Full length papers are scheduled to be online in the following International Journals:

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Joint venture of

Abdul Wali Khan University Mardan, Pakistan &
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PROCEEDINGS
Volume-3

Conference Chair and Editor-in-Chief: Dr. Sher Afzal Khan
PREFACE

Distinguished Delegates and Guests!

The organizing committee warmly welcomes the distinguished delegates and guests to the 2nd International Conference on Computational & Social Sciences (ICCSS-14) held from August 26-28, 2014 in Recep Tayyip Erdoğan University, Rize, Turkey. ICCSS-14 is sponsored by Abdul Wali Khan University Mardan, Pakistan, Recep Tayyip Erdoğan University, Rize, Turkey and supported by scholars from universities all around the globe. The major aim of the conference is to provide an animating opportunity to the participants to interact with international experts in a variety of fields: Computer, Mathematics, Social and Life Sciences.

The conference has solicited and gathered technical research submissions related to aspects of major conference themes and tracks. The papers published in the proceeding have been peer reviewed by reviewers drawn for the scientific committee, external reviewers and editorial board.

The quality of the ICCSS-14, guaranteed by the attendance of an unparalleled number of experts of international repute–can be assessed when reading the contents of the proceedings. The conference is therefore a unique event, where attendees will be able to appreciate the latest results in their field of expertise and will acquire additional knowledge in other fields. The program has been structured to favor interactions among attendees hailing from diverse horizons; scientifically, geographically; both from academia and industry.

We would wish to thank the Patron-in-Chiefs, Conference Chairs, Co-chairs, keynote speaker, researchers, organization staff, and the members of the other committees for their faithful contribution. We are also grateful to those who have contributed to the success of ICCSS-14. We hope that participants and interested readers will benefit scientifically from the proceedings and also find it stimulating in the process. Finally, we would like to wish you success in your technical presentations and social networking.

We hope you have a unique, rewarding and enjoyable time at ICCSS-14 in Rize, Turkey.

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EVOLUTION OF MU‘JAM LITERATURE IN ḤADITH COLLECTION

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ABSTRACT. We are living in post modern era that flashes numerous problems for humanity in general and for Muslim in particular. Every Muslim wishes to solve all his problems in the light of Islamic teachings. Besides the Qur’an, Ḥadith have played an important role in making and developing of the Islamic Shari’ah and Law because it contains exhaustive material and comprehensive guidance on all aspects of a Muslim’s life (it is a treasure chest of good manners and excellent moral aimed at impressing material life of a person). Without such knowledge of Ḥadith it would be difficult for a Muslim to adopt the proper approach and to have divine source for solving out the problems of his life. When for taking guidance in the light of the sayings of Holy prophet (may Allah Bless him and Grant him peace), he is referred to the compilation of Ḥadith. In such condition he feels great difficulty in proper understanding. While to go ahead in his busy material life, considering the details about the evaluation of compilers, narrators and their narrations is the only job of the students of Ḥadith, who also identify their fields of researches in Ḥadith literature. Hence there is one brief compilation of Ḥadith, having systematic arrangements for direct assessment to the narrators. This kind of compilation is called Mu’jam. In spite of having lot of uses and applications especially for present modern age, it can be enlarged very familiar among general Muslims. So in my research, I have tried the utmost to present the complete concept of Mu’jam literature in Ḥadith collections for understanding its methodology as well as its importance in a Muslim’s routine life. I hope that it will create positive impact on the minds of modern Muslims as well as those who are very affectionate to become familiar with different kinds of Ḥadith literature.

Keywords: Hadith Collection; Methods of Compilations; Mu’jam literature in Hadith.

1. Introduction. As Ḥadith has maximum status among Muslims practices at the beginning of Islam, believers had their best to act upon the Holy Prophet (may Allah Bless him and Grant him peace) as well as they also preserved themselves as a role model. They memorized each and every word and action of Prophet (may Allah Bless him and Grant him peace) and for its preservation until to end of world, they started the series of huge storage of the Ḥadith as compiled into many books.

For that determined, interesting and continuously compilation, scholars of Ḥadith adopted different methods and ways which reached on climate with the passage of time. These methods and ways of compilation of Ḥadith
were developed according to the individual taste of compilers, which they compiled in a book shape on ḥadīth. So it is very essential for readers of ḥadīth book, to well aware of all methods, ways, tastes and styles of the compilers of different kinds of ḥadīth books.

Here, it will be discussed on some methods for the selection of ḥadīth literature for its compilation by covering the position of Mu‘jam among these methods. First of all, during the lifetime of Prophet (may Allah Bless him and Grant him peace), some of his companions and their followers wrote down the sayings of Prophet (may Allah Bless him and Grant him peace). They made notes for their own guidance, and these notes resulted for larger works produced later. These collections are called ṣahīfah. Collection of Abī Hurairah, which was taught and handed over by his student Hammam b. Munabbih, is one of the examples of ṣahīfah. The most important ṣahīfah was collected by Abd Allah b. Amr b. al-‘Ls with the title of “Al ṣahīfah al ṣadiqah”. According to Ibn Athir, this ṣahīfah al-ṣadiqah includes two thousand ḥadīth. Except these, Proph‘ (may Allah Bless him and Grant him peace) made many letters, orders and treaties on different occasions, which were preserved by different companions individually for their own informations.¹

In the time of ‘Umar b. ‘Abd al-Azīz, the compilation of ḥadīth were not in the form of ṣahīfah but in the form of books. Many books came to appear e.g. “Kutub al-Qīz” by Abī Bakr, “Risqulah” by Salim b. ‘Abd Allāh, “Diftar” by al-‘Uthman and “Abwāb” by Sha‘bān etc. Mostly in this period, compilers had collected Aḥādīth without any sequence of subject but few had adopted the method as Imam Sha‘bān, divided his collection, “Al-Abwāb” into chapters and each chapter contains Aḥādīth related to one topic. However, this method was not perfect as it was only for its initial stages.²

After 125 A.H, ulema ul ḥadīth started to collect Aḥādīth according to chapters on fiqh, as “Kitab al-Athār” by Imam Yousaf. Then Imam Mīlik also followed the same methods in his collection, “Muwatta”. In which first he mentioned Aḥādīth related to prescribed chapter then the sayings of companions and followers. These both collections are the first example of chapter wise arrangement, which is called as “Muṣnāf”. So, Muṣnāf are those large collections of Aḥādīth in which Aḥādīth relating to most or all of the various topics mentioned above are put together and arranged in various books or chapters, each pertaining with a particular topic.³

At the end of second century, another new method was adopted, according to this method, Aḥādīth are collected and arranged irrespective of their subject matter. In other words Musnad means those collections of Aḥādīth arranged according to the names of companions including their various Isnād. The compilations according to this method are called Musnad. Musnad Imam Aḥmad b. Ḥanbal and Musnad Ishāq b. Rahwiah are examples of such methods of compilation.⁴

When Musnad works were started, people felt difficulty to find out the relevant ḥadīth in their objects. So Ulema of ḥadīth thought about the compilation according to content wise. However, this method is divided into three categories. Firstly, some ulema compiled only those Aḥādīth, which are ṣahih according to them. e.g. Imam Bukhārī, Muslim and Tirmidhī.
etc and their compilations are called Al- Jawami’. Al- Jawami’ are those books which contain Aqidah about eight prescribed topics as ‘Aqida (Beliefs), Ahkam (including all subjects of fiqh from Taharat (purity to waslaha (exhortation), Al-Raqib (piety, asceticism, mysticism), Adab (etiquette in eating, drinking, traveling etc), Tafsir (commentary on Qur’an), Tarikh and Siyar (historical and biographical matters which includes the lives of Prophet (may Allah Bless him and Grant him peace), his companions and successors), Munaqib (denunciation of person or places etc) and Fitn (crises). Second kind is that compilation, for which only contain Aqidah al-Ahkam (legal-liturgical traditions), omitting material relating to historical, spiritual and other matters which has been done by Imam Darimi (d.255A.H), Abu Daud (d.275A.H), Imam Nisa‘I (d.303A.H) and Imam Darqawi (d.85A.H) etc. these collections are called Sunan. According to Ulema ul Hadith, Sunan are those compilations which contain only Marfu’Aqidah on fiqhi chapters. Third kind is such compilation which is arranged according to fiqhi chapters including Marfu’, Muqaf and Maqtu’ Aqidah and called as Mu‘anafat. Mu‘anaf Abd al-Radhiq and Mu‘anaf Ibn Abi Shaybah are the famous kinds of these collections.

Some scholars have selected the method of Mustadrak. It is called such collections of Hadith in which compilers, having accepted the conditions laid down by any previous compiler, collects together such traditions fulfill those conditions but neglect the previous compiler. Mustadrak of Al- Hakam belongs to this category, which collected together such Aqidah which fulfilled the conditions laid down by Bukhari and Muslim, but not included by them in their Sahihin.

Ulema of Hadith adopted another new method, in which a later compiler of them collected together fresh Isnad for such Aqidah as were collected by pervious compiler on the basis of different chains of Isnad. This method is called Mustakhraj. Al- Mustakhraj of Isma‘il on Sahih al- Bukhari, Mustakhraj of Abu Nuaym on the Sahih al- Bukhari and Muslim belong to this category. They have given them a fresh chain of Isnad for some Aqidah, which were already included by Bukhari and Muslim in their Sahih but different Isnad.

The Ijza are such collections of Hadith which have been written down on the authority of one single individual whether a companion or any subsequent generation e.g. Juz of Abul Bakr, in which all the narrations of Abul Bakr are compiled. The term Juz is also applied to such collections of Hadith which have been compiled on a particular subject matter- e.g. “intentions” “the wisdom of God” etc. According to some ulema the collection of forty Aqidah, Arba’in belongs to this category as mentioned above.

Some ulema of Hadith adopted one more new method of Mu’jam for the compilation of Hadith. The term Mu’jam is generally applied to such work on various subjects. These are different from one author to another. Some times it is arranged according to alphabetical listing of the companions. Some times, according to region, and some time according to alphabetical listing in which names of teachers of the compiler are mentioned as Imam Tabarani had done in his Mu’jam al- Saghir. Hence every compiler has adopted his own style. These all-different methods and style of the compilation do not affect the authenticity of Hadith books. Sometimes, ignorance from these important methods creates confusion in the mind of readers.
However great care and attention has been paid by Ulema al-Fad'ith while adopting these methods. This was not done by accidentally but Ulema al-Fad'ith devoted them to preserve it for ever shining. However, among the great numbers of collections of the Fad'ith literature, it can be said that Mu'jam is a useful and effective method for the compilation of Fad'ith, with a specific methodology in which all A-Fad'ith are presented with full sequence of narrators in alphabetical indicate a special interest to the compiler. These Ma'ajim are related to a variety of the subjects which may appear according to special interest of compilers. It can be related to his particular teachers, companions or cities.

2.1 Definition and Meanings of Mu'jam:
The word Mu'jam is derived from the root "ع - ج - م" that means;

\[\text{عجم الكتاب أو الحرف نطقه بالسود}\\]
(He put dots on the word or book with ink.)\[^{15}\]
So when it is used with Fathah(فتح) as مـعـجم (مـيمـي . ) like مـدخـل or مـخرج مـدخل, that means dotting upon words. Otherwise in case of dummah( د) , it becomes objective( . . ) from اعـجمـم بـاب . (making dots on words or book or removing of the perplexity between the similarities of words) to مـعـجم , that means words with dots/ حروف مَتَوَّطِئة . Any how, Mu'jam means putting dots on the words to remove the confusion due to their similarities. Because of that Arabic Alphabets are called as Mu'jam. Those are twenty eight. Keeping in view that in the beginning there were no dots on Arabic alphabets and it was difficult to distinguish the analogous letters of alphabets, Therefore dots were put down on those alphabets for convenience. For example two dots on Ta(ت) or three on tha(ث), one on Fa(ف) while Two on qaf(ق) etc.\[^{16}\] That is why the word Mu'jam (مـعـجم) is selected from 'Jam (عجم).

Technically, according to Linguistics, it means; Those books which material is arranged alphabetically, are called Mu'jam.\[^{17}\] That is why most of the dictionaries or Encyclopedias are called Mu'jam.

According to Muaddithun;
Mu'jam is a kind of collection of Fad'ith, in which a compiler arranges the A-Fad'ith, on the basis of the chain of companions, Shuykh or regions etc. Normally these chains are arranged alphabetically. As Ja'far al-Kattani said;

\[\text{و هو في اصطلاحهم ما تذكر فيه الا حداث على ترتيب الصحابة او شيوخ او البلدان او غير ذلك و غالب ان}\\
\text{يكونوا مرتبين على حروف الهجاء}\\
\text{"Technically (it means) those books in which Ahadith are mentioned according to companions, Shyuks or regions etc, and mostly those are arranged alphabetically."}\\
\text{'Abd al 'Aziz Muaddith e- Dehlvi, while mentioning different kinds of the compilations of Fad'ith discussed Ma'ajim as a collection in which A-Fad'ith are mentioned along with the sequence of Shyuhkh, considering their dates of deaths or listing of the names alphabetically or the ranks of Excellencies and pieties. Mostly those are arranged according to alphabets. While discussing the Masanid, he wrote that it is a collection in which A-Fad'ith are mentioned on the basis of the narrations of}\\
\]
companions either this arrangement is according to alphabet or the basis of the dates of their acceptance of Islam or reality. Then he presented some examples for those sequences in his book "Faw'īd Jami'ah 'A'ja la Bar Nafi'ah".  

If these definitions are taken into consideration, it becomes evident that Shah 'Abd al 'Aziz makes a difference between Masnūd and Ma'ajīm by saying that Masnūd are arranged according to sequences of companions and Ma'ajīm are arranged by the sequence of Shuykh of a particular compiler.

Both definitions given by Shah Abdul Aziz are not lucid and one can not differentiate one from other. Infact, he took that definition from Syed 'Abd al Hayyi al Kattāni in his book "Fahris al Fahris wa al Athbūt", and quoted it under the discussion of Ma'ajim e-Thalathah. Kattāni said:

"Mu'jam refers to that book in which one sheikh (compiler) presents alphabetically the biographies of his teachers and mentions the narrations of each of them".

Kattāni's definition is also based on Sakhw. Quoting him Kattāni words:

"And Sakhw said in Sharah 'al al Jazariah and I have quoted this statement from that manuscript which had been written in his life, that Mu'jam are those books which are compiled according to the names of the teachers of the compilers as Mu'jam al Saghir or Mu'jam al Awsat by Imam Ḥabar-ni, or which is compiled according to the names of companions as al Kabir by the same writer."

Above mentioned statement shows that Hafiz Sakhw added the companions in its definition. Al-Kattāni did not clarify this point while presenting the definition about Mu'jam whether the arrangement according to companions is included or not? Many great scholars were confused by it. As it can be seen, that at the same time Ja'far Al-Kattāni used the term Musnad for Mu'jam al Kabir by Ḥabar-ni, in his book Bustn al-Mu'addith-n. The question is as to why he entitles Mu'jam al Kabir as Musnad? For this ambiguity, the difference and similarities between Mu'jam and Musnad and Mu'jam and Mashkhul are to be defined clearly.

2.1.1 Difference between Mu'jam and Musnad:

Ma'ajim are those books which are arranged according to the companions, Shuykh or cities. For instance, a Mu'jam by Ḥabar-ni; his Mu'jam al Kabir is arranged on the basis of the names of companions while Mu'jam al Awsat is arranged according to Gharaib Shuykh and Mu'jam al Saghir is according to the names of his teachers. All three are arranged
Masanˇd are the collections of ṣadth, in which narrations of each companions are mentioned under his name without considering their subject matter or status as ṣahh, ḍasan or Da’if. The priority in the arrangement is usually based upon the position of their excellence (as top of the list are rightly guided Caliphs, then ‘Shrah Mubashrah then others etc) or the period of the acceptance of Islam or the names according to alphabets. Some famous Masanˇd are as follows:

Musnad Abi Da’ud al Jiyalsi (d.204A.H), Musnad Imam Shaf’i (d.204A.H), Musnad Imam Aˇmad b. Ḥanbal (d.241A.H), Musnad Baqˇd b. Makhlad(d.272A.H), Musnad Ab di Bakr al Humaydi(d.219A.H). Musnad Is˛aq b. Rahwayh (d.241A.H) and Musnad Abu Y’ala Al Musali(d.307A.H) etc.

Therefore, it can be concluded that difference between them due to their focus on a particular aspect. Following diagram can illustrate their distinctions:

![Diagram](image-url)

As explained in the diagram, (Figure.1), the basic factor in Masanˇd is the methodology adopted by the compiler. He compiles the Aˇdth of a companion in one section and then arranges these sections either by alphabetical arrangement or by the position of Excellence or by their
priority in the acceptance of Islam.

As for Mu'jam are concerned, Basic factor is that; A心脏病 are collected in alphabetical order. Then different methodologies are adopted. Sometimes it is arranged according to the Shuykh of narrators or sometimes according to the narrations of different regions or cities.

It is evident from the above chart that there is one similar point between Masn'd and Ma'ajim. If compilers have narrated A心脏病 by the chains of companions along with alphabetical arrangement then it will be called as Musnad as well as Mu'jam.

It is clear from the above mentioned discussion that the confusion regarding Shah 'Abd al 'Aziz, statement of calling "Al -Musnad" also the "Mu'jam al Kabir" by Imam 'abar an is removed. It may be the reason as to why he excluded the category of companions' narrations from the Mu'jam literature. In fact, it was common with the compilers of Musn'd literature in A心脏病; that is Why Shah 'Abd al 'Aziz did not mentioned it in the definition of Mu'jam.

2.1.2 Difference Between Mu'jam and Mashkh:

For understanding the exact meaning or definition of Mu'jam literature in A心脏病, one has to know the confusion regarding different terminologies in A心脏病 sciences specifically which are similar to Mu'jam. One of those terminologies is "Mashkh". As one can be confused about Mu'jam and Musnad similarly some one may be confused about Mashkh:

There is a slight difference between Mu'jam and Mashkh as, Mashkh are those compilations of A心脏病 which are arranged:

a. According to the dates of the deaths of Shuykh. As Mashkh by N'al.

b. According to those cities which compiler himself has visited. As Mashkh by Sufiyan al Raswi.

c. According to dates of Tahammul al A心脏病 (by Sam'a, 'Ard, Ijaza, Munawalah, Kitabah, I'lam, Wasiyah, Wjadah etc). As Sabat by 'Umar b. Ahmad b. Ali al alab, Mashkh b. Shazan(d.426A.H), Mashkh Abi Y'alay al Khalil(d.442A.H), Mashkh Abi Qasim al Qazwan(d.582A.H) and Mashkh Abi Qasim al Suhward(d.632A.H).

While in Mu'jam A心脏病 are collected from Shyukh but the criteria for its arrangement is different. As the Statement of Nawab Qadque Hasan Khan is mentioned in 'Ujala bar Nafi'ah that;

"I said Mashikhat are same with the meanings of Mu'jam except that Mu'ajim are arranged alphabetically rather than Mashikhat." 24

So Nawab Qadque Qasim mentioned with reference to his teacher Mulana 'Abid Sindh that Mashkh are same with Mu'jam but difference is that Ma'ajim are arranged by names of Shuykh alphabetically but no
alphabetical arrangement is considered in Mash
dkhīt.\textsuperscript{25}

It can be said on the basis of above discussion that the exclusive
definition of Mu’jam which distinguishes it from all other kinds may be
described as follows:
It is one kind of the compilation of ṣadīth literature in which A火烧th are collected with alphabetical listing of chains. Moreover, chains are
considered sometimes by the names of companions, some times by the names
of Shyukh of compilers and sometimes by different regions or cities.

2.2 Significance of Mu’jam in ṣadīth Collection:
Collection of ṣadīth by any means is a great work. The Holy Prophet (may
Allah Bless him and Grant him peace) always encouraged his companions
to understand and memorize his sayings and promised a reward to one who
preserves his A火烧th and conveys them to others. There is a ṣadīth in
which Prophet (may Allah Bless him and Grant him peace) ordered to
transmit and preserve his A火烧th. In the last address of Hajj he said:

«لا ليبلغ الشاهد الفائث فعل بعض من يبلغه يكون أعى له من بعض من اسمع»
"Let him who was present among you inform to whom
was absent. May be the person, who listen ṣadīth has
deep understanding than the transmitter."\textsuperscript{26}

’Amr b. ’Las reported that he has heard the Prophet (may Allah Bless him
and Grant him peace) once said:

«بلاغ عن و وحدوا عن»
"Convey from me even if it one verse."\textsuperscript{27}

In another occasion the Prophet prayed (may Allah Bless him and Grant
him peace) for those who devoted in collecting A火烧th and transmitting
them to other. The Prophet (may Allah Bless him and Grant him peace)
said;

«نصر الله امرًا سمع من حديثه كما سمعقود سماع ، فرب سماع أعى من سماع»
"May Allah make Radiant (the face of) someone who has
heard what I have said, has learnt it by heart and
he transmitted it to others as he heard it, because
may be the person who got the ṣadīth has deeper
understanding than the transmitter."\textsuperscript{28}

Imam al Nawawi in the introduction of his collection of forty A火烧th has
discussed that above mentioned A火烧th were encouraging him to make that
collection of Arba’īn. Of course he said that A火烧th regarding virtues
of Arba’īn Ḥadīths are weak A火烧th but it is permissible by ulema al-
ṣadīth to apply them in the process of encouragement to obey Allah.
However, al-Nawawi mentioned that above A火烧th are actually basis of his
work in collecting A火烧th.\textsuperscript{29}

However, one example of Imam Nawawi, is presented in response to these
A火烧th as he mentioned to collect A火烧th. Similarly majority of ulema
intended to compile Ḥadīth by different ways. So as the result of above
sayings of Prophet (may Allah Bless him and Grant him peace) as well as
work of great ulema in the collecting A火烧th shows importance of the
collection of ṣadīth. Since Mu’jam is also one method of compiling
A hadith which has a great significance in its all aspects.

The Qurʾan has given an important principle regarding the authenticity of information. It says:

"O people who believe, if a debaucher come to you with any information, do investigated it..." 30

It explains to find out the authenticity or reliability of any information which is obtained by other means, is extremely important. That's why along with the gathering of all information's about the Prophet (may Allah Bless him and Grant him peace), determining the validity of that information is essential, As the Prophet (may Allah Bless him and Grant him peace) himself said about the authenticity of the information in the following words:

"It is enough for a man to become a liar that he transmits further whatever he listen (without clarifying)." 31

Therefore, many Ulema intended to collect A hadith. They also took great care for the arrangement of those A hadith and made efforts to determine the status of narrators. In Mu’jam, compilers have arranged their collected information (Ahadith) in such a way that one can easily checks all its narrators.

Mu’jam is a kind of literature in which compiler adopts a method to arrange the A hadith according to companion, regions and the teachers of the compiler. He arranges it systematically so that one can easily find access to the credibility of narrators on the basis of science of Isma ul Rijal by taking them alphabetically.

As Abu Bakr Ahmad b. Ibrahim b. Ismail b. al Abbas al Ismaili mentioned in the introduction of his Mu’jam that;

"Infact I took help from Allah for covering the names of my all those teachers to whom I listen, wrote or made him to read any hadith . I arranged them alphabetically so that students can get them easily and if there would be any confusion or contradiction about any name they can be satisfied." 32

One compiler of Mu’jam indicating the significance of Mu’jam says: by this way (alphabetical listing) readers or students can get very quick access to different material of hadith text and if they want to inquire (by following the instructions of Holy Prophet (may Allah Bless him and Grant him peace) about the narrators as well as they can do it with this present arrangement rather than any other method.
Some times, importance of the collection of Afections is clear, but another
time one may wonders as to why some scholars restricted their efforts to
Alphabetical listing (Mu‘jam). There are several possible reasons for
this. It can be argued that they may have chosen it as a sufficient basis
for collecting a large number of Afections by different narrators along
with their brief introduction and status in reliability. As Abıld Musaafa
Hmd ‘Abd al Majid al Salfi, in his introduction to Mu’jam al Kabr
said;

و المعجم الكبير بحرازى ترجم فيه الحافظ الطبراني للصحابة تراجم و جيزة و بروى عن كل واحد منهم بعض
أحاديثهم وجميعهم 33

Secondly, they have the opportunity for mentioning entire list of their
teachers, their meeting places as well as dates for taking Sama’
(listening of Afections) to them. It can be supported by the statement of
Abdul Muqr’ about his Mu’jam quoted by Abmad b. Mirn Sayd al Blnsh:

هذا الكتاب جمع فيه اسماء المحدثين الذين سمعت منهم بالحجاز و بمكة و المدينة. و مصر و الشام. والعراق.
وعبر ذلک برحمه الله تعالى

"In this book I have collected the names of all Muhaddithin to
whom I listen in Hijaz, Makkah, Madinah, Egypt, Syria, and Iraq
etc, may Allah Mercy upon them.” 35

Similar reason has been given by Abdad al Gasan Juma’i in the introduction
of his Mu’jam that;

هذا ما اشتغل عليه ذكر شيوخ الذين قلتهم في سائر الآفاق بيكة والعراق. وفارس. وآرض إصطبغ،. واللغو ودير بكر وشام.

"I met in all over the world, i.e Makkah, Iraq, Paris,
the place of Istakhr, Thaghur, diyar Bkr, Siriya
Egyptets and I arranged them alphabetically.” 36

Above examples show that compilers have got good chances for mentioning
their teachers' names, teaching places as well as circumstances of their
learning or taking Afections.

Alternatively one of the reasons for stressing Alphabets is to provide
the opportunity for the students of Afections as well as readers which they
directly approach to the narrators and their specific traditions narrated
by them as Al-Isma’il said that;

والاقترار منهم لكل واحد على حديث واحد يستغبر. أو يستفاد. أو يستحسن او حكایة. فبضاف. إلى ما أشتته من ذلك جمع
أحاديث تكون قوانين في نفسها

"I took from every one at least one Afection, which is considered
as Gharb or which have some benefits. I also mention the events
of those Ahadith so that along with this effort, some Ahadith
having some benefits would also be collected along with the
Informations of Shuykh.” 37

However, the importance of Mu‘ajim is clear. Despite of having multi
purposes, many Shahih Afections Showed the important virtues of compilations
and transmissions of Afections on which our great ‘Ulema al Afections took
steps for compilation of ḥadīth. Subsequently there are many methods in collecting Ahadith, one of them is Mu‘jam which possess lots of consideration.

2.3 Origin and Development of Mu‘jam:

In the beginning, terminology of Mu‘jam was applied to all those books, which were arranged alphabetically in their subject matter. All Muḥaddithūn used this style in their books of Isma ur Rijāl (in which they discussed large number of the narrators of ḥadīth and important informations about them) because they wanted to arrange their huge collections of narrators' informations in sequence. So, a reader can get easy access to any narrator. First effort regarding this was done by Imam Muḥammad b. Isma‘il Al-Bukhārī (d.256A.H), when he arranged the whole informations of 40,000 transmitters of ḥadīth including companions up to his time alphabetically. However, title of his book was "Tarikh al-Kabīr" not Mu‘jam. He also wrote down "Tarikh al Saghīr" arranged by century wise.38

At the same time, Ahadith were being compiled with different methods. Muḥaddithūn had adopted different styles for their collections. After the second century of Hijrah some Muḥaddithūn had started to compile ḥadīth with the names of companions who narrated ḥadīth without considering as whether these Ahadith are ṣahih, ṣasan or Da‘if or whether these are relevant to one topic or various topics. Those types of books are called Masnūn-d. Their basic objective was to compile each and every thing that is coming from narrators in a book form. Then in later century, some scholars' of ḥadīth formulated that method and arranged alphabetically and also included the names of their teachers as well as cities. Thus, it can be explain that after third century, method of Mu‘jam was used by both dimensions, in field of Isma ur Rijāl(or the names and circumstances of Companions) as well as in the compilation of ḥadīth. One of the great Muḥaddith of Al-Jazrah, Abd Ya‘la Aḥmad b. ‘Alī b. Halah al Tamīmī al Musli wrote a formal book entitled with Mu‘jam us ṣahabah in 307A.H.39 At the same time, he also compiled ḥadīth narrated from his teachers and arranged them alphabetically. Then another Scholar, Abū Al-‘Abbas Muḥammad b. ’Abd al Rahman b. Muḥammad al- Daghūl (d.315A.H) wrote, "Mu‘jam ul ṣahabah".40

One more famous scholar Abu al Qasim ’Abd al-'Allah b. Muḥammad b. Abd al Azīz al Baghwā (214-317A.H0, wrote a Mu‘jam al Kabīr and Mu‘jam al Saghīr with the names and other informations about companions. It has been reported by Abū al Qasim Isa b. Jarah.41 Its manuscript is present in Maṭbah Zahriyah Damascuss with the serial no. 11/94.42 Ibn e Nadim has mentioned his two Ma‘ajim; Mu‘jam al Kabīr and Mu‘jam al Saghīr in his book Al- Fihrist.43

It is said that in earlier times, people have formulated above style of Mu‘jam. The later scholars (Mutakhirūn) expanded its scope to all those books in which the narrators took ḥadīth from their teachers. ’Abd al Fa‘i Al Kattānī wrote in his book "Paris al Faharis wa al Athbīnt" that;

[توسع المناخرون فسموا المعجم الكتاب الذي نقصه الشيخ بسيونه وأقرئوه أو من أخذ عنه، أو بفرد أحدهم بسيون حافظ أو ناجيه، كمعجم شيوخ الصدقل لعباض، ومعجم ناجيه لابن الأيوبي، السم بذلك لتركهم الرواية فيه على ترتيب حروف المعجم تسهيلًا للمنطق والمفهوم]

"And later scholars expanded it and gave the title of Mu‘jam
to all those books, in which narrators collect his Shyukh or contemporaries or students or Muaddithn collected the teachers of any Ḥadīth or (sometimes) the students of that Ḥadīth also.""
In addition to this, in the field of Biographies of poets, Abū 'Abd Allāh Mu‘āmar b. Imran b. Musa al Marzaban al Kitib (d.384 A.H) wrote Mu‘jam al Sh’ura’. Ibn Shahīn b. Uthmān al Bughdadī (d.385 A.H) also wrote Mu‘jam al Shuykh. Then Ibn lal Aḥmad b. ‘Ali Al-Hamdīn (d.398 A.H) brought his attention toward Isma ur Rijal and wrote a Mu‘jam us ṣahabah that was appreciated by mentioned book e.g. “Tarjīkh” that;

"I have never see anything better than his Mu‘jam."

In fifth century, once again a great Mu‘addith of Ghriṣṭn, Abū al Ḥasan Mu‘ammad b. Jumai‘ al Sidawī (d.402 A.H) mentioned his all Shuykh and their narrated Aḥdīth or good sayings with the title of "Mu‘jam al Shuykh". It is also called as Mu‘jam Ibn Jumai‘. Abū al Qasim Sahāmi (d.427 A.H) also wrote Mu‘jam al Shuykh. Who was the teacher of Abū al Qasim al Qashirī. Then Abu Nuaym Aḥmad b. ‘Abd Allāh Asbahānī (d.430 A.H) adopted the same methodology and compiled Mu‘jam al Shuykh. Abū al Qasim Sahāmi (d.427 A.H) also wrote Mu‘jam al Shuykh. Who was the teacher of Abū al Qasim al Qashirī.

Abu al Qasim Al Qashirī. Then Abu Nuaym Aḥmad b. ‘Abd Allāh Asbahānī (d.430 A.H) adopted the same methodology and compiled Mu‘jam al Shuykh. Later on, ‘Abd al Ha‘i Kattān indicated that people expended the concept of Mu‘jam for collecting the information of their teachers as well as they also started to write some informations about different countries according to the Mu‘jam methodology. Its example is the Mu‘jam of Abī ‘Ubaid al Bakri al Undlasi (d.487 A.H) its name is; "Mu‘jam ma Is’ta‘jam min al Balbūn wa al Amīkan". Allama Jūr Allāh Abī Qasim Māḥmūd b. ‘Umar Al Zamakhshāri (d.538 A.H) wrote "Mu‘jam al Ḣadīth".

Rather then the very vast usage scholars were still busy to compile Mu‘jam on the names of their teachers and their informations. As Abu Sa‘d ‘Abd al Karīm b. Mu‘ammad Al Sam‘ānī (d.562 A.H) compiled his "Mu‘jam al Shuykh". He also compiled Ahadith in his Mu‘jam entitled with "Al Tanjīr fi Mu‘jam al Khabīr". Abū al Qasim b. Ḥasan b. ‘Asākir (d.571 A.H) compiled Mu‘jam with both originating as well as developing factors. Firstly, he wrote the last Mu‘jam in the field of Isma ul Rijāl of 6th century entituled with Mu‘jam Ibn ‘Asākir. Then he wrote a Mu‘jam on the biographies of some females which is called as "Mu‘jam al Niswān". Moreover, he added one new dimension of Mu‘jam by describing the biographies of common people rather than companions of Shuykh or poets. Similarly Qaḍī ‘Yāẓīr b. Māḥsa (d.522 A.H) wrote "Mu‘jam fi Qaḍī al Ṣukrah‘ in which he mentioned all informations about the companions of Al Qaḍī Imam Ṣukrah‘.

At the end of sixth century to ninth century of Islam, scholars rushed toward writing of Mu‘jam specifically regarding their Shuykh. It can be transpired by the following list;


[ لما رأت شيء احسن منه ]
'Isnatu'd-Din Abū-Mūsā Qasim b. Muḥammad al Barzalī (d.738AH).
The title of his Mu'jam is, Mu'jam al Kābīr.
Abū 'Abd Allāh Muḥammad b. Āmid al Dhīḥrī (d.748 AH).
Abū Ishāq Burhān ud-Dīn al Tānkī (d.800 AH). The title of his Mu'jam was Mu'jam al Kābīr, which is also about Shuyukh.
Qūsim b. Qatlībgha al Ḥanāfī (d.879 AH)

All above mentioned scholars have intended to write Mu'jam on the style of Mu'jam al Shuyukh. This series is going on in near centuries Muḥammad Fawād 'Abd al Baqī compiled Mu'jam al Mufharis li Alfaḍ al Qur'ān in the 15th century of Islam. Similarly, A.J Winksink compiled al Mu'jam al Mufharis li al Ṣadd al Ṣaḥīḥ al Nabwī. But those Mu'jam are having only indexes that had been inducted from previous collections. Actually after 9th century of Islam no further work has been done regarding its compilation. However in the whole historical development of Mu'jam literature, maximum work has been done on Mu'jam al Shuyukh.

2.4 Development of Mu'jam specifically as a Method of Ṣadd th Collection:
Above discussion demonstrates that how much progress had been produced in Mu'jam literature. However, it is said that most of the scholars took it in other sense and used those methodologies in the work those were not relevant to Ṣadd th collection. Even some Mu'jam al Shuyukh (as one dialect of Mu'jam technical definition) are not compiled for the intention of Ṣadd th compilation. As a research topic "Methodology of Mu'jam literature in Ṣadd th Collection", it becomes essential to make a distinction of Ma'ajim which have collections of Ṣadd th from those who possess only informations of their teachers, poets, countries or some other categories.

A list of those books of Mu'jam compiled by Muḥaddithūn with intention of the compilation of Ṣadd th is mentioned as below:

- First of all Ṣamīd b. Salma (d.167AH) compiled some Ahadith according to alphabetical arrangement of Shuyukh.68
- Mu'jam al Shuyukh by Ṣamīd b. 'Ali al Muthna al Muwsalī (d.307AH).
- Mu'jam al qarnabah (Mu'jam al Kabīr) by Abū Bakr b. Qānī (d.351 AH).
- Mu'jam al Kabīr by Abū al Qasim Sulīmān b. Āmid al Tabarīnī (d.360 AH).
- Mu'jam al Awsat by Abū al Qasim Sulīmān b. Ahmad al Tabarīnī (d.360 AH).
- Mu'jam al Saghīr by Abū al Qasim Sulīmān b. Āmid al Tabarīnī (d.360 AH).
- Kitāb al Mu'jam fi Asamī al Shuyukh al Ismā'ilī by Abū Bakr Āmid b. Ibrāhīm b. Ismā'il al Ismā'ilī (d.371 AH).
- Mu'jam al Shuyukh by Ibn Jumay' al Saydī (d.402 AH).
- Al Tanjīr fi Mu'jam al Kabīr by Abu Sa'd Abū al Karim b. Muḥammad al Sam'ānī (d.562 AH).
- Al Mu'jam al Mufharis li Alfaḍ al Ṣadd th al Nabwī by A.J. Winksink.
3. Conclusion. Mu'jam is one specific method of collecting Aḥadīth among its various methods of collection. All the methods of collection are not emerged by chance. However those are adopted intentionally to assemble the huge collection of Aḥadīth as more useable and accessible with new dimensions. It is observed that the same compiler compiledṣaḥīḥ as well as Mu'jam too. For example Al Ismī 'Ilāj compilesṣaḥīḥ Ismī 'Ilāj and Mu'jam al Ismī 'Ilāj as well. Ibī Ya'īlī compiled Musand and Mu'jam also. So they were well aware about the status of their narrators and narrations and they considered those standards for the application in their other compilations. Through Mu'jam they just collected a part of Aḥadīth in Alphabetical arrangement by ignoring the status or subject matter ofṣaḥīḥ. They also desired to highlight the spheres of their teachers for which they also collected Aḥadīth, events, stories and quotations to Aḥadīth only. So compilers adopted different methodologies by following these targets just to make their collections more conceivable and attractive for their readers. The basic requirement of Mu'jam literature is just to follow their special alphabetical arrangement which has provides a positive and useful effect on the readers ofṣaḥīḥ and its researchers.

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64 Hajj Khalifa included in the category Mu'jam for especially as Hadith compilation after mentioning the Mu'ajim al bar, see Kashf al Zunan, p.1737

65 Ibid, 1736

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**Content Notes**

**Tahammul al ḍhadth**

It means the way for carrying of knowledge of ḍhadth.

**Sam'a**

It is one method for getting the knowledge of ḍhadth, in which reading by the teacher to the student is done.

**'Ard**

Reading by student to teachers

**Ijaza**

To give permission someone to transmit a ḍhadth or book on the authority of the scholar without reading by anyone

**Munawalah**

To handover someone the written material to transmit

**Kitabah**

To write ḍhadth for some one

**I'lam**

To inform someone that informer has permission to transmit certain material.

**Wasiyah**

To entrust someone his books

**Wjadah**

To find someone books or ḍhadth written by someone just as we now a days discover some manuscripts in a library or some where els.

**Sabat**

This term is also used for Mashjadkhait; it is also called as Faharis.

**Tarjam tul Al Alam**
1. 'Ubid Sindh

2. 'Umar b. 'Abd al-Az'z

3. 'Amr b. Salma

4. A.J Winksinck

5. Abî Ya'lî Al Muwsal

6. Sam'an

7. Abu Bakr

8. Abu Bakr Al Musal

9. Abu Hurairah

10. Abd al-Radhîq

11. Abd Allah b. Amr b. al-'Ls

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**Brief Introduction**

1. Mulana 'Abid Sindh (d.1944 A.D) a prominent Figure of Indian freedom Movement. Spent 14 years in learning philosophy of Islam.
4. A.J Winksinck Arent Jan a scholar of 20th century work a lot on indexes of Hadith literature.
<table>
<thead>
<tr>
<th></th>
<th>Name</th>
<th>Contribution</th>
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<tbody>
<tr>
<td>13</td>
<td>Abu Daud</td>
<td>Abu Daud Sulaman b. Ashath Al Azîr Al Sajistani (d.303A.H) who got the title of &quot;Sheikh us Sunnah&quot; due to his Excellency in Hadith. His famous compilation is considered in kutab e Sunnah. (Al- Dhahâb (1955). Tadhkhirat al-`uffaâ. vol.6, p.59)</td>
</tr>
<tr>
<td>16</td>
<td>Abu Da'îd Suliman</td>
<td>Abu Da'îd Suliman b. Da'îd al-Iyalsî (d.204A.H) expert in understanding of Hadith, wrote many valuable books. e.g. musnad. (Al-Dhahâb (1955). Tadhkhirat al-`uffaâ. vol.1, p.352)</td>
</tr>
<tr>
<td>18</td>
<td>Al-Dehlî</td>
<td>Shah 'Abd al 'Azîz Mu'addith e- Dehlî (d.1239A.H) Famous with marvelous memory and wrote many valuable books.</td>
</tr>
<tr>
<td>19</td>
<td>Al-Dhîhbî</td>
<td>Ab-Abd Allâh Mu'ammâd b. A'mâd b. Usman al Dhîhbî (d.748 A.H) belong to genius family, expert in the sciences of Hadith, travelled to many countries, wrote more than two hundred books.</td>
</tr>
<tr>
<td>20</td>
<td>Al-Hakam</td>
<td>Ab-Abd Allâh Mu'ammâd b. 'Abd Allâh Al-Hakam, one of the greatest Hufâz compiler of Hadith, travelled to many countries for padîth (Al- Baghda'd Al-Khatîb (1931). Tîrkh e-Baghda'd, vol.5, p.473)</td>
</tr>
<tr>
<td>21</td>
<td>Al Isma'îli</td>
<td>Abu Bakr A'mâd b. Ibrahim b. Isma'il b. Isma'îl (d.371A.H), Imam, Hafiz, Seikh al Islam</td>
</tr>
<tr>
<td>22</td>
<td>Al Kattânî</td>
<td>Mu'ammâd b. 'Jafar b. Idris al Kattânî al Hasni Al Fasi Ab-Abd Allâh (d.1345A.H) was great historian, Muhâdith &amp; author of about sixty books books. (Al- Dhahâb (1956) Siyar al- A'îm al Nubalâ'. vol.6, p.300)</td>
</tr>
</tbody>
</table>
24 al Nawârî 8 Yahya b. Sharf Nawârî al Shafi was expert in hadith & Fiqh. His writing are considered ad original sources for hadith & Fiqh. (Hûtj Khalîfah, (1941). Kashf al- Zunûn, vol.1, p.70.)


26 Al- Zuhrî 2 Ma'md b. Muslim Ibn Shahab Al- Zuhrî (d.125A.h) famous follower of the followers, one of the greatest hufaz e hadîth & fuqha, among the pioneers of Comilers of hadîth. (Al- Dhahabî.d.(1955).Tadhkirat al- Rûf'ayî. vol.1, p.108)

27 Imam Darîmi (d.255A.H) 3 'Abd Allîh b. 'Abd ur Rehman b. fadhi b. Behram b. 'Abd ul Samad al Tâmîmî Abu Muhammad Al Samargandi Al Darîmi (d.255A.H), was a Muhadith, Al Hafiz, famous due to sidq. (Al- Dhahabî.d.(1955).Tadhkirat al- Rûf'ayî. vol.2,p.534)

28 Humam b. Munabbih 2 Humam b. Munabbih one the great follower, student of Abî Hurairah who transmitted Hadîth, his famous compilation is Al Sahîfa.


30 Imam Mûlik 2 Abâl 'Abd Allîh Mûlik b. Ans b. Mûlik Asbahî (d.179A.H) one of the great scholars, author & compiler of Hadîth e.g Mutta. (Al- 'Asqalânî, Ibn Râjî.Tahdhîb al- Tahdhîb, vol.10,p.5)

31 Imam Muslim 2 Imam Ibn al Hujjaj Al Nisapuri (d.261A.H), was a Muhadith, student of Imam Bukhari, expert in criticism in hadîth. (Al- Dhahabî.d.(1955).Tadhkirat al- Rûf'ayî. vol.2,p.588)

32 Imam Nisâ'i 3 Ahmad b. Shuaib b. Ali b. Sanâ'î Abu Abduurrehman Nisâ'î (d.303A.H) was a great Imam of hadîth, compiler of great bookse.g sunan. (Al- Dhahabî.d.(1955).Tadhkirat al- Rûf'ayî. vol.2,p.698)

33 Imam Shafî'i 5 Muhammad b. Idris al Shafî'i Abâl 'Abd Allîh al Qarshi al Matlabî (d.204A.H) was great Imam, founder of Fiqh, authentic in Hadîth & Fiqh, expert in argumentation. wrote many books e.g. Al Risala & Al Umm. (Al- Baghdâdî.d Al- Khatîb.(1931).Tîrkh al- Baghdî, vol.2,p.56)

34 Imam Yousaf 2 Imam Yousaf (d.767A.H) Student of Imam Abu Hanifa, remained chief Judge in his period, fhis famous books Kitab al Athar.

35 Ishaq b. Rahwayh 2,5 Ishaq b. Ibrahim Abu Ayab Ibn Rahwaih (d.241A.H), was Alim, Hafiz having marvellous memory& Sheik of east.
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<tr>
<td>37</td>
<td>Al-Sha'bī</td>
<td>Al-Sha'bī Aamir b. Shahil Abu Umro al Hamdani (d. 104 A.H.) one of great scholars, had a lot of students. (Al-Dhahab. (1955). Tadhkirat al-fu'fī. vol.1, p. 74)</td>
</tr>
<tr>
<td>38</td>
<td>Sezgin, Fawād</td>
<td>Muḥammad Fawād 'Abd al-Baqī, d. 1388 A.H. a contemporary scholar of 19th century who worked a lot on Indexes of Quran e.g. Mu'jam al-Mufhāris li al-Qur'ān.</td>
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</table>
AVOID THE CROWD—PERVASIVE TRANSPORART MANAGEMENT SYSTEM

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ABSTRACT. Public transport sometime faces severe congestion which create problem for general public. The transport management system manages the transport timing with proper routing of transport. However there is no mechanism that carries out the analysis of rush faced by the transport system. Over crowd will obviously create discomfort for passenger with no trace to reschedule visit plan on real time. The effort has been made by different researchers to calculate the congestion time on the bases of automated fare collection system and different tactics has been used for crowd analysis to determine the location and nature of crowd. In this paper we will analyse the crowd on real-time pervasively to facilitate the passenger on bus stop about the anticipated transport exclusive condition.

Keywords: Real-time system; pervasive transport system; GSM; visual hull; crowd counting.

1. Introduction. The transport management system in urban areas provides the systematic procedure of public transport with respect to time & routes. The passenger on public transport stops are aware about the transport for their routes with approximate time but no one is aware about the availability of seats in imminent transport for their desired routes. The effort has been made to contest with crowded issue by analysis of available archive data pattern of public transport. Real time rush management system for passengers has not been introduces as yet.

Counting people inside the public transport in real time is a difficult task. Many researchers worked a lot to count the people in crowd by using different techniques. Common techniques used in this regard are counting the people one by one on different check points. Counting people through image is difficult because of its limited picture resolution and occlusion. In public transport people occupy seats as well as stands inside the bus so exact count of passenger through picture resolution is not possible. Counting of people through pass gate may produce good mark of accuracy but this approach is labor intensive and neither can provide result in real time on different check. In a single view inside the public transport there are many occlusion so its not possible to count number of people in a single view. For getting real time position and count of people wireless sensor network can provide the better solution of the problem. Deployment of sensors on different location inside the public transport can cover all the view of vehicle. The energy contains of WSN diminished this idea and its deployment is expensive to make it operational. Different sensor network use different architectures as [1, 3, 7, 10, 11]. We suggest 12 image sensor that cover inside the bus to triumph over occlude. The quantity of sensors depends upon the type of transport area covered. The fixation of sensors over ceiling of transport in such manner that effect of occlude evaded. The 12x nodes collect data and send it to the sink at the central point of vehicle. Sink is connected with GSM adapter for transmission of data from mobile.
transport through base station to bus terminal. At public transport terminal the total count of people along with vehicle identification with route information displayed for passengers awaiting for the transport.

2. Visual Hulls. The visual hull is the intersection of all cones swept out by the silhouettes of objects seen from all camera views. It is the largest volume in which objects can reside that is consistent with all the silhouette information. On the bases of planner projection of visual hull the object is computed on the bases of lower bound and upper bound of the object. The visual hull is a geometric shape [2, 4] which is obtained from scene object's silhouettes observed in views. Voxel estimated is computed in [5, 6, 9]. [6, 8] compute the visual hull in real-time. Complete computation of visual hull in [8]. In this paper, only a planar projection of the visual hull is required, reducing the computational cost even further. Our projection approximates a top view of the scene. The intersection of viewing cones produce visual hull on placement of camera with different angles. Projective centres and whose side view match with the scene silhouette.

![Fig 1: Visual hull of a person with 4 views](image)

A visual hull cannot form concavities but it efficiently computed and yield a very good human silhouette guess. From silhouette guess actual object may obtain with some calculations.

3. GSM Network and SMS. Once data is received at sync, second step is to transmit data to bus stations, interchanges, or simple bus stops to display it for passenger. Radio waves carries data from transport (GSM adapter) to the base station. As transport is mobile so for limited frequencies; cells used for reuse of frequency to cover larger area for wireless transmission. the cell sites are connected to the switches which in turn connect to the public telephone network. GSM is almost cover 80% of the world market share for mobile communication. Mostly it works within 900 MHz or 1800 MHz bands of frequency. For low data rate GSM works under circuit switching where as packet switching is require for faster communication like GPRS. GSM support short messaging service. SMS sent to SMSC service center that facilitate in store and forward mechanism. If the recipient (in our case bus stop information display board) is not reachable then SMSC queues it for later retry. SMS is a stateless communication protocol in which each SMS message is measured completely free of other messages. SMS is small in size so its easy to transmit form any mobile device on a low data rate. Message size. Transmission of short messages between the SMSC and the handset is done whenever using the Mobile Application Part (MAP) of the SS7 protocol.[15]. SMS transmitted precisely to 140 octets (140 octets = 140 * 8 bits = 1120 bits), this show the way to the greatest individual short message
sizes of 160 7-bit characters, 140 8-bit characters, or 70 16-bit characters. GSM 7-bit alphabet support is mandatory for GSM handsets and network elements.[17] In urban environment or cities, every cell site may have a range of up to 0.5 mile, while in rural areas, the range could be up to as 5 miles. It is possible that in clear open areas, a user may receive signals from a cell site 25 miles away.

4. Conclusion. **Structureal Architecture of Mobile Phone cellular Network.** A simple view of the cellular mobile-radio network comprises of a radio base stations, network to handling text and calls, packet switched network for handling mobile data. PSTN to connect users with wider network of telephony.

![Fig#2 GSM Model](image)

Any phone connects to the network via an RBS (Radio Base Station) at a corner of the corresponding cell which in turn connects to the Mobile switching center (MSC). The MSC provides a connection to the public switched telephone network (PSTN).

5. **Projection of the Visual Hull. The silhouette projection is the result of visual hull.** The silhouette produced with moving object on plane surface provide exact and countable information of moving abject. The silhouette brush the cone in 3D space. Each cone is projected on a plane surface as shown in figure-1. each view of camera form different direction project silhouette on planer surf the boxes shows in the figure-1 shows lower and upper bound of the projection that is to be compacted on the plane. The shaded area shows projection visual hull of one camera but our projection is intersection of projected silhouette cone from all cameras. The polygons that results in the projection of visual hull represent all possible regions in the plane. A few polygons may be empty. The empty polygons are called phantoms[12]. To get actual polygon there is need to cut all possible phantoms using geometric constraints.

6. **Algorithm for Counting.** The counting algorithm works as follows[12]:
   I. obtain new readings from each sensor. Compute the planar projection of each silhouette.
   II. calculate the intersection of all possible projections. store up the resultant polygons in \( \Gamma(t + 1) \).
   III. Remove small polygons and phantoms from \( \Gamma(t + 1) \).
   IV. Update the tree structure \( T \).
   V. Report the new bounds on the number of objects in the workspace. Repeat for \( t \leftarrow t + 1 \).

7. **Inclusive Route.** Once data transferred from sensors to the sync then it needs to be transfer to the other end/terminal for user facilitation. It is important that overall data transfer create overload on network and unnecessary utilization of recourse. WSN network consist of sensor subsystem, processor subsystem and communication subsystem. It is convenient to process the data on the same end then should be transmitted to reduce load on the network.
Data is processed in processor subsystem; the senses the projection of object and transmit it to the processor sub system. The counting of total polygon processed by process subsystem. Communication subsystem contains GSM adapter to transfer compiled result in SMS form to remote base station. Base station forward the data to MSC. Mobile switching centre forward that data to relevance BSC where the bus terminal display receives data with the help of is already. It is important to mention here there is no human intervention in this whole process. Probably it is pure M2M communication that uses GSM for cost effective and reliable mobility. As [14] and [16] revels that there is currently no 3GPP standardization solutions for machine to machine communication using the existing wireless framework. Short Messaging Service (SMS) has recently become an important transmission carrier for M2M communication [13]. SMS features like encryption, synchronized transmission with voice call, and lower cost are vital advantages. M2M communication devices use primarily SMS for communication between unit[14].

8. Conclusion. In this paper, we have presented the crowd information on real time for passengers on the bus terminal. Our system provide updated information regarding availability of seats and built estimation of availability in case passengers standing inside the bus (overloaded). With our system, passenger may change their rout for travelling in case unavailability of seat in forthcoming transport. In transport we use 12x sensors powered with vehicle battery. The number of sensors may vary depends upon size to vehicle. the angle of sensors in different angles make a visual hull. The visual hull is the intersection of all cones swept out by the silhouettes of objects. Polygons are results of visual hull in the plane. The empty polygons are called phantoms. We subtract phantoms ant get actual polygon for further addition that results counting of people in the bus. The counting takes place in processor subsystem of WSN. Once the information compiled, its result transmitted through GSM technology by sending SMS. That communication is purely M2M communication from transport WSN through GSM adapter to bus terminal for display board. Passenger may change their visit plan on the bases of refined and accurate information about rush in the transport and may select alternative routes for journey. This may save time and money in addition with protection from hectic journey.

REFERENCES

[15] 3GPP TS 22.368 (v11.4.0) Service requirement for Machine-Type Communications(MTC); Stage1 (Release 11).
THE SOCIOLOGY OF ISLAMIC CULTURE

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ABSTRACT: The Islamic Culture’s sociology engulfs all socio mores of human way of living. The criterion and nature of this society is to regulate the individual’s conduct both in person and with other human beings, basing on his Creator’s moral fiber for ultimate success. This edict of living is marvelous which distinguishes itself from manmade experiences and evolution in its application. This is divinely ordained, tangible and everlasting for all related situations. It standardizes all living obligations of human life like faith, rituals, education, matrimonial, legal, social, political, economics and behavioral ethics. It provides guidance for every obligation of life including all societal issues of peace and war times, national/international. The main sources of guidance are the ‘Quran and Sunnah’ with two supplementary sources: Ijmaa and Qiyas: (Drawing analogy from the essence of divine principles and preceding by the jurists/learned people for all religious and socio living). These rulings open the doors of cosmopolitan culture for peace and progress. This sociology provides solution for all new issues of life on earth with respect to other religion’s values. The example is “The truce of Madina by the Prophet of Islam (saw)” in 634 AD. The Islamic way is of tolerance and peace, it presents a moral, spiritual human civilization force which made and is making positive contribution for the development of human living. The present adversary of other cultures/religions’ followers against Muslims and Islamic culture is addressed in this paper.

Key Words: Islamic sociology, world religions, human life, Criterion, peace solution

1. Introduction: In present day globalization for achieving progress and prosperity, the cooperation and harmony is the foremost need of civilization. To promote a shared civilization, an appraisal of world civilizations proves that the emphasis was laid on social legislation / institutions for better human living ie politics managements, economic, education, health, family affairs, literature, linguistics, heritage, law and religious studies. The brief study of Islamic culture’s sociology shows that it is the one which has a systematic growth approach to mankind socialization. It has the central premise to society’s mores with the worship to God almighty for wellbeing and flourishing performance to the individual and state. The history of the great prophets Ibrahim, Moses David, Jesus and last prophet Muhammad (peace is upon them) and all scriptures including the Old, the New, the final Testament (Quran), built a unique compassionate societies and civilizations, wherein everyone lived with contentment. The Islamic sociology as summarized by the modern intellectuals that a Muslim living revolved around only mosque, a family polygamy and a theological functioning of a state is not true. The Islamic living does not differentiate between state functions and social institutions. Moderately, Islamic living is a comprehensive reality; the culture of
Islamic sociology’ is a rational path of life with blessing and mercy. It is a lifelong social practice by which populace built up their potential for their best living. Mr. Musa Saleem gave an account of the situation before the advent of Islam as ‘The power conflict of Byzantine and Persian humbled the sociology of these civilizations. Particularly the great civilization of Roman, Persia, China and India were in the state of chaos and full of barbarianism. The struggle of conversion of Anglo-Saxon by Pope Gregory, to his form of Christianity was the culture and sociology of at that time.(1)

These state of affairs of human sociology at that time are described in the Quran Surah Al-Room verse no 41(2).

Translation; ‘Wrongdoing of the mankind has become visible on land and sea because of the hand of peoples have earned (their dealings), that (Allah) may give them a taste of some of their deeds: in order that they may turn back(from problems). And the resultantly the human being reached on the brink of pet of fire as said in surah Al-e-Imran verse no 103. (3). The Creator saved the mankind by sending the Islamic culture and sociology for the time to come.

2. What is an Islamic Culture’s Sociology?

The Islamic sociology is friendliness, neighborliness, warmness, good natured civility with accessibility to establish the company to others. It deals with own self, with the Creator, with parents, with wife, with children, with relatives, with neighbors, with Muslims brothers, with non Muslims and community/society inclusive in all state systems at national and international levels. It is a heaven revealed living order and not a matter of theoretical discussion or scared words for reading purposes but to govern the life of the populace at large, to beacon the people come to light from darkness as said in Surah Al-Maidah verses no 15 -16 below; That, ‘there a shining light and a clear book have come to you: who seek His happiness and pleasure. He (swt) guides you to the way of wellbeing and peace and takes them out of obscurity to the radiance, guides them to strait path’. (4)

The pioneering concept of oneness of mankind as said in Surah Al-Nisa verse no 1 and in Surah Al-Hujurat verse no 13 that all human being are the children of one man and woman. There is no superiority lies in color, creed or on race. The same model of sociology is practiced by the last prophet of Islam and said by him at the plan of Araafat that there are no barriers of class and sections of any kind and there no preference of white on black or western on eastern or Aryan and non Aryan but the purity and piety of a person and his character in the eyes of the creator. (5) Book Kutbah ul hujja ul widah.

The historic Quranic confirmation to above fact is of prophet Ibrahim ‘the great prophet Ibrahim was not Jew, nor Christian, he did bow his will to al mighty Allah’s alone will’. Surah Al-e-Imran verses no 67. Imam Muhammad Ghizali(i) in his book,‘ Ahya-e-ulum (6) later, Ibn-e- Khaledun(ii) and Shah wali ullah(iii) wrote a lot about this subject. The Sociology of Islamic

3. Living Management for mankind: The Lord of the universe full filled the need by giving a munificent Islamic social order, when the human desires/lust for wealth and authority created conflicts in the name of classes, creed, races and religions that destroyed the sociability of human collectivism. The bankrupt sociality of human civilization was once again remodeled for human growth. The way forward for peace full living is mentioned in Surah Al-e-Imran verses no 103, (7) below;

وَاعْتَصَمُوا بِحَبْلِ اللَّهِ جِمِيعًا وَلاَ تَفَرَّقُوا وَأَدْفَعُوا نَعْمَةَ اللَّهِ عَلَيْكُمْ إِذْ كَانَ أَعْدَاءُ فَأَنْتُمْ مُسْلِمُونَ إِذْ كَانَ أَعْدَاءُ فَأَنْتُمْ مُسْلِمُونَ.
Précis; for this living it imperative to hold the rope of almighty Allah which He (swt) has stretched out for the humanity and do not create divisions among yourself. Remember HIS gratitude that when you were enemies to each other and HE (swt) by His mercy joined your hearts in love and you became brother, when you were on the brink of pet of fire, He saved you from it. The same living management for human being is need as revealed in surah Al-e-Imran verse no 3(8) as following;

(i)-Abu Hamid Muhammad ibn Muhammad (1058-1111) known as Al-Ghazali or Algazel to the western medieval world, was a Muslim theologian, sociologist, jurist, philosopher, and mystic of Persian descent.

(ii) -Ibn Khaldun (1332-1406) was an Arab Muslim historiographer and regarded to be among the founding fathers of modern sociology. He is best known for his book The Muqaddimah.

(iii) -Qutab-ul-Din Ahmed Bin ‘Abdul Rahim, known as Shah Waliullah(1703-1762) was an Islamic scholar, reformer and founder of modern Islamic thought who attempted to reassess Islamic theology and sociology in the light of modern changes.

Narrated by Hazrat Khalid bin Walid (ra)(i) , A traveler once came to the mosque to see the prophet (BPUH) Ater greeting the prophet (BPUH) he was asked, where he was from ? The traveler replied that he came from very far just to get a few questions answered. Following the dialogue between the traveler and the prophet of Islam (BPUH), It has been extricated by Imam Al-Syuti from Jamia al Hadith as following: (9)

(*) عَﻦْ ﺧَﺎﻟِﺪِ ﻟِﻨْوَﻟِﯿْدِ قَﺎلَ: ﺟَﺎئَ رَﺟُﻞٌ إِﻟَﯽ اﻟْﻨﱠﺒِﯽَّ

Narrated by Hazrat Khalid bin Walid (ra), that a traveler came to the prophet (BPUH) and requested in the following words:

(9) ﻓَﻘَﺎلَ: إِﻧِّﯽ ﺳَﺎﺋِﻠُﮏَ ﻋَﻤﱠﺎ ﻓِﯽ اﻟْﺪﱡﻧْﯿَﺎ وَاﻵﺧِﺮَةِ ﻓَﻘَﺎلَ ﻟَہُ : ﺳَﻠْ ﻋَﻤﱠﺎ ﺑَﺪَاﻟَﮏَ

Traveler asked:

(9) ﻓِﻠْ ﺑَنُ اﻟْوَﻟِﯿْدِ ﻛُﻮْنَ اهْبِ ﺑِنُ اﻟْنَّﺎسِ۔

I want to be known amongst people as an intelligent person

Prophet (BPUH) Replied

(9) ﻣَنْ ﺑَنُ اﻟْوَﻟِﯿْدِ ﻟَنَ أُسَؤُ اﻟْعَﻠَمَ ﺑَنِي اﻟْنَّﺎسَ。

Fear Allah (swt) always

Traveler inquired:

(9) اهْبِ ﺑِنُ اﻟْوَﻟِﯿْدِ ﻣَنْ ﺑَنُ اﻟْوَﻟِﯿْدِ ﺑَنِي اﻟْنَّﺎسَ۔

I want to be rich

Prophet (BPUH) answered:

(9) ﻣَنْ ﺑَنُ اﻟْوَﻟِﯿْدِ اﻧْأُ اﻟْوَلِدُ ﻣَنْ ﺑَنُ اﻟْوَﻟِﯿْدِ ﺑَنِي اﻟْنَّﺎسَ。

Traveler requested:

(9) اهْبِ ﺑِنُ اﻟْوَﻟِﯿْدِ ﻣَنْ ﺑَنُ اﻟْوَﻟِﯿْدِ اﻧْأُ اﻟْوَلِدُ ﺑَنِي اﻟْنَّﺎسَ۔

I want to be the best man
Prophet (BPUH) responded:

خير الناس من ينفع الناس فكن نافعاً لنعماً

(i) - Khalid bin Waleed (R.A) (592-642) A companion of Prophet of Islam(PBUH), Full Name: Abu Sulayman Khalid ibn Al–waleed al–Mughirah al Makhzumi

Good man is the one who benefits others, so benefit others (you will become the best man)

Traveler asked:

أحب أن يكون أعنا الناس.

I want to be the most just man

Prophet (BPUH) said:

اجرب للناس ما تحب لنفسك تكون أعنا الناس.

The things that you choose for yourself choose them for others as well and you will become the most just man.

Traveler Questioned:

أحب أن يكون أخص الناس إلى تعالى.

I want to be the most special servant of God among all men

Prophet (BPUH) answered:

كثر ذكرًا أكن أخص العبد إلى تعالى.

Increased remembrance of Allah will include you in the most special servants of Allah.

Traveler asked:

أحب أن يكون من المحسنين.

I want to be among the beloved

Prophet (BPUH) said:

كلبتك نراها فإن لم تكن نراها فإنك راك.

Worship Allah in a way that you are watching Him and if you are not watching Him then He is watching you (you will be among the most beloved)

Traveler asked:

حب يكمل إيماني.

I want my faith to be perfect

Prophet (BPUH) said:
Improve your conduct your faith will be perfect.

Traveler asked:

I want to be among the most obedient of men

Prophet (BPUH) said:

Do your duties and you shall be among the most obedient

Traveler asked:

I want to meet Allah without any sins

Prophet said:

Get clean immediately when you are dirty and you will meet Allah clean

Traveler asked:

On judgment day I want my result to be with pious people

Prophet (BPUH) said:

Do not be cruel and you will be with pious people

Traveler asked:

I want Allah to be merciful with me on judgment day

Prophet(BPUH) said:

Be merciful on yourself and on all of Allah’s people and Allah will be merciful with you

Traveler asked:
I want me sins to lessen
Prophet (BPUH) said:
إِﺳْﺌَﻐْﻔِﺮِ اﷲَ ﺗَﻘِﻞﱠ ﺟُﻨُﻮْبُكَ۔
Ask for forgiveness regularly and your sins will be less
Traveler asked:
اَحْبِبْ اَنَّ اَكْرُنَّ ﺍُکْرَمَ النَّاسَ
I want to be respectable among men
Prophet (BPUH) said:
لاَ تَشْكُوُنَّ اﻟﻪَ إِﻟَى اﻟْﺨَلْقِ ﻣِنْ اَکْرَمَ النَّاسَ۔
Do not complain to Allah about any creations and you will be respectable
Traveler asked:
اَحْبِبْ اَنَّ ﻧَوْسَعَ ﻋَﻠَيْنَى ﻓِﯽ اﻟﺮِّزْقِ
I want my provision to increase
Prophet (BPUH) said:
دُمْ ﻋَﻠَﯽ اﻟﻄﱠﮩَﺎرَةِ ﻧَوْسَعُ ﻋَﻠَﯿْﮏَ ﻓِﯽ اﻟﺮِّزْقِ
Remain with ablution, your provision will increase
Traveler asked:
اَحْبِبْ اَنَّ ﻣِنْ اَحْبَاءِ اَﻟﻪَ وَرَﺳُﻮْلِهِ
I want to be a beloved of Allah and His Prophet
Prophet (BPUH) said:
اَحْبِبْ اَنَّ ﻓِﯽ اَﻟْ/Runtime compiled successfully with no errors.
Do not be angry at Allah’s creations and you will be saved from Allah’s anger

Traveler asked

احبَّن أَشْنِجِبَ ذَوْقُنِي.

I want my prayers to be accepted

Prophet (BPUH) said:

اجْتَنِبِ اﻟْﺣَرَامَ ﺗُﺴْﺘَﺠَﺎبَ دَﻋْﻮَﺗِﯽ ۔

Leave what is forbidden and your prayers will be accepted

Traveler asked:

ان لا يقحنني ا على رؤوس الأشقاء.

I want Allah to save me from humiliation

Prophet (BPUH) said:

اَﺣْﻔَﻆْ ﻓَﺮْﺟَﮏَ ﮐَﯿْﻼَ ﺗَﻔْﺘَﻀِﺢْ ﻋَﻠَﯽ رَؤُوْسِ اﻻْ

Protect/conceal your private parts and Allah will save you from humiliation

Traveler asked:

احبّن أَسْتَرِ ا على عيوبِي.

I want Allah to hide my defects on judgment day

Prophet (BPUH) said: Hide your brother’s defects and Allah will hide your defects

اِسْتَرْ عِيْوَبَ اِخْوَانِكَ يَسْتَرِ ا ﻋِيْوَبَكَ۔

Traveler asked:

ما الذي ينحو على الخطاب؟

How will I get salvation from sins?

Prophet Replied:

الْمُؤْوَغَ وَالْخَضْنُوْغَ وَالْأَمْرَاءَنَ

Tears, humbleness and illness

Traveler asked

اًبَ غَنْسِهَ أَفْضَلَ عَدّاً ۔

What is the best deed?
Prophet (BPUH) said:

חסן الخلق والتواسط والصبر على البلية والرضء بالقضاء.

Manners and being patient in face of problems

Traveler asked:

أين سيأتي أعظم عدداً.

What is the biggest sin for Allah?

Prophet (BPUH) said:

سوء الخلق والنشع المطاغ.

Bad manners and being miser

Traveler asked:

ما الذي يسكن غضب الرحمن؟

What calms Allah’s anger in this world and the next?

Prophet (BPUH) said

إخفاء الصدق وصلة الرجم.

Charity without showing off and being good to your neighbors

Traveler asked:

ما الذي يطفي نار جهنم؟

What will put out Hell fire on judgment day?

Prophet (BPUH) said:

الصوم.

Fasting

4. The Source, the disposition and Fortitude of Islamic Way of Life: This living style is established by the Creator (swt) of the universe himself that is confirmed by His (swt) own words i.e. Quran al-karim. This culture /sociology when setup by the great prophet Moses against pharaoh’s century old established un-Islamic culture, the prophet Moses said to him which is mentioned in Surah Taha verse no. 50 beneath.

قال ربنا الذي أعطي كل شيء خلقه ثم هدى

Musa (Moses) said: ‘Our Lord is He Who brought everything into being (as most suitable it was), then guided it (according to its potential).’

The best form of creator is a man as said in Surah Al teen Verse no: 4 as following:

لاحق الإنسان في أحسن تقويم
Indeed We have created man in the best constitution (equipoised in the finest proportion). The Lord is He (swt) who gave everything its life and then guided it (living order). This is further sophisticated in Surah Al-Aalaa verses no. 2&3(10) below;

'He (swt) created and mannered in a highly equilibrium and He (swt) who conscious and guides’

The best accepted way of life is given that mean the best sociology for mankind with ultimate success as following in Surah Al-Imran Verse no 19:

It is as per the character of a and purpose of his creation as explained in surah As-Shamas verses 7-10(11) under;

‘By the spirit and He (swt) who formed it and then inspired it with immoral and moral i.e. fear of God; the one is truthfully successful who reasons it grows and purifies him and he is the failure who corrupts and destroys it’.

4.1 **The spirit and resilience of Islamic way of life:** It is an ocean which truly purifies the individual and congregate humanism for ultimate success. The Islamic teachings by its spiritual stresses command their followers to study the nature by itself that takes the individual to research and bring changes in human thinking and sociology. This order is without any compulsion to religion as advised in surah Al-Baqrah (The cow) verse no256 (12) below;

Translation; there is no compulsion in way of the life: the truth stands lucid from faults; who ever rejects animosity and believes in true God has grasped the most trustworthy hand – hold that never breaks. Ana Allah (swt) herath and knoweth all things’.

4.2. **The Islamic sociality by nature stands on firm justice:** It is said in surah Al-e-Imran verse no. 18. And the accepted sacred sociality before Allah (swt) is Islamic order of life only, as explained in surah Al-e-Imran verse no.19. Other than this way of living is not accepted by the Creator of human being as ordered in Surah Al-e-Imran verse no 85(13).

4.3 **The moral fiber and resilience of life:** The Islamic scenery by itself is sincerity (nasiha) mean "truly in quest of the most excellent, in all terms on intentions and actions for the one whom the individual is making or to negate the deception and cheating. It is narrated by Imam Tamim Dari (RA) from the one of Hadith is as following;

Translation; on the authority of Tamim -al -Dari, Prophet (saw) said ‘the religion is a nasiha’ we asked, to whom? The Prophet (saw) said ‘to Allah and his book and his messenger and to the leader of the Muslims and to their common folk’. (14) in Sahih Bukhari following Hadith the spirit and resilience of Islamic way of life is mention below(15):

5. **The Islamic Concept of human Life Cycle and why this sociology:** It is a common question of the individual that why man is created and what the Creator wants from this creation’s life and what would be the reward/punishment of obedience and disobedience of the Lord of the universe? The niceties are below;

5.1 **The worldly life’s representation :** As per Islamic order of human life and its purpose, the present worldly life extends to other world. The apparent stages are appended (16) below;

- The Birth of a man.
5.2 The second Phase

- Intermediate Period of life after the death of a person.
- The end of this present existence world.
- The rebirth of other world and the day of resurrection.

5.3 Third stage

- Eternal life.
- The Day of accountability (The worldly deeds result day).
- Worldly life’s Rewards and punishment.
- The Paradise, everlasting emerald life.
- Un-dying life of misery, tortures, the Hell.

5.4 Why this Sociology: Again a big questions of this living that how to be a successful in here after way of life and to how to meet the requirement of that life? It is answered by the giver of this sociology and narrated by Hadrat Abu Horarah (RA).

Translation; this world is the place of work (deeds) for hereafter life (what so ever you sow here, so shall you reap hereafter). (17)

In that case this society must be with true faith, with sincerity, full of charity to fellow being with firm and unshakable attitude in all circumstances. It starts from parents, respect to human being, no murder, and no suicide no stealing. No adultery/ homosexuality, no interest on transactions, no gambling, no bad treatment to neighbors and no backbiting. Be honest to one, be generous to others, call on the unwell, help out the needy, be dirt free and wipe out all dirt from the path of Islamic living. Be modest in dealing and dress conservatively, only then the individual is a true Islamic sociologist. The indispensable traits of this living are explained in surah Al-Baqrah verse no 177; (18)

The gist of above verse;

Who are the true sociologist and the righteous one in the eyes of all mighty Allah?

- There are no double standards in his life.
- He truly believes in one true God and the last day (the accountability of his deeds).
- In his angles, His books, His messengers.
- Spends his substance out of love with his Lord.
On his kin, on orphans, on needy, those who ask and freeing of captives.
He is steadfast prayers and practices a regular charity.
Fulfill the made contracts with populace.
He is firm and patient in pains and adversities.
These are ones who are the people of truth and the God conscious.

5.5 It is a farsighted sociology: The same sociology has been given to all prophets by the lord of the universe. It is revealed by Him to his messengers, Surah Al-Baqrah verse no 136(19) as following:

Translation; ‘Say (O Muslims) We believe in Allah (swt) and that which is revealed to us and that was revealed to Ibrahim and Ismail and Isaac and Jacob and their children and that which Moses and Jesus received and that the prophets received from their Lord. We make no distinction between any of them and unto Him we have surrendered’.

5.6 The alive Commandment: To run the societies as per the will of the Creator, He (swt) sends a clear directive to his prophets with complete laws and instruction to practice it in true form. When these are applied honestly and correctly in living order the result is a harmonious and smoothly functioning. The Living commandments of Islamic sociology as given to prior prophets is explained in surah Bani Israel (Children of Israel, Isra, the night journey) from verses no 19-38(20), the summary is below that who’s striving is acceptable by Allah (swt)?

- Those who have true faith in Allah.
- Those who worship none but true God the almighty Allah alone.
- And wish for the hereafter and strive with all due care.
- They are kind to their parents as they were cherished in childhood.
- Do the deeds of righteousness with kindness.
- Do not over spend as the spend thrifts are the brothers of Satan.
- They render due rights to the kindred.
- They are the just measurers.
- They do not kill their children for the fear of want.
- They do not commit adultery (faithlessness).
- They do not walk with insolence.
- They do not pursue for which they not have knowledge because every seeing, hearing and condition of heart will be inquired by their Lord.
- They do observe the rights of others.
- Fulfill their obligations towards others with love and care.
- They help in education and protect others.

6. The Ideal civilization with Ideal Sociology: In the thoughts of M Fethullah Giilen, as Maulana Roomi has depicted the ideal human and ideal society and Dr Muhammad Nawaz Chudhary Afaqi writes in his book ‘Tahzibo Tamadan’ that the Islamic society is ideal due to, the one’s time, money and efforts scarification for others betterment and community is true Islamism. As the individual, sincerely spends towards the rest of the human being for other’s interest in the most excellent way. One gives his highest to the people and society’. (21)

The last Prophet Muhammad (pbuh) taught and practiced this subject matter of sociology as leader, teacher, soldier, commander, elder, manager, principal, husband, father and ruler. Some of his traditions are as narrated by his beloved sahabah are as following:

Narrated by Hadrat Abdullah bin Amar (RA) that the Prophet (saw) said ‘The True Muslim is the one, from his hands and tongues the others Muslims are saved. (22)
Hadrat Abu Hurarah (RA) reported The Prophet Hadrat Muhammad (saw) said; ‘He is true Muslim; the one does not harm others verbally, physically or in any other way or means. (23) The one of the saying of the prophet is as following;

On the authority of Hadrat Abu Hurarah (RA) that Prophet (pbuh) said ‘It is a part of glorifying the Allah (swt) that by having mercy for the young and giving the respect to the elders (24)

7. The Islamic Social Order/ Standard of social conduct: The people need a fundamentals structure of actions or a set pattern of activities that may be named as customs, a popular living styles, or a social standards/traditions. The Islamic traditions fulfill this need and guide the mankind to cosmopolitism societal styles of life as mentioned in Surah Al-Furqan verses no. 60-77 below(25);

• Walk on earth in humility
• Answer to ignorant is peace
• Spend the nights in adoration prostrate and standing before Allah
• Ask from Lord that avert from us the wrath of hell
• Spend in the way of Allah with balance in their life
• Invoked not with Allah
• Nor slay life
• Do not commit fornication
• Must repent on bad deeds
• Efforts to do good deeds
• Do not witness the falsehood
• Must avoid futility
• They do not droop down
• Don’t behave like deaf and unsighted
• Pray the lord for grant of best living
• To lead a righteous life without ills
• Ask the highest place in the heaven in hereafter life
• They shall be met with salutation and peace
• They will dwell there in eternally
• They believe in the inevitable reward and punishment in here after life

8. The vista of Islamic sociology : The panorama of Islamic sociology is a divine natured which meets the need of human life’s affairs. It stars from where the humanities and social sciences meet to resolve all issues, as all religions and the human sciences endeavors to give solution to the sociality. It deals with all human relations that fall within the study of composition, function and problems of human groups: the ultimate phenomena of the field of human sociology. The concluding objective of Islamic sociology is to secure the wellbeing of humanity by establishing a virtuous society. (26)

It is complete blessing and disguise of Almighty Allah for the human being. He (swt) says in Surah Al-Maidah verse no.3 (27) as below;

Meanings; ‘I (Allah) have perfected your way of life and completed my favour upon you, have chosen for you an Islam as your religion’.

This is a course of action whereby populace learns an attitude, true values and appropriate actions for the member of a society. In general it includes all the concepts and practices which have developed around all religions of the world. The social institutions in the Muslim history were established to promote and protect the needs of the mankind living in a free and fair co-existence society as following;

• True faith in his creator and spirituality (Internal piety)
The rituals/worship (The rights of Creator)
The Education system? Social justice for just society
The fair Economics and business order
The Political and ruling system
The up keep of modesty, privacy and personal freedom
The Human rights and rights of other on one self
Rights of parents, family and community
The respect to humanity without any racism, class, creed, white, black, poor or rich, safety and security of life honor and property
For the associations of society, the establishment of institutions of Science of society, social relationships, the development of a structure of interaction, and collective performance of organized human groups.

9. The Chief Sociologists: The first true modish sociologist, who laid the unassuming foundation stone of a peace full sociology and society in a dark and ruined human social order, is the Islamic living. Modern historians wrote, that ‘Ibn-e-Khaldun’ a Tunisian (732 AH i.e. in Fourteen Century AC) was a founder of sociology in Spain and later Thomas Hobbes (1588-167 AC) (29). ‘Adam Ferguson’ (1723-1816), who wrote in his essays on the history of civil society and gave the nature of sympatric and simple living civilization with one’s fellow. For the modern sociology, George Fitzhugh (1806–1881) and Henry Hughes (1829–1862) (30) who put forward the idea of liberal society, the individual progress with market relations. The French sociologist ‘Auguste Comte’ (1789-1839) introduced the term sociology who elaborated the meaning of this system as ‘positive polity’. In late eighteen and early nineteen century, Americans put forward the idea of liberal society, the progress with the market relations. For the modern sociology George Fitzhugh (1806–1881) and Henry Hughes (1829– 1862) wrote about the ‘Treatise on Sociology’. These authors evaluated the free society living with the slave’s one. They gave the principles of social organization on equality of individualism with simple habit of a nature. All these modern thinkers could not picked up many essentials of this subject, like an authority and owner who is a central character, which ensure its application, execution, and effectiveness of these instructions. The vital aspect of any sociology is the administrator’s character and the judicious use of that authority/power which become an example for others. The material and spiritual distinctions are preferred in order to continue exterior and interior of that personality to command the populace. This personality has to show some symbols/signs to demonstrate the degree of relationship and connection with his the Creator. This sign is known as a miracle. In deed for this sociologic living purpose a prophetic personality is needed. Whose all deeds, acts, words, his mannerism, his morals his appearance and truthfulness with eradicate all evils from the ruined civilization. The customs and habits to which the peoples are fanatically attached, he has to deck out the various wild, uncompromising peoples of that society with all the finest virtues, and make them a teachers of others and masters to the civilized nations.

Non above mentioned modern thinkers, philosophers, administrator and reformers could have such a character to build a modern society and meet the requirement less than a man who subjugated the minds, spirits, hearts and souls of the peoples. He came as spiritual rulers, beloved of hearts, in richer of souls and a teacher and demonstrator of life affairs. Who capture and won the intellects and spread this sociability by wonderful living and not by sword. The summaries write up of Abdullah Ali Yusuf about this first sociologist of peaceful Islamic sociology is as following:

The Prophet of Allah (saw) received a message of final triumph: the most high for the yearning of souls in atmosphere of darkness, conflicts and frighten society of humanity. These ordain came like a fruit of love, peace, goodness and purity for the society in time of twenty three years as the need arose. Which appeal to them in their doubts and fears. It help them by putting new heart in them in moment’s trial and happiness? He (PBUH) recited on them which was imprinted on their heart / minds and recorded by pens. The body of this sacred scripture grew and arranged for the purpose of populace prayer/readings. This is an ever protected book of the lord for the guidance of
humanity for all times to come till the existence of this universe, the best code of way of life to live ever with ultimate success. (31)

10. The Coupling of Islamic Sociology: The last Prophet of Islam (PBUH) laid an everlasting combining pedestal for the mankind in his last sermon in the valley of Arafat at Makkah fourteen centuries ago. The underpinning of His (PBUH) sociology is His (PBUH) saying that, All those who listen to me shall pass on my words to others and those to others again; and may the last one understand well than who listen to me directly. Be my witness, O Allah, that I have conveyed your message to your people (32). The précis of his (PBUH) sermon as below;

‘He (PBUH) spoke to the gathering, ‘listen me very vigilantly and take this message to those are not present today’:

- The human life and property is sanctified.
- Life is a God sacred trust; return the entrusted goods to their rightful owners.
- Hurt no one so that on one hurt you.
- Keep in mind that one day you will meet your Lord and He (swt) will indeed reckon your deeds.
- The almighty Allah has forbidden usury (interest) is to you; therefore all interest obligations shall henceforth be surrendered.
- Beware of Satan, for your wellbeing of your religion. He has lost all hopes to lead you astray ever in big things, so be cautious of following him in small/minor things.
- Listen to me in earnest, O people; worship alone Allah the true God (wst), offer five daily salat, keep fast in the month of holy Ramdan, pay zakat, perform Hajj, if you can afford once in life.
- Every Muslim is your brother, you must know, you are all equal, no one has superiority over other except by good actions and piety, remember, one day you all will appear before HIM (swt) and answer your deeds, so beware, do not stray from the right path after I am gone.
- O people, no prophet or apostle will come after me ever, no new faith will be born, therefore reason well.
- O people understand my words that I convey to you. I leave behind me two things, The Holy Quran and my Uswah (The Sunnah), if you follow these you will never go astray.

11. Conclusion: The Quran has summaries this sociology as following:

\[
\text{رسول الله } \text{أَسْوَىٰ خَسَنًا لَّمْ كَانَ يَرْجُوا } \text{الله} \text{وَالْيَوْمُ الآخرَ وَذَكَرَ } \text{إِلَّا كُثِيرًا}
\]

It is proven fact that without a proper living frame work, any individual, a group of people in any society or any organization cannot live peace fully, so as it is built on divine order with moral full conduct, having a system of mercy, equal justice and is ever lasting.

The Islamic sociology giver’s character, his given features of society is deep-seated to human living. Historically the prophet of Islam is the first sociologist who founded a new society at Makkah and established it at Madina by having a social contract with all other followers of the religions, although historians cite the beginning of modern social living nineteen century. The criterion of living commandment is not the consensus of a group of people or community for the interest of some people but these living principles are for total public interest and humanity for all times. This living is for the sacredness of human life, dignity and the compassion for the weaker, fairness in dealings, incorruptibility in administration where a justice is to be enjoined. This society is for the growth and progress of mankind as following:

- For Islah-e-Nafs (one self).
- For right of education by growing spiritual and physical personality (character edifice).
- For reducing crimes by having equality before laws.
- For economic growth by protecting and judicious distribution of the resources/facilities.
• For maintenance of peace.
• The right to take part in state’s affairs.
• For the security of life, property and honor.
• For the right to protest against tyranny.
• For the protection of religious sentiments.
• For the right to basic necessities of life (33).

Today humanity and Muslims particular need this unique, sincerely embodied, believing in oneness of mankind and accepted work /way of life before the Lord al-mighty .I solicit my lord to benefit others from this system /effort and help me on the day when no son, no wealth or any other sort of worldly support will help the individual as said by the Lord in holy Book Surah The poets verses no 87-89(34) as following;

• When all the men will be raised before Almighty Lord, I may not be humiliated on that day.
• The day where no son or wealth is of any benefit.
• But the one who come with a resonance of heart.

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SECURITY IDENTIFICATION MECHANISM
USING ACCELEROMETER OF SMART PHONE

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ABSTRACT. The traditional technologies for identity of personal recognition schemes like PIN or password have certain drawbacks. The major drawback is the security. These passwords can easily be broken by using brute force dictionary. Biometric techniques are safer as compare to password identification for security purpose. This paper presents a new biometric security mechanism using accelerometer of smart phone. The use of accelerometer is very common for activity recognition in the researcher community. We have used the basic concepts of graph theory for identification mechanism. The accuracy of identification mechanism was about 80.66 %.

Keywords: Biometric Signature Identification ; Pattern Recognition ; Smartphone Accelerometer ; Graph Theory

1. Introduction. When some services are requested from a system, a personal recognition scheme is required to confirm the identity of a person. The purpose of such system is to ensure the access of legitimate user to that service. ATM, Computer systems and mobile phones are the examples of such system.

One of the available traditional technologies to confirm the identity is knowledge based method (PIN or password). People used to set their password based on the digits or the words they can easily remember, for example the names or the birthdays of their beloved. This traditional mechanism of the use of password has been criticized due to its weakness in the computer society, because such type of passwords can easily be cracked by using guess or using brute force dictionary[7].

Another method of recognition scheme is biometric system. It’s a pattern recognition system that operates on biometric data from an individual, extracting a set of features from the data, and by comparing this feature set against the templates present in the database[8]. Handwritten signature belongs to behavioral biometrics and is widely acceptable biometric characteristics [1] It is the characteristic of an individual to write the name or surname by his or her own hand in a unique style. Although some professional forgers have ability to fool the system by reproducing signature of any person.

The purpose of this paper is an effort to build a system that overcomes the security limitations of passwords. In this paper we have presented a conceptual model of security across multiple systems by using smart phone accelerometer.

An accelerometer is an essential part of smart-phone. This sensor measures the linear movement in three dimensions and generates a data element that contains the value of acceleration in all three linear dimensions [9]. It has been evidence in the literature that accelerometer readings provide a rich source of information about the movement action of mobile phone holding by the individual[9]. Using accelerometer as User Interface has also been proposed. If we pick a smart-phone in our hand, and move the hand as we are doing our signature in the air. During this action the accelerometer will generate the data of acceleration due to motion of phone that can be used as a security signature.
2. Related Work. Many biometric schemes for the security of system have been proposed in the recent years. Graphical password techniques are now a day’s common and provide better usability than text password[10]. Modern smart phone using android operating system adopted a technique of lock mechanism different from traditional PIN codes. It is called pattern lock and it requires a pattern by drawing lines on screen by the user to unlock the smart phone. User start the pattern by touching one of the dot and swipe its finger to join other dots to form a particular pattern. It requires minimum 4 and maximum 9 dots to create the pattern. It is not allowed to repeat any node on the way of horizontal, vertical or diagonal line. Due to this limitation, the total numbers of possible patterns are 389,112. [9]

Some researchers proposed a recognition based schemes. [11] and [12] combines recall and recognition aspect by showing images to the user and user have to select certain points on the image. Some existing graphical passwords techniques have been designed for desktop computers originally but many of them could be used for smart-phone with touch screen.

Another technique of graphical password support multiple fingers for simultaneous selection of points on the image[13].

Another scheme of Convex Hull Click (CHC) is introduced by [14]. CHC is an effort that develops a new style of security innovations with people in mind. It allows the user to prove the knowledge about its graphical password safely in an insecure location because users don’t want to click directly to the image of their password.

Another work of keystroke dynamic has been explained in (Keystroke dynamics authentication for mobile phones). In this scheme the dynamics of keystrokes have been studied and it is assumes that the timestamp generated by the system related to press and release event of a key can be processed.

3. System Description. Modern mobile phones are equipped with many useful types of input sensors including camera (often multiple), Microphone, gyroscope, Proximity sensor, GPS, Magnetometer, Tri axial accelerometer etc.

These sensors are inexpensive, powerful and have versatile use in the modern research. Services using these sensors of smart-phone are also increasing. Specially some sensors like gyroscope or 3 axis accelerometer have a lot of use to recognize the activity of a person holding that Smartphone. Motion capturing sensors rapidly becoming a key function in consumer electronic devices including smart-phone.

In our experimental setup we have used tri axial accelerometer on Android Operating system architecture.

3.1. Accelerometer. Accelerometer is a device used to measure the acceleration of a moving object. Acceleration is the change in velocity (speed) per unit time. Tri axial accelerometer measures the acceleration along x (lateral), y (longitudinal) and z (vertical) axes. It is a powerful side channel that can also be used even the location based services are disabled on the Smart-phone. The electronic accelerometer uses piezoelectric or piezo-resistive properties of element. It behaves like a mass on a spring. When it experiences the acceleration, the mass is displaced to the position at which spring can accelerate the mass at same rate as Smart-phone. Now this mechanical motion is converted into electrical signals that are sensed and measured.

Figure 1. axis of accelerometer of smart-phone

Accelerometer can measure static acceleration like gravitational acceleration and also the acceleration of moving body in m/s2. In smart phone (hTC desire S) it generates its value up to 6 decimal places.
3.2. **Hardware platform.** We used HTC desire S as a hardware platform for our experiment, one of the most widely used smartphone in the market. It uses Google’s Android as operating system.

3.3. **Software setup.** We developed an android application on HTC desire S for our experiment. It allows the user to start the activity of doing his signature. The user picks the mobile phone in his hand and by moving that hand in the air in the style of his hand written signature. The accelerometer will send new reading as it sense a change of 0.3 m/s\(^2\) in the acceleration value.

4. **Signature Identification System.** Signature identification system can also be implemented for on-line security purpose. It may consist of an identification module, which is the main module of system. This main module is responsible for the complete identification logic. System has an interface for the user to interact with. User is asked to do the signature by moving the mobile in the air as his hand written signature. The system will generate some data against the motion of mobile phone. The system will transfer this data to identification module. The data base of the system contains data template storage. The identification module match the data of signature against all the templates present in the data base, and find the best match. Generally there are some predefined rules that must be satisfied for identification. If best match satisfied that rules then person is identified.

In our system when user complete the activity of signature, the accelerometer sends a signal that contains three component of its reading to the system. Let F be the function of signal, which is a three dimensional vector. The vector can be represented as:

\[
F = [x, y, z] \quad \text{………………..}(1)
\]

Where

- x is the lateral component of acceleration
- y is the longitudinal component of acceleration
- z is the vertical component of acceleration

5. **Data Acquisition.** As we have mentioned before, that our system uses tri-axial accelerometer of HTC desire S for the data acquisition. Accelerometer sends packets containing all the three co-ordinates of acceleration. Vertical component of acceleration must have an additional value of gravitational acceleration equal to 9.8 m/s\(^2\) approx. If mobile is picked so that its screen is up-ward facing then vertical component will be z, but we observed that 9 out of 10 participants perform the signature action by mobile device so that there vertical component was x component. So in that case gravitational acceleration will be added in the x component.

6. **Feature extraction.** To continue the identification process firstly we have to find the minimum and the maximum value of each co-ordinate. For x co-ordinate we find Min(X) and Max(X) and similarly for y and z axes. From these values we will find the difference function for each axis. Difference function for each co-ordinate axes can be written as

\[
DX = \text{Max}(X) - \text{Min}(X) \quad \text{(2)}
\]

\[
DY = \text{Max}(Y) - \text{Min}(Y) \quad \text{(3)}
\]
The second thing that we required is the number of strokes (Nstroke) in a single signature. A stroke can be define as the line start from a starting point where initial velocity start from zero to an end point where deceleration occurs and final velocity in that particular direction become zero. (Deceleration is the negative acceleration or the rate of decreasing of velocity). For further explanation of stroke we take the help from graph theory.

The above signature consist of three strokes, the first stroke is from point 1 to point 2 as we start from point 1 and increase our speed then we decelerate and at point 2, the speed become zero in that direction. Similarly the second stroke is from point 2 to point 3 and the third stroke is from point 3 to point 4.

Now we calculate the weight of each stroke of the graph. In the above example the weight of first stroke (started from point 1 and end at point 2) can be expressed as

\[ W_1 = \sqrt{DX^2 + DY^2 + DZ^2} \]  

(5)

Where DX, DY and DZ are explained in equation (2), (3) and (4).

The total weight ‘Wt’ for N stroke will be the sum of all the weight of each stroke.

\[ Wt = W_1 + W_2 + W_3 + \ldots + W_N \]  

(6)

7. User Registration. For the registration of user, he or she should perform the signature process at least 20 times. Each signature produces its own graph that will be stored in the data base for one user. During the process of identification, all the stored graphs for that user will be considered for best match.

8. Identification Process. In the process of identification we use all the features extracted from the graph. These features will be compared against the set of signatures templates of that person present in the database to get the best match. This will be a time consuming process. To speed up the system we have to choose fast classifier so that only those users that successfully satisfy certain rules are allowed to continue the process of identification.

8.1. Graph Norm. Graph norm is a real number that represent the whole signature of the graph. In our case the ratio of total weight ‘Wt’ to the Number of strokes ‘Nstroke’ can be consider as a graph norm (Gnorm).

\[ G_{norm} = \frac{W_t}{N_{stroke}} \]

The value of Gnorm for a normal person almost remain same. This feature will enhance the value in the identification process.

9. Identification Procedure. After the user perform his or her signature by the smart phone the identification procedure will start. In first step the graph norm and number of stokes are calculated and classified. If the system matches these values with just one user then the identification procedure will be over and the user will be recognized as a potential signatory.

10. System Result. The proposed system for identification was tested on 20 users. For registration process each user has to provide 10 signatures. Total of 300 identification tests were performed by the live user. In 242 cases the system correctly identified the user. In 45 cases wrong users were identified. In 13 cases the system does not suggested any user. So the identification accuracy was about 80.66%.
11. Conclusion and Scope of Future Work. In this paper, a new approach for security signature has been proposed. This approach is based upon the accelerometer coordinates of smartphone, when the user performs the signature in air by holding smartphone in his hand. Since this approach uses graph theory for identification, which has proved as a good tool in the biometric system. This system can also be used for on-line identification applications. This method is not perfect one, because we have uses only very basic concept of graph theory for signature identification. The field of graph theory is wide, so in future some more feature of the graph theory will include in our work to make it more perfect. Furthermore we have not consider the Euler motion or the angular rotation of smartphone. So in future we will also add the co-ordinates of gyroscope in our system to make it more perfect.

REFERENCES

CLIMATE CHANGE: A REVIEW OF THE CURRENT TRENDS AND MAJOR ENVIRONMENTAL EFFECTS

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ABSTRACT: Among the many environmental issues that the earth is facing today such as population growth, increasing resource demand, unsustainable development and environmental pollution, climate change has been increasingly recognized as the most significant problem associated to changes in atmosphere being faced by humankind. Climatic changes have been occurring as a result of the warming of the globe due to the accelerated release of greenhouse gases principally CO₂, methane and nitrous oxide into the atmosphere from anthropogenic activities. The resulting impacts from deviations in the global climatic patterns are multiple and wide ranging. Changes in surface and ocean temperatures, cloud density, extreme weather events, glaciers melting and rise in sea level, water quality and crop management practices have been widely attributed to both short-term and long-term changes in the climate. This review involves a critical discussion on climate change, its natural and anthropogenic causes, trends in climatic variables and its direct and indirect impacts on glaciers melting, weather events, hydrology and water quality, forest resources, agriculture production and biodiversity with particular focus on South Asia and Pakistan.

Keywords: Climate change; climatic variables; anthropogenic sources; environmental impacts; Pakistan.

Introduction: Climate is the pattern of weather parameters such as temperature, humidity, evaporation, precipitation and wind direction averaged over a relatively long time. In other words, climate refers to long-term fluctuations in maximum and minimum temperature, precipitation in its various forms, surface wind, humidity, cloud type and amount, solar radiation and other elements in earth’s climate system. Climate change on the other hand is a significant change in the values of the climatic variables compared to the past, approximately 30 years.

The earth’s climate has warmed and cooled for millions of years as observed from the historical temperature data of earth surface and oceans. These natural warming and cooling of the climate is mainly the result of natural processes such as variation in solar irradiance, change in earth’s axial tilt, changes in the continent drifting and volcanic activity. However, the abrupt increase in earth’s mean temperature since the beginning of the 20th century, especially after the inception of industrial revolution led the scientists relate the man-made emissions of carbon dioxide (CO₂) and other greenhouse gases for being the principal cause of contemporary climatic changes. This human-induced increase in temperature and resulting climate change is either directly or indirectly causing rising of sea levels around the world, frequent and uneven precipitation distribution, flash flooding, prolonged droughts, glacial melting, tropical cyclones, hurricanes, severe dust storms, dry and cold spells, altered the availability of water and its quality, impacted the plants and land use pattern and many others environmental impacts as shown in the Fig 1. Changes in cloud cover, precipitation, soil moisture, and atmospheric circulation are the main factors responsible for much of the rising trend differential in...
all over the globe and cause frequent heat waves, droughts, extreme precipitation events and related impacts such as wildfires, heat stress, vegetation changes and sea-level rise.

Fig 1. Climate change, causative anthropogenic actions and major environmental effects

1.1 **Observed global trends and contemporary status:** Understanding of the past and future climate patterns is achieved by scientists mainly using observations and theoretical models to match past climate data, make future projections, and link causes and effects to climate change. Temperature, ice cores, floral and faunal records, glacial and pre-glacial processes, oxygen isotopes and other sediment analyses, and sea level records are used globally to interpret climate change. Mann and Jones showed the mean surface temperature over the past two millennia and reported that the warmth in late 20th century was unprecedented and attributed to the anthropogenic forcing of climate. Since the late 19th century, average global surface temperatures have been recorded with an increase of approximately 0.6°C±0.2 (95% confidence interval). In the 20th century, increase in temperature has been noted in two periods, from 1910 to 1945 and 1976 to the present. The warming rate from 1976, (0.17°C/decade) was slightly higher compared to the period between 1910 and 1945. However, future forecasted increase in temperature is expected in the order of 1.4°C to 5.8°C over 21st century if the current rate
of GHG emissions continues. On the other hand, changes in climate are already being observed with the last 60 years as the warmest in the past 1000 years. The most recent warming period is faster over land as compared to the oceans warming.

Since the start of the global mean temperature record from 1856, the decade between 2000-2010 has been the warmest recorded. The data of the global temperature from December 2004 through November 2005 show that 2005 was the warmest year followed by, 2010, 2007, 2003, 2002, 1998, 1997. The year 2005 show a clear global warming trend of the last several decades by equaling the record warmth of 1998 without the occurrence of El Nino, which in 1998 added extra heat from the ocean to the earth's surface. Similarly, recent researches from Global Climatologically Record from Climate Data Centre and National Oceanic and Atmospheric Administration (NOAA) and NASA showed that 2010 equaled 2005 as the earth warmest year on record over the last 131 years (instrumented monitoring stations date back to 1880). According to, since 1876, there has been an increase in mean November and December temperatures by 2°C and 1.5°C respectively. Mean humidity in December has also been increasing since 1950. Other studies relevant to increasing temperature trend in the world as well as in the South Asia are illustrated in Table 1.

Table 1. Significant temperature trend around the world

<table>
<thead>
<tr>
<th>Region/ Country</th>
<th>Significant Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global</td>
<td>0.5°C/100 years</td>
</tr>
<tr>
<td>Global</td>
<td>0.3 °C/10 years in 54 years data</td>
</tr>
<tr>
<td>Pakistan</td>
<td>0.5°C to 1°C increase</td>
</tr>
<tr>
<td>Pakistan</td>
<td>0.133 °C/10 years (1976-2005)</td>
</tr>
<tr>
<td>Pakistan</td>
<td>0.64°C increase from 1901-2007</td>
</tr>
<tr>
<td>Himalayan region</td>
<td>Maximum temperature is more than minimum temperature</td>
</tr>
<tr>
<td>Eastern Himalayas</td>
<td>0.02 °C/Annum from 1977 to 2000</td>
</tr>
<tr>
<td>Northeast Himalayas</td>
<td>+1.0 °C during winter and 1.1 °C during autumn over the last century</td>
</tr>
<tr>
<td>Turkey</td>
<td>1.1°C/50 years</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>0.61°C from 1961-1990.</td>
</tr>
<tr>
<td>India</td>
<td>0.4°C/100 years</td>
</tr>
<tr>
<td>India</td>
<td>0.25°C/decade</td>
</tr>
<tr>
<td>Nepal</td>
<td>0.06 °C/17 years</td>
</tr>
<tr>
<td>Nepal</td>
<td>0.04°C/30years</td>
</tr>
<tr>
<td>Bhutan</td>
<td>0.5 °C from 1985-2002</td>
</tr>
<tr>
<td>Southeastern China</td>
<td>0.6°C/Annum</td>
</tr>
<tr>
<td>Japan</td>
<td>Increasing incidences of daily maximum temperature &gt;35°C, decrease in extremely low temperature</td>
</tr>
<tr>
<td>West China</td>
<td>0.01-0.04 °C/year in 41 years</td>
</tr>
<tr>
<td>South-East Asia</td>
<td>Increase in hot days and warm nights and decrease in cold days and nights between 1961 and 1998</td>
</tr>
</tbody>
</table>

2. Causes of climate change: The present warming of the globe that causes climate change is chiefly attributed to changes in the concentrations of various gases in the atmosphere, which affect the earth radiation balance including carbon dioxide (CO₂), methane (CH₄), ozone (O₃), nitrogen oxides (N₂O) and chlorofluorocarbons (CFCs). These gases are called greenhouse gases (GHG) as they trap heat in the atmosphere just as greenhouses used to grow plants trap sunlight to raise the heat inside. Sources of greenhouse gases in the atmosphere are mainly the combustion of fossil fuels (oil, natural gas) for industry and transport, rapid industrialization, fast growing population, deforestation for agriculture, unplanned urbanization and infrastructure developments. Level of these GHGs have been rising (Fig. 2) and the net result is a gradual increase global warming. According to, the greenhouse effect due to these gases has been intensifying since the later part of the 20th century and global climate will remain warmer in the next decades of the 21st century. Particularly responsible is CO₂, whose level in the atmosphere has amplified due to increased use of fossil fuels, while on the other hand, the destruction of natural vegetation has prevented the environment from restoring the balance.
Karl and Trenberth described that human induced actions are the dominant factors in recent global warming and if climate mitigation measures are not adopted at the right time, situation will become worst in the near future. For this purpose, the international response to mitigate climate change has been organized under United Nations Framework Convention on Climate Change (UN/FCCC), and in 1997 the first protocol for quantitative GHG emission reduction targets was signed. The Intergovernmental Panel on Climate Change (IPCC) scientifically studied and assessed all aspects of global climate system and its interaction with atmosphere, land surfaces, oceans, sea ice and ecosystem. Findings of these IPCC assessments have been arranged in authoritative reports in 1990, 1995, 2001 and 2007, and these reports are the primary source of the scientific information.

2.1 Global trend in GHG emissions: IPCC in its 1st report mentioned that emission of GHGs are increasing and does not remain stable due to increased energy consumption as a result of population growth and industrialization especially in the developing countries. Further significant increases in GHG levels are expected, particularly as developing countries became more industrialized. Based on present warming trends, World Energy Outlook (2010) predicted a 53% increase in global energy demand by 2030, with 70% of that coming from developing countries that will subsequently result in further rise in temperature. Recent researches revealed that these temperature trends are actually much higher than previously thought. From the period of pre-industrial to the present era, the concentrations of GHGs are increasing by approximately 2.5 ppm per year. It is estimated that, if the world’s GHG emissions remain at a level of 550 ppm at a minimum, there is a 63% chance the dangerous limit of 2°C temperature increase will be exceeded till 2100.

Changes in the concentration of greenhouse gases, which occur both naturally and as a result of human activities, also influence Earth’s climate. GHG emissions are increasing faster in developing countries than in the developed countries. According to the US government forecast, from 2003 to 2030, global emissions of CO₂ will rise up to 75% mainly from the fossil fuel burning in developing countries. Though, United States is the world leading emitter of CO₂, countries like China and India will very soon surpass its limit that is only one-fourth and one-fourteenth respectively, the level of America’s per capita emissions. Member states of the European Union (EU) are trying to cut their greenhouse emissions, however the same report reveals that GHG from the US have increased by 15.8% from 1990 to 2004.

2.2 Role of urban regions: Being home to more than three billion people, cities are major sources of GHG. According to , up to 80% of global GHGs are estimated to originate from urban areas. For instance, increase in transport, use of electricity for space heating and/or cooling, lighting and domestic appliances and industrial processes directly emit heat into the urban areas. At the same time, increased surface roughness in cities hinders wind speeds, convective heat loss and evapo-transpiration, which can reduce air quality. China and India alone have more than a quarter of the world’s urban population and the world’s largest urban populations. Currently about half of the world’s population is living in urban areas. Even in Africa, which has long been considered a rural continent, close to 40% of the population is living in cities. Urbanization rates average 2% globally, but
are higher in many developing countries. However, despite their lower levels of urbanization, less developed regions have more than double the numbers of urban dwellers than the more developed (2.3 billion vs. 0.9 billion). In Asia, windstorms and floods between 1996 and 2005 caused over 70,000 deaths and economic loss of around $190 billion, a large part of which could be attributed to the lack of adequate infrastructure.

In addition, climate record of the globe is also affected by urbanization. Uncertainty in climate trends, particularly temperature trends is revealed by the differences in observed temperature and the diurnal temperature range for large urban areas, smaller urban areas, and rural areas in China and Japan. In both countries, the large urban areas are warmer than the smaller urban and rural areas. Similarly, the diurnal temperature range (DTR) in large urban areas is smallest, compared to the smaller urban areas and rural areas. A number of studies have examined the impact of urbanization in the climate record and arrived at similar conclusions: that approximately 0.1 °C of the observed 0.6 °C warming since the late 1800s in the global temperature time series is due to urban warming. Research statistics show that in the last century, global industrial growth enhanced nearly 50% with a fourfold increase in the world population (Table 2). Nearly 50% of the land pattern is changed due to human actions while the burning of fossil fuels has increased the concentration of CO₂ to a level that cannot be found in the last 4.2 million years.

<table>
<thead>
<tr>
<th>Year</th>
<th>Urban population (Millions)</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1900</td>
<td>220</td>
<td>13%</td>
</tr>
<tr>
<td>1950</td>
<td>732</td>
<td>29%</td>
</tr>
<tr>
<td>2005</td>
<td>3200</td>
<td>49%</td>
</tr>
<tr>
<td>2030</td>
<td>4900</td>
<td>60%</td>
</tr>
</tbody>
</table>

(Source: UN Population Division, 2010)

3. Environmental Impacts

Rise in Sea Level: Melting ice and thermal expansion of oceans are the key factors for sea level rise. Global observations at different locations reveal that in global temperature is considerably causing seawater to expand and sea level to rise. Rise in sea levels was observed during the 20th century around the northern and southern Pacific Ocean, Indian Ocean and Caribbean Sea, however the rise is not geographically uniform like warming of the land surface. In 1961 and 2003 global sea level rose at an average rate of 1.8 mm per year, however the rate was faster at about 3.1 mm per year over the period from 1993 to 2003. According to the IPCC 4th assessment projection, a mean of 0.4 m rise by the end of the Century excluding future changes in glacier melt are projected. In India and Pakistan, the current rise in sea level is reported to be about 1 mm per year since 1960. Bangladesh is particularly vulnerable with estimates of sea-level rise varying from 0.30 to 1.5 m by 2050 under alternative scenarios. In addition, according to research that about 13 million to 94 million people living near the coast are at increase risks of flooding if sea level rise up to 40 cm. Sealevel rise could cause flash flooding, increase the salinity of inland waters, inundate low lying areas, drown wetlands and coastal marshes and erode beaches. Coastal areas of China, India, Bangladesh, Africa and the small islands (96%) are especially susceptible to increasing salinity of their water resources. In addition, rising sea levels will also lead to salt water contamination of groundwater supplies, threatening the quality and quantity of freshwater supply. Since 1990, the IPCC has documented such changes as an evidence of global warming.

Melting of arctic ice: Numerous studies have shown that Arctic summer ice is melting at an alarming rate than ever before due to the global warming. A study conducted by found that four out of the five lowest years of sea ice coverage have occurred since 2002. Another similar work on the decline of Arctic summer sea ice melt was done by. They predicted that Arctic could be completely free of summer sea ice well before the end of this century. Records of past ice-sheet melting indicate that the rate of future melting and the related sea-level rise could be faster than the last century. The study by them found that during the last interglacial period, approximately 130,000 to 127,000 years ago, sea level was 4 to 6 meters higher than today. Climate models project that the high northern latitudes will remain warmer than they were during the last interglacial period. Temperatures in the late 21st century would be warm enough to melt at least large portions of Greenland and West Antarctica. Millions of people would be vulnerable to flooding and displacement from the resulting sea level rise, and the economic loss associated with coastal inundation. But it is not just the ice system that is changing. Changes in the permafrost or the permanently frozen ground also reflect a warming trend in the Arctic. Recent study of the
National Centre for Atmospheric Research’s Community Climate System Model (2006) projects that under GHG scenarios; there will be up to 80 % decline in permafrost by the end of the 21st century.

3.3 Glaciers melting/ Retreating: Melting or advancing of inland glaciers is also occurring and would affect the land use patterns around the glacier. For instance, agriculture lands or herding near the glaciers, alter the habitat of animals and plants that have become adapted to surviving closer to the glacier. reported that large scale melting of mountain glaciers is occurring at fastest rate

Meanwhile, work carried out in Kalimanjaro by concluded that increased air temperature leads to govern the glacial melting in a direct manner. The effect of global warming on the mountainous areas is most visible from the shrinkage of glaciers and reduction in reduced snow cover duration . There is some disagreement among the scientists that all glaciers of Himalaya-Karakorum-Hindukush region are retreating. According to the World Glacier Monitoring Service (2002), most of the world’s mountain glaciers have been shrinking for the last 30 years, including the greater Himalayan and might disappear by 2035, as shown in the Table 3.

Table 3. Observed rates of glacial retreat in different parts of the Himalayas

<table>
<thead>
<tr>
<th>Glacier and Region</th>
<th>Rate of retreat (m/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kashmir and Himachal (India)</td>
<td></td>
</tr>
<tr>
<td>Barashigri, Chandan Basin of Eastern Lahul</td>
<td>44</td>
</tr>
<tr>
<td>Stock, Ladakh</td>
<td>6</td>
</tr>
<tr>
<td>Tajwas Nar, Sindh basin of Kashmir</td>
<td>5</td>
</tr>
<tr>
<td>Fanfshtang, Bhara basin of western Lahul</td>
<td>12</td>
</tr>
<tr>
<td>Garhwal (India)</td>
<td></td>
</tr>
<tr>
<td>Trisul, Nanda Devi sanctuary</td>
<td>10</td>
</tr>
<tr>
<td>Betharti, Nanda Devi sanctuary</td>
<td>8</td>
</tr>
<tr>
<td>East Kamet</td>
<td>5</td>
</tr>
<tr>
<td>Gangotri, Bhagirathi Basin</td>
<td>15</td>
</tr>
<tr>
<td>Santopanth – Bhagirathi glaciers complex, Alaknanda</td>
<td>12</td>
</tr>
<tr>
<td>Kumaun (India)</td>
<td></td>
</tr>
<tr>
<td>Milam, Gouri Ganga basin</td>
<td>13.5</td>
</tr>
<tr>
<td>Poting, Gouri Ganga basin</td>
<td>5</td>
</tr>
<tr>
<td>Shankalapa, Gouri Ganga basin</td>
<td>23</td>
</tr>
<tr>
<td>Sikkim (India)</td>
<td></td>
</tr>
<tr>
<td>TistaKhangse, Tista Basin</td>
<td>8</td>
</tr>
<tr>
<td>Nepal</td>
<td></td>
</tr>
<tr>
<td>Shorong region</td>
<td>2.7–2.3 (1978–1989)*</td>
</tr>
<tr>
<td>Khumbu region, 7 clean-type glaciers</td>
<td>30–60 (1998–2004)*</td>
</tr>
<tr>
<td>Exceptional rate in Nepal</td>
<td>2.0–3.4 (1970s–1989)*</td>
</tr>
<tr>
<td>Bhutan</td>
<td>71</td>
</tr>
<tr>
<td>Luggye glacier</td>
<td>** 160</td>
</tr>
</tbody>
</table>

* Mean for the period, **This glacier is in contact with a large glacial lake

Source:

3.4 Uneven precipitation pattern: Like the rising trend of global temperature in 21st century, no clear evidence with regard to long-term change in the global precipitation has been found. Recent studies show a rising trend of only 9mm, which is approximately 0.98% per decade for 20th century. However, the above mentioned increase has been observed over high latitude areas and tropical oceans with a decrease over tropical lands. It is obvious that climate warming leads to increased moisture-holding capacity of air and cause changes in the characteristics of precipitation events, including their frequency, intensity, amount and duration. Other evidence for increasing precipitation rates are shown in Table 4.
Table 4. Significant rainfall trend in all over the world

<table>
<thead>
<tr>
<th>Significant trend</th>
<th>Country/Region</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upward</td>
<td>Japan</td>
<td></td>
</tr>
<tr>
<td>Upward</td>
<td>Australia</td>
<td></td>
</tr>
<tr>
<td>Upward</td>
<td>South Africa</td>
<td></td>
</tr>
<tr>
<td>Upward</td>
<td>China</td>
<td></td>
</tr>
<tr>
<td>Downward trend in June, July and September and upward in August</td>
<td>India</td>
<td></td>
</tr>
<tr>
<td>Upward trend in high latitude and downward in lower latitude</td>
<td>Whole Globe</td>
<td></td>
</tr>
<tr>
<td>Downward trend in coastal and hyper arid plains and upward in northern areas</td>
<td>Pakistan</td>
<td></td>
</tr>
<tr>
<td>Upward</td>
<td>Himalayan region</td>
<td></td>
</tr>
<tr>
<td>Upward</td>
<td>Bangladesh</td>
<td></td>
</tr>
</tbody>
</table>

3.5 Extreme weather events: The largest impacts of glob warming mainly come from the incidence of the extreme weather events, such as heavy rainfall, severe storms, heat waves and droughts. In most parts of the Europe and US, extreme cold waves and record snowfalls were observed during winter season of 2009/2010 in Europe. In 2008, severe prolonged drought hit the several states of the South Africa such as Argentina, Uruguay, Paraguay and southern Brazil causing severe damage to agriculture, livestock and water resources. For most parts of the South Africa it was observed as one of the driest years on record. Heavy rainfall in 2010 in China contributed to floods and landslides along with devastating mud/rockslide in the northwest of the country. Similarly extreme precipitation events in West Africa have been observed in 2010 year, with the worst flooding in 50 years. However, by their very nature, extreme events are hard to study and predict precisely because they are relatively rare and can be influenced by local factors, such as terrain and snow pack. Unfortunately, the increase in heavy rains would not necessarily make more water available for hydropower or irrigation because natural and engineered reservoirs are greatly affected by severe storms. Moreover, both the Northwest and the Gulf Coast would also see an increase in the number of dry days. It is estimated in the study on Special Report on Emission Scenarios (SRES), that 120 million to 1.2 billion people will experience increased water stress by 2020s, and by 2050s, the number will increase to 185 to 981 million people. New evidence on recent trends, particularly on the increasing tendency in the intensity and frequency of extreme weather events are more evident in Asia in the 21st century. For instance, a decline in summer precipitation was observed over the central parts of the arid and semi-arid Asia and is leading to the expansion of deserts and periodic severe water stress conditions. Increased rainfall intensity, particularly during the summer monsoon could increase flood prone areas in temperate and tropical Asia. In South-East Asia, extreme weather events associated with El-Nino were reported to be more frequent and intense in the past 20 years.

Significantly longer heat wave duration has been observed in many countries of Asia, as indicated by pronounced warming trends and several cases of severe heat waves. Generally, the frequency of occurrence of more intense rainfall events in many parts of Asia has increased, causing severe floods, landslides, and debris and mud flows, while the number of rainy days and total annual amount of precipitation has decreased. However, there are reports that the frequency of extreme rainfall in some countries has shown a decreasing tendency.
Increasing frequency and intensity of droughts in many parts of Asia are attributed mainly due to rise in temperature, particularly during the summer and drier months of the year. The recent studies conducted by Fan and Li (2005) indicate that the frequency and intensity of tropical cyclones originating from the Pacific Ocean have increased over the last few decades. While, cyclones originating from the Bay of Bengal and Arabian Sea have been noted to decrease since 1970, however their intensity has increased. In both cases, the damage caused by intense cyclones has risen significantly in the affected countries, particularly India, China, Philippines, Japan, Vietnam and Cambodia, Iran, Bangladesh and Tibetan Plateau. About 80% of Bangladesh is prone to floods and every year, at least one-third of the country’s territory is affected. Recently, abnormal weather behaviour caused extreme events in Pakistan. About 40% of the people are highly prone to frequent multiple disasters with variations in rainfall patterns, storms, floods and drought. Besides these, weather related disasters hit the countries regularly like cyclones, hurricanes (Katrina and Nargis), heat waves, super floods, droughts and intense rainfall. According to a World report, Pakistan loses nearly $4.5 billion annually from environmental disasters.

3.6 Severe Rainfall events: According to US global change research, the warmer temperatures are likely to increase evaporation from land surfaces and cause severe rain events. Increased rain events are responsible for increase in surface runoff. An increase in precipitation of 5-1% per decade in the mid/high latitudes of the Northern Hemisphere, and some parts of Southern Asia, temperature rise may also induce a prolonged drought which along with others anthropogenic factors caused deforestation, weathering and soil erosion. More intense and longer droughts have been observed since the 1970s, particularly in tropical and subtropical. One effect of the rising temperatures that are expected over the next century is that the atmosphere’s capacity to hold moisture will go up. For every 1°C increase in temperature, the water-holding capacity of the atmosphere rises 7%. Increased moisture in the atmosphere will lead to more intense precipitation events – even when the annual total amount of precipitation is slightly reduced. Changes in precipitation patterns are already observable (Table 5). Over the past century, Eastern North America has gotten wetter, while southern Africa and the Mediterranean have become drier. In the 21st century, the Northeastern U.S. is expected to receive more precipitation, while the Southwest is expected to become even drier. Similarly, unpredictable rainfall has been noted in Northern Europe, some parts of North, South and Central Asia. In his studies revealed that most of the regions of Asia like Eastern and the Southern parts will receive summer as well as intense winter precipitation with a greater probability in the intense precipitation frequency. In the northern Indian Ocean annual rainfall is likely to increase in winter season (December, January, and February), and around the Maldives in summer season (June, July, and August), while decreases occur in Mauritius in the same months of summer. According to the IPCC (2001) report, it is estimated that although total rainfall increase may be smaller (1.0 - 3.4%) but its intensity will be slightly larger. Recent studies, based on climate models and past observational records, predict a future increase in droughts in the south of Europe as a result of increased evapo-transpiration and a relatively slow decrease of rainfall and precipitation frequency. IPCC (2001) report, about 0.3% average decrease in rainfall per decade for the subtropical land areas as opposed to tropical lands with 0.3% increase per decade. Similarly many parts of Europe and East Asia showed a positive trend in the annual maximum consecutive days having rainfall below 1.0 mm and a negative trend in the number of rainy days during 1950-1995. The results of were found relevant with the research conducted on the Mediterranean areas by and during the period 1951-1995. Their research work focused on the Mediterranean areas, indicate a larger frequency of drought periods, with associated impacts on agriculture, water resources and socio-economic activities. Decreasing trends in annual mean rainfall are observed in Russia, North-East and North China, coastal belts and most parts of North-East India, Indonesia, Philippines and some areas in Japan. Annual mean rainfall exhibits increasing trends in Western China, South-Eastern coast of China, Arabian Peninsula, Bangladesh and along the western coasts of the Philippines. Analyzed heavy precipitation events in China over the studied period (1960-2000). They found
only 2% increase in the total precipitation and 5% increase in total extreme precipitation events at 95% confidence interval.

Table 5. Severe rainfall events and flood and droughts episodes in different countries

<table>
<thead>
<tr>
<th>Regions</th>
<th>Events</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pakistan</td>
<td>Super flood in 2010 after heavy monsoon rainfall in over eighty years. An estimated 2000 people dead and over 700,000 homes damaged or destroyed. Worst drought hitting the country during the period 1998-2001</td>
<td>(Pakistan Meteorological Department, 2012)</td>
</tr>
<tr>
<td>South Asia</td>
<td>50% of droughts associated with El Niño; consecutive droughts in 1999 and 2000 in Pakistan and N-W India led to sharp decline in watertables; consecutive droughts between 2000 and 2002 caused crop failures, mass starvation and affected ~11 million people in Orissa; droughts in N-E India during summer monsoon of 2006</td>
<td>(India Meteorological Department, 2002-2006)</td>
</tr>
<tr>
<td>South Asia</td>
<td>Serious and recurrent floods in Bangladesh, Nepal and north-east states of India during 2002, 2003 and 2004; a record 944 mm of rainfall in Mumbai, India on 26 to 27 July. floods in Surat, Barmer and in Srinagar during summer monsoon season of 2006; 17 May 2003 floods in southern province of Sri Lanka were triggered by 730 mm rain</td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>Increase in area affected by drought has exceeded 6.7 Mha since 2000 in Beijing, Hebei Province, Shanxi Province, Inner Mongolia and North China; increase in dust storm affected area</td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>Floods in Changjiang river in past decade; more frequent floods in North-East China since 1990s; more intense summer rains in East China; severe flood in 1999; seven-fold increase in frequency of floods since 1950s</td>
<td></td>
</tr>
<tr>
<td>Russia</td>
<td>Increase in heavy rains in western Russia and decrease in Siberia; increase in number of days with more than 10 mm rain; 50 to 70% increase in surface runoff in Siberia</td>
<td></td>
</tr>
<tr>
<td>Russia</td>
<td>Decreasing rain and increasing temperature by over 1°C have caused droughts; 27 major droughts in 20th century have been reported</td>
<td></td>
</tr>
<tr>
<td>Japan</td>
<td>Increasing frequency of extreme rains in past 100 years attributed to frontal systems and typhoons; serious flood in 2004 due to heavy rains brought by 10 typhoons; increase in maximum rainfall during 1961 to 2000 based on records from 120 stations</td>
<td></td>
</tr>
<tr>
<td>South-East Asia</td>
<td>Increased occurrence of extreme rains causing flash floods in Vietnam; landslides and floods in 1990 and 2004 in the Philippines, and floods in Cambodia in 2000</td>
<td></td>
</tr>
<tr>
<td>Mongolia</td>
<td>Increase in frequency and intensity of droughts in recent years; droughts in 1999 to 2002 affected 70% of grassland and killed 12 million livestock</td>
<td></td>
</tr>
</tbody>
</table>

Source:

3.8 Threats to Biodiversity: According to reports that there has been a loss of 37% in biodiversity globally from 1970 to 2000. This study, concluded climate change as one of the main driving forces for the decline in
biodiversity. Documented extinction rates for the last 400 years through geological time scale include 58 mammals and 115 birds reported that in Asia, approximately 50% of the region's total biodiversity is at threat and becoming almost extinct due to change in temperature. He estimated that in China, 105 to 1522 plant species and 5 to 77 vertebrates and in Indo-Burma about 133 to 2,835 plants and 10 to 213 vertebrates would be extinct by the end of the century.

3.9 Forest resources: Warming of the globe has also influenced the forest resources and altered biomes production and its quality. Warming may considerable affect plants carbon nitrogen ratio, biomass production, yields, root morphology, shoots morphology, soil nutrients uptake etc. High CO\(_2\) levels in the atmosphere can affect plant responses to different limiting factors including water, light, nutrient availability. For instance, a mild change may result in vegetation stress, rapid plant loss and desertification in certain circumstances. In non-temperate climates, climatic warming may enhanced the ability of present day forests to withstand these changes (Table 6). According to a change of 3°C can lead to an elevation shift of forests of about 500 m, and even though species have the ability to adapt warming since the last Ice Age about 10,000 years ago, the predicted change (2.5°C for a doubling of CO\(_2\)) is very high and will exceed their rate of “migration” to keep up. A rate of change of 0.01°C is a threshold value for survival of many species.

Table 6. Different types of forest and potential impacts of climate change

<table>
<thead>
<tr>
<th>Forest type</th>
<th>Effect</th>
<th>Region</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alpine Forest</td>
<td>Mean Annual temperature increase of 1-1.5(^\circ)C over the last 100 years</td>
<td>Australian and Swiss Alps</td>
<td></td>
</tr>
<tr>
<td>Alpine Forest</td>
<td>Summer drought stress</td>
<td>Yellowstone National Park, USA</td>
<td></td>
</tr>
<tr>
<td>Riverian Wetlands</td>
<td>Mean July temperature increase almost 4(^\circ)C</td>
<td>Mississippi River, USA</td>
<td></td>
</tr>
<tr>
<td>Coastal mangroves</td>
<td>Sea level rise up to 9-12cm per century. In 1980, 3.6 million hectares of mangroves have been lost, equivalentto a 20% global reduction</td>
<td>Pacific, Indian and Atlantic oceans</td>
<td></td>
</tr>
<tr>
<td>Temperate forest</td>
<td>Wildfire and prolonged droughts</td>
<td>UK and USA</td>
<td></td>
</tr>
<tr>
<td>Arctic alpine</td>
<td>Winter temperature increase upto 4(^\circ)C or more</td>
<td>Norway</td>
<td></td>
</tr>
<tr>
<td>Rainforest</td>
<td>Deforestation and fires degraded up to 55% Amazon rainforest</td>
<td>Amazon</td>
<td></td>
</tr>
<tr>
<td>Tropical Rainforest</td>
<td>Deforestation, high CO(_2) Saturation level</td>
<td>Africa, Asia, Pacific and the tropical countries of Latin America, Amazon</td>
<td></td>
</tr>
</tbody>
</table>

Source:

3.10 Impacts on crop yield: Short and long term climate change is also leading to changes in crop yield and crop management practices and techniques. Temperature variations greatly affect albedo, soil quality and humidity variations.

Crop yields at mid to high latitudes may increase for low levels change in temperature, but will decline at higher level change in temperature. Studied impacts of global climate change on agriculture yields and revealed that
direct impacts of the increase in temperature cause shortening or elongation of growing season, change in duration and intensity of precipitation, water and soil quality and extreme weather events while indirect impacts could result in excessive rate of soil erosion. estimated a decrease in crop yield of 0.71 tons/ha, 0.42 tons/ha and 0.04 tons/ha with temperature increase from 18°C to 19°C, 22°C to 23°C and 27°C to 28°C respectively. According to Pakistan Agricultural Research Council (2003), temperature increase in winter months (December to March) have negative impacts on the big grain crops, sugarcane and fruits. Moreover, the production volume and quality have also been adversely affected because of changes in reproductive periods (Spring/fate winter season), irrigation water requirements and its supply, altering soil characteristics, and increasing the risk of pests and diseases. Beside the adverse effects of climate change, some of them are likely to be beneficial. In middle to high latitudes there may be an increase in agricultural productivity, depending on crop type, growing season, changes in temperature regimes and the seasonality of precipitation. In these areas, temperature increase can enhance crop growth by allowing earlier planting of crops in the spring, faster maturation, earlier harvesting and carbon sequestration potential. All these phenological changes were observed in oak, apple and pears and a range of 29 Mediterranean species.

**Increased duration of wild fire:** Studies have shown that in North Asia, an increase in 1°C in average temperature could increase the duration of wild fire season by 30 times, which could cause various adverse consequences on key forest ecosystem functions including structure and composition of soil, outbreaks of pest, loss of biodiversity, species habitat quality, and prevalence of diseases. Wildfires in the western United States have been recorded increasingly over the past few decades, but the extent of these changes had never been analyzed until recently. found that there has been recorded a four time increase in the number of western wildfires and 6.5 times as much area burned in 2003 as compared to 1987. But the wildfire of 1987 was also recorded more than 1970. The length of wildfire season was observed 78 days. The average burn duration for large wildfire has observed from 7.5 to 37.1 days over the same time period. They concluded that wildfire in United States is primarily due to changes in climate that specifically increases in spring and summer temperatures and earlier spring snowmelt.

**Water supply and quality:** Changing climate has been widely recognized to significantly impact the availability of water, as well as the quality and quantity of water. Reduced rainfall and increasing temperatures will further lead to the reduction of available water supply including smaller flows in springs, rivers and underground levels. Increasing trend in temperature and its association with precipitation can induce stress in hydrological cycle, resulting in dryer and wetter rainy seasons, and subsequently enhance the risks of more extreme flash floods and droughts. Melting glaciers will increase flood risk during the rainy season, and reduce the dry-season water supplies to the one-sixth of the world’s population.

Many of the world’s countries are already struggling for the availability of fresh water supply for drinking, municipal, agricultural and industrial purposes (Table 7). Irrigation demand, industrial pollution and sewerage will put pressure on existing water resources and all these will be significantly intensified by climate change. According to the World Bank (2006), Pakistan is among 17 countries that are already facing water shortages and is among the 36 countries where there is a serious threat of food crisis.

<table>
<thead>
<tr>
<th>Country</th>
<th>1955</th>
<th>1990</th>
<th>2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>4,597</td>
<td>2,427</td>
<td>1,818</td>
</tr>
<tr>
<td>Mexico</td>
<td>11,396</td>
<td>4,226</td>
<td>2,597</td>
</tr>
<tr>
<td>Philippines</td>
<td>13,507</td>
<td>5,173</td>
<td>3,072</td>
</tr>
<tr>
<td>Iraq</td>
<td>18,441</td>
<td>6,029</td>
<td>2,356</td>
</tr>
<tr>
<td>USA</td>
<td>14,934</td>
<td>9,913</td>
<td>7,695</td>
</tr>
<tr>
<td>Pakistan</td>
<td>2,490</td>
<td>1,672</td>
<td>837</td>
</tr>
</tbody>
</table>

Source:

The quality of existing water supplies will also become a further concern in some regions of the globe. Water acquires most of its geochemical and biochemical properties during its cycling from clouds to rivers, through the biosphere, soils and geological layers. Changes in the amount or pattern of precipitation will change the route and residence time of water in the watershed, thereby affecting its quality. As a result, regardless of quantity, water could become unsuitable as a resource if newly-acquired qualities make it unfit for the intended use. For example, in areas with relatively high water tables, or under intensive irrigation, increased evaporation due to higher temperatures will raise the concentration of dissolved salts in water. Further, increased flooding could
raise water tables to the point where agrochemicals and industrial wastes from soil could leach into the groundwater supply. Likewise, higher ocean levels will lead to salt water intrusion in coastal groundwater supplies, threatening the quality and quantity of freshwater access to large proportions of populations.

**Economic and human losses:** Over the last 30 years, South Asia has experienced more than 65,000 deaths and about a billion people have been affected by floods and landslides. This accounts for around 33% of all flood events in Asia. The India and Bangladesh floods of 1998 caused over 2,600 deaths, displaced 25 million people, and caused an estimated US$ 3.4 billion of economic damage. In 2007, floods in India, Nepal, and Bangladesh caused more than 3,400 deaths, affected 30 million people, and caused an estimated US$ 5 billion in economic damage. The impact of floods can only rise as the population in floodplains grows and the value of infrastructure increases.

**Health risks:** Occurrence of extreme events like outbreaks of flood, prolonged droughts, changes in surface temperature, decreasing water availability, intense rainfall, tropical cyclones and unexpected cold and heat waves have been considered the widespread cause of diarrhoea and other infectious diseases like cholera, Hepatitis, dengue fever in South Asian countries like India, China and Bangladesh. According to a study by there are annually about 1200 deaths due to cold and hot weather. Similarly, lower rainfall trend and other changing mean affect the agriculture, particularly its interruptions in food storage and supplies in sudden, acute events. Children in Africa born in drought years, for example, are significantly more likely to be malnourished or stunted. In Kenya, children are 50% more likely to be malnourished, and in Niger, 72% more likely to be stunted. When children are malnourished, their vulnerability to infection is greatly increased and a vicious cycle results. A chronically malnourished three or four year-old may be at a permanent disadvantage, becoming both physically and mentally stunted.

**Conclusion:** Review of climate trends and different scenarios at global level revealed that climate change poses significant risks and vulnerabilities to environment in terms of certainty, urgency, and severity of impact, as well as the importance of the resources being affected. It is, however, essential to continue scientific research not only to further ascertain climate change but also on aspects of timing, frequency and intensity of the projected and perceived threats so as to be able to predict and mitigate hazardous events before they strike.

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FIGHTING DEFORESTATION IN SWAT PAKISTAN THROUGH REALIGNING PROPERTY RIGHTS, EDUCATION AND COMMUNITY PARTICIPATION

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ABSTRACT. Swat is part of the high mountain Hindu-Kush Himalayan region of Pakistan, with diverse biophysical and socio-economic characteristics. The region is endowed with many fragile and fragmented ecosystems but land use and land cover changes have accelerated processes with irreversible effects on ecosystems. This paper aims to provide evidences of deforestation in the context of very disparate accounts on the state of forest resources in Pakistan, and suggests realigning property rights, education and community participation.

The temporal analysis of forest cover between 1968 and 2007 showed a drastic change in forest cover. In lowlands forest cover decreased by 36% and in high elevations by 69%. Annual deforestation rates observed were 1.86% (scrub forest zone), 1.28% (agro-forest zone) and 0.80% (pine forest zone) in the respective areas of district Swat. This change in forest cover leads to destruction of ecosystems and associated livelihoods.

Results of household surveys and expert interviews showed that due to lack of education/environmental awareness, and lack of alternative income sources in district Swat have been mainly linked with the health and status of the overall forest ecosystems. Another important problem is the ambiguity in ownership of forest as well as rangelands and weak enforcement of statutory rules in the district.

A multi-sectoral approach is required which needs to work alternative income sources and enhancing agricultural productivity based on the conservation of traditional crop diversity and value addition to agric-products, education and environmental awareness, efficient and effective implementation of the state rules/laws governing the forest use and protection and to solve the property rights issues in the region.

Keywords: Deforestation, land use change, property rights, Socio-ecological system, Resilience, Institutional response, Swat, Pakistan

1. Introduction. The term land cover denotes the natural or artificial objects on the Earth’s surface. It is closely related to land use, which refers to why and how people work the land and how vegetation and soils are affected during this process [1], [2]. The high mountain Hindu-Kush Himalaya (HKH) region shown in Map 1 is a region with diverse biophysical, ecological and socioeconomic characteristics [3]. The region is endowed with many fragile and fragmented ecosystems therefore complex land use and land cover changes are accelerated processes with irreversible effects on fragile ecosystem. Furthermore, a good
part of the region is evolving from traditional self subsistence economy to open economy with links to regional and global markets. Due to this change in the economy and due to its physical location the HKH region is described as a “hot spot” for land use and land cover change, where accelerated processes are occurring [4], [5], [6], [7].

Numerous drivers of change have been identified including population pressure, agriculture expansion commodity and timber prices, population growth, wage levels, improvement of accessibility and increase of linkages between high and low lands, tourism, opening to the external economies and global economic integration, change in life style and cultural patterns, external interventions in the form of development initiatives, and governmental policies or lack thereof [6], [7], [8], [9].

Forest depletion is serious environmental issue in HKH region and Pakistan. According to an estimate by the [10] 39 thousand hectares of forest are vanishing annually in Pakistan. Between the years 1981 and 1990 the deforestation rate was 0.6% annually [3, 8], while in the years 1990 to 2000 the deforestation rate in Pakistan was 1.5% annually [8]. A similar finding was provided by other researchers, who found in a field survey that 33% of the respondents observed a severe decrease in the forest cover area of District Swat in the years 2000 to 2005 [11].

Institutional roles are always important in land use and land cover change studies. Forest management, tenure system and rules and regulations and especially their enforcement is different in Swat now, than they were before 1970. Swat was a princely governed state and was merged into Pakistan in early 1970. The change in formal and informal institutions and policies may have had an impact on the land use change in Swat. Little investigation has been done so far and needs further work to reveal the impacts of this institutional change on land use change in Swat valley.

To analyse causes and impacts of land-use changes especially deforestation is becoming increasingly more important [12], [13], [14], [15], [16], [17]. Keeping in view the importance of the issue, this paper focuses to investigate the relation of environmental education / awareness, socio-economic conditions and property rights of the people with the high rates of deforestation.

2. Introduction to Study Area. This study was carried out in district Swat (shown in Figure 1) which is part of the mountainous areas of the Khyber Pakhtunkhwa province and consist of many valleys with scrub and/or coniferous forests on the upper slopes and alpine pastures on the ridges. Swat can be divided into two regions, Swat-Kohistan and Swat Proper. Swat Kohistan is the mountainous area on the upper reaches of the Swat River up to Aien (name of an area). The southern is Swat proper, which can be further divided into: Bar Swat i.e., upper Swat and Kooz Swat i.e., lower Swat. Swat has a predominantly rural population. Pashtuns (mainly Yousafzai tribe), Kohistanis, Gujars and Pirachas inhabit the valley of Swat.

![Figure 1. District Swat on Pakistan Map](image)

The very important factor to be noted about study area is the major institutional changes. District Swat used to be a sovereign princely state until 1969, but then it was merged into Pakistan in 1970 [18], so institutional change has created gaps in ownership of the forest and other common land/property, which definitely need to be explored.

3. Material and Methods. For data on land use changes in district Swat, this study depends on the work of [19], where land use maps were developed from old aerial photographs (1968) and satellite images (1990, 2007) using remote sensing and GIS techniques.
A cross sectional and comparative static research design was used for data collection. This design was applied because the data collected was for two different time periods 1970 and 2005 and from different section / parts of the district. Different techniques like surveys, focus groups and workshops were conducted for data collection. Twenty household surveys in each village were conducted aiming at data regarding socioeconomic such as family size, education, land holding, number of farm animals, awareness regarding major environmental issues, total income and income from forest/agriculture, source of fuel wood, and accesses to forests. Qualitative data from expert interviews were analysed using content analysis and were developed into categories, themes and subsections to support the main factors e.g. conflicts in property rights. Open-ended questions from the household survey were categorized and grouped. The groups were then coded and analyzed for distinguishing the differences among zones for each factor.

4. Results and Discussion.

4.1. Major Land Use Changes. Land use and cover changes in Swat, over forty years, showed drastic changes in all the three zones; namely Kalam, Malamjaba and Barikot areas [19]. In Kalam, and Malamjaba and Barikot region the forest decreased by 30.5 % and 49.7 % respectively, whereas in Barikot, the agro-scrub forest zone, forest cover decreased from 32.7% to 9.5%, between 1968 and 2007

4.2. Fuel Wood Extraction. Firewood from the natural forest is the only source of energy for cooking and heating in the study area. The weather conditions in the three zones are different from each other and therefore annual firewood consumption for heating and cooking per household is significantly different in the three zones. Due to harsh weather conditions in Kalam region, the majority (49%) of households use up to 20 tonnes of firewood and another 45% of households burn up to 30 tonnes of firewood annually, while in ‘Barikot’ almost all households (88%) consume less than 10 tonnes of firewood per annum. Our results are in line with [12], [14], [20] and [21].

4.3. Timber Extraction. Forest in Malamjaba and Barikot has already been almost finished and the very little forest left has been categorized as protected forests. Thus the locals are not allowed to use this forest for timber extraction. But interviews with experts and households revealed that many trees are cut down illegally both for timber and firewood. The proximity of these forests to big urban centres makes them more vulnerable and the ‘Timber Mafia’ is comparatively more active in Malamjaba as per the expert’s information. Similar results were reported by [12] and [22]

4.4. Literacy and School Enrolment. For the purpose of this study literacy has been defined as the ability to read and write. Here, Pukhtun law and the absence of girls’ schools might be the reasons for a surprisingly low literacy rate among women in all the three regions. The highest literacy ratio was observed in Barikot region but even in this area women are far behind in regard to. Our data about education seconds the official national average, which is 55% for men and 32% for women. Regional differences in school enrolment of children between 5 and 18 years are less obvious, yet again reflecting the huge gap between male and female education: whereas boys’ enrolment rate is above 80% in all three villages, the girls’ rate is above 50%. In the three regions, eighty percent of the respondents said that local school facilities have been improved in many ways. Other researchers who have worked in similar research areas have reported a gradual increase in literacy ratio [23] and [24].

4.5. Natural Assesst and Access Right. Land As most of the households in the study area are involved in agriculture, therefore this section focuses first on land access. Subsequently, access to forest resources will be discussed.

4.5.1. Land Access and Tenure. Our data shows that, more than 80% households in Kalam are involved in farming, which basically is the dense forest zone of the district. Similarly adjacent to it is Malamjaba region where 95% household interviewed were engaged in Agriculture. In both the zones, the majority of farming households were having very little land and were actually cultivating land on lease (i.e., owner cum tenants). Tenancy is very common; in Kalam and Malamjaba zone, however there were very few pure tenant farmers. An important thing to note here is that many people do call themselves landowners but do not have an official proof for it, and it is very true especially about land adjacent to forests. Some experts in their interview
mentioned that in both the regions such agricultural lands and farming is providing an access to forest land and encroachment as well. In Barikot zone, however, things are different. Only 61% of all households have access to land, out of which 94% are involved in farming. 42% of all households are not farming at all, thus indicating the importance of other occupations and sources of income in the lowland. In terms of farming households, Kalam and Malamjaba are quite close to the provincial average, which lies at 83% owners, 6% owner cum tenants, and 11% tenant farms. Access rights have been one of the major cause for deforestation and land use changes, which has been repeatedly reported by many authors in Hindu Kush Himalayas, e.g., [25], [26], [27], [28] and [29].

5. Conclusion and Recommendations. It is based on data collected and interviews conducted we recommend that small credit schemes may be introduced for farmers of mountain areas. Alternative energy resources like electricity, kerosene oil and liquid petroleum gas may be subsidised for people living in remote valleys for minimising use of expensive wood for fuel purposes. The government may also promote coordination among the institutions involved in conservation of biodiversity at federal and provincial levels and integrate sustainable mountains development into the Perspective Plans, Five Year Plans and Annual Development Programmes, and into relevant sectoral plans, particularly those for wildlife, forestry, fisheries and agriculture. There is also a need to establish Sustainable Mountain Planning wing. Professionals including engineers, town planners, professors and consultants should be inducted as members and participation of participation from government bureaucrats. We also recommend that local government laws should be amended to provide for greater community level participation in activities supporting sustainable mountain development. The laws relating to communal ownership and access to sensitive ecosystems like water towers and water sheds should be reviewed and revised so as to protect and encourage customary natural resource management systems. Apart from that improve the effectiveness of existing legal mechanisms by creating greater awareness of regulations and enhancing the capacity of law enforcement agencies. This will only work if environmental awareness and environmental education is provided at all levels. The communities living in the region must be educated about the importance of forest cover for sustainable ecosystem.

REFERENCES


AN EMERGENCY PATIENT BEDDING SYSTEM FOR
SMARTER HOSPITALIZATION

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ABSTRACT. This paper aims to target prevailing problems of emergency department / room (ED / ER) with bottom-up research methodology. Today, many ER related challenges and prevailing solutions in terms of patents and protocols have been discussed thoroughly. Later, a solution is observed through bottom-up research methodology as a special patient bedding system. This emergency patient bedding system (EPBS) is a comprehensive design of a light-weight, smart patient bed specially designed for ED. Its ergonomic design follows the ED protocols and de-facto health care safety standards such that, it can be used out of the hospitals, in mobile vehicles for providing urgent and immediate medical healthcare. The unique combination of active and passive segments in the modular design of EPBS makes it unique, a handy and manageable bedding system. The design features of EPBS are compared to a number of recent but relevant European patents in this paper. The design analysis based is performed on the basis of nurses’ manual labor Full Time Equivalent (FTE). The development and use of EPBS specifically, in ED can be very useful for a preoperative environment. EPBS can also be helpful as preoperative (registration, an entry checkup), post-operative and instantaneous care strategy for patients.

Keywords: ER; Emergency Department; Healthcare; Patient Bed; Full Time Equivalent - FET

1. Introduction. Emergency is defined as: a sudden, severe and often risky situation requiring urgent action [1]. Emergency department (ED) provides services for critically ill patients without earlier appointment. Emergency departments (ED) are right inside the front door of every hospital. ED provides first aid treatment initially for wide-ranging acute cases and injuries including life-threatening and need urgent attention. ED serves 24 hours a day. ER makes available instant patient care services at every moment further a timely elimination of positioning for the patient to the next point of definitive care. When a patient comes to an ER, he needs to be registered in parallel to the treatment by some medical professional who assesses the patient’s condition. Further decisions for treatment and stay of the patient are based on this assessment. The efficiency in this registration and assessment process is considered as a critical factor in any ER as shown in figure 1.
It is necessary to have an appropriate design of ER which allowing immediate access to the patient and administrated the treatment along with the proper medical approach. With particular attention and care, life saving equipment must be placed where instant and ease is accessible [2]. Following basic tasks for ill and/or injured people in the Emergency Room Department are shown in figure 2. There are three main steps involved as Assessment, Diagnosis and treatment.

A lot of challenges are there to enhance the emergency patient care in the emergency department. There is still a need to create solutions to reduce the gaps between the patient care and the tools used during in such an environment. A patient comes to ER but due to administration formalities delay may occur which may create not only time consumption, but also it may miss a patient’s physiological data and the urgent care. Sometimes patient just have to lay over a stretcher in the hospital waiting to get bed without any proper place and without medical equipment and other necessary medical devices, waiting to get his turn in ER if available in such critical conditions else patient needs to move or shift to another hospital. Due to burden of patients in the ER there is also necessary to follow strictly Standard Operating Procedures (SOPs) or Standard Protocols (SP).

It is alarming that the mortality ratio to the increasing rate of population, despite of advancement in healthcare technology, is proportional. One of the major global issues is also overcrowding in emergency treatment [3] [4]. This paper covers the mentioned obstacles in the context of standard protocols successful implementation.
2. **Motivation.** The profound observation about global techniques and medical technologies in ER realizes that lots of things are yet to be done even in implementing to standard protocols. The implementation gap is widened in ERs of the developing and underserved regions. Whereas, in medically advanced countries, the friendliness to the ER system is quite absent today, which is evident from mishaps reported time by time from ER [5] [6] [7].

As biomedical engineer (instrumentation), during the research work, various lethal issues have been observed that motivated for finding any compact solution for medical care and the patient’s safety in the area of patient care services a. Additionally, solutions aim to provide an ease ergonomically for a paramedical staff while treating patients in ER in terms of time, space and efficiency of medical treatment.

The solution also aims efficient processing of medical devices with quality care. This paper summarizes technological resources; we have integrated those technological resources in a single system as per need of an individual. In other words, the proposed solution is based on ‘Responsive Smart System’.

3. **Problem formulation.** Apart from processes during the ER entry of the patient which includes, registration (personal data, cause of emergency, etc.) the ER protocols, in particular, are difficult to implement. Usually, Pre ER-entry steps are avoided in hospitals based on the condition of patients, however, it bring sometimes unnecessary delay in launching swift treatment [8] [9]. This situation may cause critical challenges, summarized below.

   a) Delay during ER treatment can be incurable (e.g., vital signs of the subject can be lost for any reason.
   b) Patient can go into unrecoverable conditions due to over-crowding (patients, visitors, etc.) or engaging patients in trivial formalities.
   c) Relocation of patients from the Medical Emergency Unit (MEU) is challenging due to following factors (i-Instantaneous monitoring & continuous care is required for the period of patient transfer, ii-Improper handling of equipment attached for patient monitoring sometimes creates malfunctioning)
   d) Customization of healthcare services / resources (i-Patient’s safety: Entrapment standards needs to follow, ii-For patients: Mobility and Compactness of the environment for a patient, iii-For training staff: Operative ease about instruments and their handling)
   e) On-site effective training / assistance about the equipment (i-Multimedia base trainings of a new staff, ii-Provision of highly interactive operating environment)

This emerges a need for such a contiguous system that may not only be helpful for implementing ER protocols but, can also get sync with the ER facilities. Only this way, the aforementioned challenges can be solved. By analyzing the processes, equipment handling, surveys, and advancement in patient treatment, in our strong opinion there is a need of a comprehensive bedding systems. The next section covers the related work and the latest developments in the same direction i.e., patient bed development and scope.

4. **Related work.** In this section, we provide the latest research and patent work on patient bedding, in general and emergency, in particular.

4.1. **Real-time weighing device for use with a hospital bed.** Weighing appliance for interactive measurement of the U.S. Patent No 5,086,856 [14] is designed to calculate the patient’s body weight efficiently without the movement of the patient, but this patent unable to give information regarding interactive patient monitoring on a device. Real-time weighing device made up of load cells, carrying a plate, electrical processing elements.
Figure 3. Uniformly distributed load cells b/w bedframe and support plate for measuring weight

This assembly of hardware calculates the weight with the elements integrated within the bed frame. Then it drives the data about a patient’s body mass and center of gravity as shown in the Figure 3. Its elements are described in Table 1.

<table>
<thead>
<tr>
<th>ACTIVE ELEMENTS</th>
<th>PASSIVE ELEMENTS</th>
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</thead>
<tbody>
<tr>
<td>Load Cells</td>
<td>Bed Frame</td>
</tr>
<tr>
<td>Processing Element</td>
<td>Support Plate</td>
</tr>
</tbody>
</table>

**Table 1. Active & Passive Elements of Real Time Weighing Device**

*Drawback of the patent:* One of the disadvantages of the above patent is that it doesn’t have the real time monitoring of the patient. This pitfall creates a less worthiness of the design and not perfectly suitable for the patient in critical cases.

4.2. **Intelligent hospital bed & operating method.** Invention of intelligent hospital bed facilitates with the cure and the drug administration to the patient. During stay of patient on a bed, staff needs to change the position of patient for cleaning purpose. To perform this action, staff needs to do it manually. Such service sometimes has need for an extended period of time. By performing this, physical posture of the staff may cause back pain problems. The invention of intelligent hospital bed provides facility to do it intelligently as shown in figure, 4.

**Figure 4. The invention of Intelligent Hospital Bed Illustration**
Arrangements of internal elements make it possible to work efficiently, including the following parts.

i) a lower main frame

ii) An upper frame

iii) Plurality of sensors arranged along the mattress capable of measuring the initial force on the point at which the corresponding sensor is arranged.

iv) Data multiplex system is organized with sensors which control servo motors utilized to move the changeable component of the upper frame in a way that a sensor perceives a signal of movement in real time, a servo motor linked with a related sensor moving one of the changeable parts of the mentioned upper frame is put into action. Then such a sensor produces pressure images of the object which are evaluated in real time with particular intelligent software supported an automatic learning and image processing techniques for the purpose of interpretation to get even very little movements of the object [11]. The Table 2 indicates the active and passive elements in the bed.

<table>
<thead>
<tr>
<th>ACTIVE ELEMENTS</th>
<th>PASSIVE ELEMENTS</th>
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</thead>
<tbody>
<tr>
<td>Plurality of Sensors</td>
<td>Upper &amp; Lower Main Frames</td>
</tr>
<tr>
<td>Data Multiplexing System</td>
<td>Servo Motors</td>
</tr>
<tr>
<td>Intelligent Software</td>
<td>Internal Wirings</td>
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</tbody>
</table>

*Drawback of the patent:* The patent, no doubt, is providing help in the changing of a patient’s position according to the need of a patient situation at that time but the smart way of dealing in some critical cases is missing such as if a patient is in hypotension or in hypertension system need to generate an emergency alarm by sensing the patient’s current medical conditions and provide the changing in position initially to provide assistance to make the position up or down respectively in both cases mentioned above. For example, if a patient with secretions and fits then there is a need to change in tilted position similarly if a patient is in hypertension, then there is a need to keep the patient’s head up at the 45 degree. A patient requires straight position in hypotension.

4.3. Patient support overload or obstruction detection. Hospital beds comprising of many tilt positions depending upon the requirements of the bed posture during treatment. Backrest with prone and raised positions tilted as per need of the patient. Such tilt positions organized electrically by one or more actuators technically. By using actuator sensor, bed is technically controlled by such sensors and generates an alarm while having any obstruction or overloading at the backrest region of the bed. As shown in the figure 5 [12].

*Figure 5. Patient Support Overload Detection Illustration*
The active and passive segments in the patent are mentioned in Table 3.

<table>
<thead>
<tr>
<th>ACTIVE ELEMENTS</th>
<th>PASSIVE ELEMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backrest Sensor</td>
<td>Bed Frame</td>
</tr>
<tr>
<td>Actuator Sensor</td>
<td>Controller With Actuator</td>
</tr>
</tbody>
</table>

**Drawback of the patent:** This patent is no doubt provides the safety for the patient as well as the hospital bed, but it is precisely covered the safety of the bed. It should be that intelligent that also covers the entrapment issues while the patient is unconscious. Issues of entrapment are one of the basic problems while the patient needs more and more care from healthcare professionals. So the bed should be that smart enough to overcome above mentioned challenge. One can use actuator sensor in the same manner to detect the obstruction (obstruction of any kind like if a cable of a patient monitor gets stuck between the gap areas of bed) when this condition occurs an alarm will generate and a system gets shut in order to prevent the system of bed.

In the light of thorough research, it is highly required to propose a compact solution as hardware (patient bedding or module) for ease of a patient’s treatment, record, monitoring. Also, the patient bedding should give ergonomics touch for each of treatment by the paramedical staff. The next section describes the proposal of such a solution as the Emergency Patient Bedding System (EPBS).

4.4. **Tele-Link.** Experts are with *Telemedicine mobile system* with the aim to allow them to patients from the moment they turn up at the critical center. As shown in the figure 6, one can easily see that the tele-link is individually connected with the patient. Also it consumes extra space, labor and portability issues along with the patient.

![Figure 6. Image Courtesy of In Touch Technologies](image)

There is lack of technological aid challenges on a hospital bed in terms of emergency for example

- No patient’s continuous monitoring is integrated with a bed to record and monitors the patient’s vital data
- Patient’s data can’t be communicated within the single system.
- Life threatening devices aren’t embedded to a bed to support in case of urgent need

5. **Proposed design of Emergency Patient Bedding.** From the above discussion, it is evident that a patient bed / stretcher need to be designed in form of a contiguous system. This is tantamount to accommodate the emerging needs of the doctors, patient and the relationship between two sides. Hence, to design an innovative patient bedding system and to achieve ergonomics in it, we compile surveys of hospital, patient and
healthcare professionals. In this paper, we not only propose an EPBS but also, manage to lineup the feasibility analysis of the same.

Proposed design of the EPBS is indeed a bottom-up drill approach as it can be with the devices integrated with the bed as particular and measured. We keep the standards of the Food and Drug Administration (FDA) for avoiding entrapment issues as well as follow the rules of OSHA to avoid certain issues related in terms of ergonomics of bed.

EPBS comprises of two segments and technically its assembly consisting of two main and dynamic parts I) Active II) Passive. In the active region, mainly it consisting of electrodes, a modular system, probes, main processing layer, protective fiber layer. In the Passive part it comprises of two divisions I) Passive Part of Segment 1 and Passive Part of segment 2. In the Passive part of segment 1, mainly it contains Surface technology, a patient monitoring system and control panel of bed. In the passive part of a segment 2 it basically contains the inner assembly of the patient bed. As shown in the figure 7.

5.1 Parameters of Smartness in EPBS. In the figure 8, the top view of the bed has different sections with the desired medical tools for emergency conditions. In the figure 8, there are different sections. Oxygen cylinder is kept near to a patient’s face. In the same section, vomit bowel is kept in case of a patient’s secretions. Design of a patient bedding system for treating the patient smartly within a limited space in order to access the healthcare facilities is the basic task of this project. For the Emergency patient bedding system (EPBS) design, smart hospital is created to stay with the standards of dimensions as well as the needs of the medical devices according to the different patient’s medical conditions. With two segments (Upper & Lower) bed has its distinctiveness with separate portions which can be detachable when needed. The structure of the EPBS would be of perforated metal for durability so that it provides the safety from any electronic interference. Medical devices modules are kept in a position according to the needs of the patients from mild to severe conditions. Also, in life-threatening conditions, devices would provide support to the patient. Examination light, camera and alarm are also integrated at the head part of the bed so that it won’t create any disturbance between the patient to the doctors and paramedical staff. Also, a camera will do observation from all the surrounding of the bed and notice the entire patient’s activity during his/her stay on the bed as shown in the figure 9.

![Figure 7. Active and Passive Components of The Bed](image-url)
5.2. **Analysis of EPBS.** EPBS will be all available for the patients at the door of the hospital. In an emergency, a patient doesn’t need to wait for the triage process nor for administrative procedures.

**Managing Inefficiency In Terms of Patient Delay During ER Treatment.** A patient comes with critical condition in ER, the EPBS is available. From admission to monitoring of a patient’s data, all procedures (assessment, diagnosis, treatment) will be done on the EPBS without any delay. No need to take the conventional methods to treat the patient via paramedical staff.

**Managing inefficiency in terms of Equipment Mishandling.** To avoid the equipment’s malfunctioning and
to save the space around patient, all the physiological parameters can be measured by a single modular system that is integrated within a bed and detachable with the concealed region for different probes at the bed’s frame part. A modular system not only reduce the space around a patient also minimizes the circuitry found in a conventional modular system. A modular system can easily operate. Mishandling by the paramedical staff can overcome in this way as well as equipment safety is for sure.

**Customization & Mobility Assistance.** EPBS can easily move within a hospital as well as to the ambulance. It’s customize characteristic makes it unique as it can continuously measure patients vital data, provides life-threatening treatment and support during mobility.

**Smart Patient Bed.** EPBS holding the smartness in terms of compactness, mobility of bed along with a monitoring, collection of patient’s data and observation of a patient’s condition during critical conditions.

**Managing Uncertainty via Centralized Monitoring System.** EPBS come up with the high tech monitoring environment also integrated with the EPBS in such a way that the patient data is centralized anywhere in the healthcare unit. Speaking alarm indicator is synchronized with the patient physiological parameters (ECG, SPO2, NIBP and HR) so that patient vital can easily under observation over a distance. This smart platform can solve many challenges regarding patient’s safety, security and monitoring.

### 5.3. Ergonomics

Ergonomics is equally important for patient and staff involved in the treatment of the patient. Ergonomics helps to perform tasks with ease and without creating unnecessary inconveniences for the patients during his / her difficult hours of treatment. In the following, we discuss few typical design features.

**Control of workplace investigation.** Discover the obtainable and potential workplace hazards and to seek ways to make them right such hazardous evolution of the activities that are done in the working environment involves certain parameters that are at risk of pain or injury that may involve missing of patients medical data, treatment responsibilities, patient position over bed, entrapment issues. EPBS will be responsible for taking care of such issues with the designed parameters in the upper and lower segments of the smart bedding system.

**Training on the risk assessment and management.** EPBS provides highly interactive environment with having smart surface technology, continuing medical education and training sessions to junior doctors and paramedics. These features make available for better health care services according to the need of a workplace, injuries, diseases, and the main tasks holding during emergencies.

**Time Management.** In the context of a patient with EPBS this includes alerts generated by the EPBS on preset timings and to give medicines to the patients provides a high level of care along with the time management. Additionally, a reminder of visits by a doctor to the patient is on time is noticed.

**Hardware Interfacing Communication (Bluetooth, WI-FI, 3G, 4G networks).** By having communication link via hardware tools such as mobile phones, telephones, central work stations certain issues can be observed and maintain via video conference link or tele-link to improve patient care by enabling medical professionals to increase effectiveness by giving patients save, easy and rapid access. Patient can have the tele-link at the time of need if medical experts aren’t available at the critical situation. EPBS can save many mishaps expectedly done by paramedics or junior doctors by taking the experts in an interactive mode opinion at the time of urgent need.

**Standard Protocols.** Objective to accomplish for standard protocols is to set point layout for working to specialized medical team members, administrators, paramedical personals, junior doctors, patient care as well
as working of other diverse departments and divisions of the healthcare industry. To follow the main theme of the preset points for patients during emergencies is necessary to carry out in a hospital environment. Points to follow under protocols are including: Notes and evolution, admissions, procedure notes, discharges, sign outs, death/Expirations, occupational risks, accountability, ethical Issues, confidentiality of a patient’s data, senior consultation and consultations from other Departments / Urgent Scans with the pre designed rules in the standard protocols. EPBS efficiently handles these protocols as every procedure taken by the healthcare professional will be recorded and signature by the staff.

6. Full Time Equivalent (FET). According to World Health Organization, the nurses are responsible for taking care of individuals, families and groups to aim certain goals within the challenging context of the environment in which they are working and living. It’s due on them to promote and maintain health services as well as to prevent illness of health of an individual with the proper planning and implementation of care during illness.

It is claimed that nurses have the standard working of 37.5 hours [13]. This means they have to give 7.5 hours a day in five days in a week, the EPBS can work well-organized manner for the nurses. To utilize services by the nurses in terms of time saving as well as performance by the nurses will be increased in patient attending duration. Moreover, the entire patient’s data will be saved within the memory attached to the digital system of the EPBS. Hence less paper work will be required and a large amount of data can be saved and easily accessed within the system of EPBS.

7. Conclusion. Emergency Patient Bedding System for Smart Hospitalization (EPBS) can hold tremendous advantages for the patient from monitoring to treatment prospective during the emergency conditions. In addition, EPBS also covers the capability of providing light weight, a smart patient bed for ED patients. The distinctive arrangement of active and passive parts of a modular design makes it exclusive, multipurpose and convenient for the patient as well as for healthcare providers. In addition, the design features of EPBS are compared to a number of recent but relevant European patents in this paper and improved the existing patents to some extents in comparison with EPBS according to the challenges mentioned in this paper following under the rules of Food and Drug Administration (FDA) to improve to some extent the accuracy of monitoring, sensitivity of patient treatment with the analysis based is performed on the basis of nurses' manual labor Full Time Equivalent (FTE), provides portability and customization of the system along with the patient.

REFERENCES


INVESTIGATION & DEVELOPMENT OF VOICE BASED VEHICLE-2-VEHICLE COMMUNICATION SYSTEM TO ANTICIPATE THE VIDEO BASED VEHICLE-2-VEHICLE COMMUNICATION SYSTEM PROBLEMS

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ABSTRACT. The research work is investigating and developing a Voice based Vehicle-to-Vehicle (V2V) communication system to overcome the problems of video based V2V communication system. The Voice based V2V communication system enable a vehicle to predict and react to the different driving situations and then instantly warn the drivers using speech based warnings to avoid a possible accidents and deadly collisions as it has been investigated that video based accident warring systems are danger by their selves and creating distractions for drivers. The practical bed for Voice based V2V communication system has been proposed. For this purpose a specialized hardware has been employed. The proposed system is then tested in field for different road crash scenarios and its performance has been evaluated. It has been found that voice based systems can avoid efficiently road accidents as compare to the video based V2V communication systems. Two types of testing have been done to prove the efficiency of voice based V2V communication system. In first testing phase the functionality of voice based V2V communication system has been evaluated. After collecting data from field tests 2nd type of testing has been done using C# based simulator. The performance of voice based and video based V2V communication system has been compared for T and Y junctions. The simulation results show the dominance of voice based V2V communication system over video based V2V communication system.

Keywords: Audio, Collision avoidance, Vehicle-Vehicle Communication, Video, T-Junction, Y-Junction

1. Introduction. In 2009 a report was published by world health organization, which declares road accidents as 9th major reason of deaths in the world. The report shows that only in 2009, 1.27 million died due to the
road accidents [1]. To decrease this enormous ratio of deaths researchers started work on technology, which makes vehicles able to communicate with each other to avoid road accidents by exchanging information about their speeds, locations and headings. This research field is known as Vehicle–2-Vehicle (V2V) communication system [2]. In all technology advance countries like USA, Japan, and European countries, V2V communication system is in development phase. But in Pakistan this research area is very new and very few researchers are working in this field. V2V is a subfield of Intelligent Transport System (ITS). ITS is a very hot research area and the aim of this field is to improve the road commuters safety and comfort during driving [2].

In V2V communication system, vehicles are equipped with communication technology and on board sensors like ultrasonic radars and/or GPS receivers and are able to exchange their speeds, headings and locations to evade possible collisions. It helps passengers and drivers to increase their life security. V2V communication system also helps drivers to save their time by avoiding road Jams by having road Jams alerts. [3]. Vehicles equipped with audio/video gadgets help the drivers to make their decisions. But it has been reported that video displays can create distraction for drivers and can be create dangerous situations for drivers and passengers. Also it has been found from a survey that drivers take long time to decide about which one safety manoeuvre is suitable to evade road accident due to video displays. In [5] it has been elucidated that video gadgets increase the driver reaction time to avoid the road accidents. However a quick response is necessary by the driver to avoid the possible collisions [4]. In this research paper we have first proved that video based V-2-V communication system creates distraction for the drivers. Then we have proposed a voice based V-2-V communication system test bed. Infield experiments and simulation results proved the effectiveness of proposed system. The remaining paper is arranged as follow. In section II drawbacks of video based V2V communication system are discussed. Section III elucidated the utilization of voice in V2V communication system. Section IV presents our proposed voice based V2V communication test bed. Section V discusses simulation and result. Performance analysis of proposed solution is made in section VI. In the last section VII concludes the paper.

2. Draw Backs Of Video Based V2V Communication System. A video based V2V communication system can be explained as that all vehicles are equipped with on-roof cameras and video sending/receiving hardware and software. The proceeding car sends video alerts to the neighbouring cars. The video contains information about the road hazards, road accident or road jam.

The concept of video based information system is not new and it is with us from many decays. But now new advancements in technology have made it far better than old video based information systems. To decrease the road accident possibility many V2V communication systems have proposed video based driver alert systems. The V2V com systems are using mostly IEEE 802.11 g/n for the exchange of video information.

To prove the driver distraction during the utilization of video based V2V communication system we performed infield tests. For this purpose a C# based video based V2V communication application was developed. The experimental topology includes two vehicles, one act as a server vehicle and other as a client vehicle. Server vehicle takes the video using 16 megapixel camera whereas client vehicle captures video data from the server and display it on the video LCD installed in the front of the driver. After deploying video based V2V test bed we conducted in field tests and surveys. For this purpose we select a technical crew, consist of five people. Two were sitting in server vehicle and two were in client vehicle. One other person was acting as a supporting staff.

In figure 1 it can be seen clearly that in daylight even a highest resolution cameras are failed to give the clear view of traffic flow or any road hazard. Drivers have to serve more time on video displays to understand the possibility of any dangerous situation.

These on road experiments of video based IVC system proved that, there is a need of some sort of new solution which relaxes the drivers from paying their attention on these gadgets and help them to achieve secure and comfortable driving. In figure 1 it can also seen clearly that the driver on client side vehicle is not able to see the results of video stream sent from the server side vehicle. The reason is sunlight effect.
In Video based IVCs, drivers have to pay attention towards video displays which can create a dangerous situation itself. Video based V2V communication system Driver has Problem to manage multiple tasks like see video display, speed, and tracking other vehicles etc.

3. **When We Used Voice Based Warnings.** When driver drive a car he/she manage multiple tasks, e.g. steering, monitoring speed and changing gears through visual channel then sounds channel can be used for intelligent warnings. Omni directional antennas are used for to transfer information for voice communication. According to [6], sound warnings require little directional search and responses tend to be faster than visual displays. Authors also noted that human’s eyes have missing blocking ability as compared to ears, because he cannot shut his ears unlike the eyes.

4. **Proposed Voice Based Vehicle To Vehicle Communication Test Bed.** Our Voice based V2V communication system has capability to share ((long, lat), speed, and heading) of vehicle to evade the accident possibilities. We develop this system to overcome the above mentioned problems of video based V2V communication system. The communication standard which we used as a communication medium is IEEE 802.11 N. The functionality of V2V test bed is given as under.

The position of vehicles has been tracked using GPS (Global Positioning System) receiver. For this purpose Garmin eTrex legend GPS receiver has been utilized. Specialized V2V communication (peer to peer) software has been coded in Visual studio .NET using C# language. GPS (Global Positioning System) is the system able to show us our exact position on the Earth anytime, in any weather and in anywhere.

The longitude and latitude of both vehicle V1 and vehicle V2 are exchanged between each other using specialized GPS hardware mentioned above. To test the functionality of a proposed test-bed a wireless network of 3 kilometres range was deployed. For this purpose Wi-Fi (IEEE 802 n) TL-WA801ND wireless access point of TP-Link company has been used. The TP-LINK wireless N access point TL-WA801ND is design or expands a scalable high speed wireless network.

After exchange of latitude and longitude between both vehicles distance, speed and heading of both vehicles computed in next step to measure the rate of expected collision danger.

On the bases of speed, distance, and heading the system will check the distance between two vehicles and it is less than 5m then it check the different directions either it is left, right, front or back side so it will generate audio based warning tone for driver to safe vehicles.

The alarm/audio warning is generated three times. After two warnings if driver does not response then a specialized module has been introduced in our test-bed and after third warning the ABS (automatic braking system) will be activated.

5. **Results Of Test Bed.** Figure 2 shows that Vehicle 1 is connected with vehicle 2 and share latitude and longitude with vehicle 2. The Latitude and Longitude of vehicle 2 is 33.2700 and 73.1331 and Latitude and
Longitude of vehicle 1 is 33.2701 and 73.1331 respectively. Distance between vehicle 1 and vehicle two is 0.0112 km. Whereas speed and direction of vehicle 2 are 10.536 and straight respectively. Speed and direction of vehicle 1 is 40.032 km/h and direction is straight as well according to the angle between both vehicles that is 0.

![Figure 2. Vehicle 1 Is Connected With Vehicle 2](image)

When Vehicle 2 is connected with vehicle 1, it shares its latitude and longitude with vehicle 1 and calculates the distance from vehicle 1. After calculating the speed of vehicle 2, it calculates the direction of vehicle 2, according to the previous calculations. Figure 3 highlights the direction of vehicle 2 which is straight with respect to angle 0.

![Figure 3. Calculation Of Direction By Using Longitude & Latitude.](image)

Figure 4 shows successful communication and calculation of distance, speed, and direction of both vehicles. The next step is generating a voice tone to warn the driver about the possible collision. Figure 3 shows the direction and angle of vehicle 1 that is Right and Left respectively, and the distance is less than the danger threshold, so the voice-based warning for the vehicle 1 is generated which is “Danger from Right side”.
The proposed test-bed was tested in field. Figure 5 is showing research team setting up the test in the open ground. The system was tested in the Mirpur University of Science & technology. An ad-hoc Wi-Fi based network was established between Toyota and a Suzuki car. Two lane protocols was copied in open ground and total 6 team members took part in testing.

6. Performance Analysis Of Voice Based V2V Communication System. For the rigorous analysis of voice based V2V communication system on T and Y junctions a special C# based simulator was designed. Because testing crash scenarios on real roads can lead to the life and financial risk. 5 test cases were performed for the T- junctions and 5 for the Y- junctions. Due to the lack of space we are describing in details only two T-junction and two Y- junction collision scenarios and the effectiveness of proposed solution in avoidance of accidents. However all test results of both T and Y junctions are presented in table 1 and 2.

6.1. Test Case 1(T-Junction). The test case 1(possible collision scenario) is shown in Figure 6 in which Vs (skidding vehicle) is travelling with the speed of 50 km/h and Ts (Target vehicle) is moving with the speed of 50 km/h .The whole simulation for test case 1 works as. Vs is moving on road1 and Ts is moving on road2 of T junction. In this test case it has been supposed that driver of Vs suddenly changes its road due to any of the following reasons like drowsiness or due to tire blast. The collision level presented with yellow color is
showing possible collision. The simulator calculates the distance between both vehicles and then using mathematical formulas calculates the time to collision (TTC) and time to avoidance (TTA). TTC in this case is 1.90 seconds and TTA is 0.771 seconds. Human driver needs 5.678 seconds to avoid this accident using video based emergency alerts, which is not possible in this case. Using audio based V2V communication system time of our crash sensing is 0.493 milliseconds; the possible collision can be avoided.

![Figure 6. T-Junction Test Case 1 Scenario](image)

6.2. **Test Case 2 (T-Junction).** The test case 2 (possible collision scenario) is shown in Figure 7 in which Vs is travelling with the speed of 60 km/h and Ts is moving with the speed of 65 km/h. The whole simulation for test case 2 works as Vs is moving on road1 and Ts is moving on road2 of shown T junction. In this test case it has been supposed that driver of Vs suddenly changes its road due to any of the following reasons like drowsiness or due to tire blast. The collision level presented with yellow color is showing possible collision. The simulator calculates the distance between both vehicles and then using equations 1 to 3 calculates the time to collision (TTC) and time to avoidance (TTA). TTC in this case is 2.37 seconds and TTA is 1.43 seconds. Human driver needs 5.678 seconds to avoid this accident using video based emergency alerts, which is not possible in this case. Using audio based V2V communication system time of our crash sensing is 0.493 milliseconds; the possible collision can be avoided.

![Figure 7. T-Junction Test Case 2 Scenario](image)

The results of T-Junction tests are presented in table 1. The average TTA is 1.60 seconds. It means driver reaction time is 1.60 seconds on T-Junctions and it is 4.078 seconds faster than video based V2V communication system[5].

Intersection where three roadways connect and none of the roadways continue across the others. The roadways form a Y junction.
<table>
<thead>
<tr>
<th>Test</th>
<th>Distance</th>
<th>V speed</th>
<th>T speed</th>
<th>TTA</th>
<th>TTC</th>
<th>Sound</th>
<th>Video</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>26.41</td>
<td>50</td>
<td>50</td>
<td>0.771</td>
<td>1.90</td>
<td>0.493</td>
<td>5.678</td>
</tr>
<tr>
<td>2</td>
<td>39.62</td>
<td>60</td>
<td>65</td>
<td>1.43</td>
<td>2.37</td>
<td>0.493</td>
<td>5.678</td>
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<td>100</td>
<td>2.60</td>
<td>3.26</td>
<td>0.493</td>
<td>5.678</td>
</tr>
<tr>
<td>4</td>
<td>116.49</td>
<td>100</td>
<td>80</td>
<td>-</td>
<td>-</td>
<td>0.493</td>
<td>5.678</td>
</tr>
<tr>
<td>5</td>
<td>59.41</td>
<td>80</td>
<td>90</td>
<td>1.61</td>
<td>2.67</td>
<td>0.493</td>
<td>5.678</td>
</tr>
</tbody>
</table>

Table 1. Test Results Of Proposed System ON T-Junction

6.3. **Test Case 1 (Y-Junction).** The test case 3 (possible collision scenario) is shown in Figure 8 in which Vs is travelling with the speed of 80 km/h and Ts is moving with the speed of 90km/h. The whole simulation for test case 1 of Y junction works as Vs is moving on road1 and Ts is moving on road2 of Y junction. In this test case it has been supposed that driver of Vs suddenly changes its road due to any of the following reasons like drowsiness or due to tire blast. The collision level presented with green colour is showing safe scene.

![Figure 8. Y-Junction Test Case 1 Showing Safe Scenario](image)

6.4. **Test Case 4 (Y-Junction).** The test case 2 (possible collision scenario) is shown in Figure 9 in which Vs is travelling with the speed of 80 km/h and Ts is moving with the speed of 90km/h.

![Figure 9. Y-Junction Test Case 2 Scenario](image)

The whole simulation for test case 2 works as Vs is moving on road1 and Ts is moving on road2 of Y junction. In this test case it has been supposed that driver of Vs suddenly changes its lane due to any of the following reasons like drowsiness or tire blast. The collision level presented with yellow colour is showing possible
The simulator calculates the distance between both vehicles and then using equations 1 to 3 calculates the time to collision (TTC) and time to avoidance (TTA). TTC in this case is 2.73 seconds and TTA is 1.67 seconds. Human driver needs 5.678 seconds to avoid this accident using video based emergency alerts, which is not possible in this case. Using audio based V2V communication system time of our crash sensing is 0.493 milliseconds; the possible collision can be avoided.

The results of Y-junctions tests are presented in table 2. The average TTA is 1.31 seconds. It means driver reaction time is 1.60 seconds on Y- junctions and it is 4.368 seconds faster than video based V2V communication system [5].

<table>
<thead>
<tr>
<th>Test</th>
<th>Distance</th>
<th>V speed</th>
<th>T speed</th>
<th>TTA</th>
<th>TTC</th>
<th>Sound</th>
<th>Video</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>26.41</td>
<td>50</td>
<td>50</td>
<td>0.771</td>
<td>1.90</td>
<td>0.493</td>
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<tr>
<td>2</td>
<td>39.62</td>
<td>60</td>
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<td>1.43</td>
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<td>0.493</td>
<td>5.678</td>
</tr>
<tr>
<td>3</td>
<td>77.10</td>
<td>85</td>
<td>100</td>
<td>2.60</td>
<td>3.26</td>
<td>0.493</td>
<td>5.678</td>
</tr>
<tr>
<td>4</td>
<td>116.49</td>
<td>100</td>
<td>80</td>
<td>-</td>
<td>-</td>
<td>0.493</td>
<td>5.678</td>
</tr>
<tr>
<td>5</td>
<td>59.41</td>
<td>80</td>
<td>90</td>
<td>1.61</td>
<td>2.67</td>
<td>0.493</td>
<td>5.678</td>
</tr>
</tbody>
</table>

Table 2. Test Results Of Proposed System ON T-Junction

7. Conclusion Video based V2V communication systems can cause distraction for the drivers instead of facilitating them. Our proposed voice based V2V communication test-bed has proven its efficiency and can be used as a guideline for the automakers which are working on V2V communication enabled vehicles.

REFERENCES


ABSTRACT. Microarray technology helps in the identification of new genes in our body. This technology provides the fundamental aspects underlining our life by discovering the genetic causes of differences occurring in the functioning of the human body which is unknown before. For example, a researcher might wish to know the effect of certain treatment by examining the differences in gene activity between treatment and control samples. But the detection of which genes that contribute to certain treatment using statistical test is a problem because the number of samples is smaller than number of variables. Hence, we proposed three methods to help researchers to detect differential gene sets using shrinkage covariance matrix combined with Hotelling’s $T^2$ statistic. The performances of the proposed methods were assessed using simulation study. Shrinkage covariance matrix approach shows a promising result for detection of differentially expressed gene sets as compared to other methods.

Keywords: Hotelling’s $T^2$; gene set analysis; shrinkage covariance matrix

1. Introduction. Microarray technology is one of the significant achievements in biotechnology history and developed during the second half of the 1990s. An early article defining the application of DNA microarray technology to expression analysis was published in 1995 by Mark Schena and his colleagues at Stanford University [1]. In broadest term, microarray technology may be defined as a high-throughput technology to examine the parallel gene expressions levels of thousands of genes at the same time. Precisely, microarray places an orderly arranged of many gene sequences in a grid. The grid that is often used is a glass slide. In general, a single microarray slide may contain thousands of spots. Each spot signifies a single gene and all of them representing the entire set of genes of an organism [2]. The technology has made a novelty discovery since its development and caught many researchers’ attention. A number of researchers admit that the breakthrough of this technology is a vital research instrument. The widespread of microarray technology is largely due to its ability to give the quick results, relatively easy to use and precisely perform simultaneous analysis of thousands of genes in a massively parallel manner to researchers in one experiment, hence providing valuable knowledge on gene interaction and function [3].

The challenge of understanding the microarray gene expression has led to the development of new tools in the field of statistics for the analysis of gene expression data such as for the detection of differentially expressed genes between different biological states. Generally, the purpose of differential gene expression
The identification of changed gene expression study is also known as differential gene expression.

This study is to focus on differential gene expression in gene set analysis [4] and detect the differential gene sets that produce different expression levels between samples. The method is introduced in Section 3 after a description on the properties of Hotelling’s $T^2$ statistic in Section 2. The performance of the proposed method is evaluated in Section 4 through simulation compared with existing methods.

2. Hotelling's $T^2$ Statistic. The Hotelling’s $T^2$ is named after Harold Hotelling in 1931, who developed the test statistic as a natural generalization of $t$-statistic. The test statistic develops in multivariate statistic which tests for univariate problems would make use of $t$-statistic. On the contrary, the $t$-statistic disregards for the correlation structure. This classical test statistic solves the univariate procedure problem and takes into account the correlation relationship between data.

The acceptable of this statistic in microarray analysis was due to the characteristics’ suitability with the gene expression background of data. This method took into account the multidimensional structure of microarray data. The information for gene interactions was utilized to allow for finding genes whose differential expressions which cannot detectable by univariate methods. The Hotelling’s $T^2$ statistic gave a prediction rate that is at least as good as univariate procedure including the $t$-test. Furthermore, the test statistic is found to be more sensitive compared to the univariate $t$-statistic for the detection of the gene with certain conditions and summarized the Hotelling’s $T^2$ to be more efficient [5].

Let $n$ represent the number of slides/samples, and $p$ was the total number of genes in a gene set. Let $X_{ki}$ be the expression level for gene $i$ (where $i=1, \ldots, p$) of sample $k$ (where $k=1, \ldots, n$) from the treatment group and $X_{kj}$ be the expression level for gene $j$ (where $j=1, \ldots, p$) of sample $k$ (where $k=1, \ldots, n$) from the control group. The expression level vectors for samples $k$ from the treatment and control groups can be expressed as $X_i = (X_{ki1}, \ldots, X_{kip})^T$ and $X_j = (X_{kj1}, \ldots, X_{kjp})^T$, respectively. The unknown population covariance matrix, $\Sigma$, was typically estimated by the sample covariance matrix, $S_{ij}$, for many situations. The sample covariance matrix, $S_{ij}$, was defined as:

$$S_{ij} = \frac{1}{n-1} \sum_{k=1}^{n} (X_{ki} - \bar{X}_i)(X_{kj} - \bar{X}_j)$$

where $X_{ki}$ and $X_{kj}$ is the $k$-th observation of the variable $X_i$ and $X_j$ respectively. The mean, $\bar{X}_i$, was defined as:

$$\bar{X}_i = \frac{1}{n} \sum_{k=1}^{n} X_{ki}$$

and the $\bar{X}_j$ is the mean for $X_{kj}$. Suppose we have $n_1$ and $n_2$ observations from two groups, such that $n_1 + n_2 = n$. Then, consider testing the null hypothesis that the two groups have equal multivariate means versus the appropriate alternative hypothesis, $H_0: \mu_1 = \mu_2$ against $H_1: \mu_1 \neq \mu_2$. The test statistic based on Hotelling’s $T^2$ was defined as:

$$T^2 = (n_1 + n_2)(n_1 n_2)^{-1} \sum_{i=1}^{p} (n_1 + n_2)^{-1} \sum_{k=1}^{n_1} (X_{ki} - \bar{X}_i)(X_{kj} - \bar{X}_j)$$
For two subsamples, the pooled sample covariance matrix, $S$, was calculated as:

$$S = \frac{1}{n-2} \left( (n_1 - 1)S^{(1)} + (n_2 - 1)S^{(2)} \right)$$  (4)

The sub-sample covariance matrix, $S^{(1)}$ and $S^{(2)}$ were defined as in equation (1). The maximum likelihood estimator was employed to obtain the sample covariance matrix. This estimator was unbiased when the number of samples is larger than the number of variables. As a result, the sample covariance matrix in Hotelling’s $T^2$ poses the singularity problem when $p$ is near to $n$ and it is not invertible for $p$ to exceed $n$. Thus, it will normally cause problem in hypothesis making as the test statistic become unstable.

3. **Proposed Shrinkage Covariance Matrix.** The proposed methods provide an alternative to estimate covariance matrix using shrinkage method based on the definition of [6, 7, 8, 9]. The approach was adapted to Hotelling’s $T^2$ and was extended to gene set analysis in microarray study. Three different shrinkage methods are proposed and they are termed as ShrinkA, ShrinkB and ShrinkC for the rest of this study. General algorithm for the three proposed methods is outlined below:

**Step 1:** Normalize and transform data.

**Step 2:** Compute the shrinkage target.

**Step 3:** Search for the optimal shrinkage intensity by using related definition.

**Step 4:** Replace the sample covariance matrix in Hotelling’s $T^2$ by using the results obtained in **Step 2** and **Step 3** above.

**Step 5:** Calculate the Hotelling’s $T^2$ statistic for each of all the gene sets measured in dataset.

**Step 6:** Permute samples for each gene set and declared as significant gene sets according to the permutation testing.

The proportion of each component in shrinkage estimation is:

$$S_{\text{shrink}} = \alpha T_{ij} + (1 - \alpha)S_{ij}$$  (5)

where shrinkage target, $T_{ij}$ and shrinkage intensity, $\alpha$ is defined as:

$$\alpha = \max \left\{ 0, \min \left\{ \frac{\kappa}{n} - 1 \right\} \right\}$$  (6)

where $\kappa$ is a constant and $n$ is the number of samples. The constant $\kappa$ could be written as:

$$\kappa = \frac{\pi - \rho}{\gamma}$$  (7)

where $\pi$ is the sum of asymptotic variances of the entries of the sample covariance matrix scaled by $\sqrt{n}$. $\rho$ is the sum of asymptotic covariances of the entries of the shrinkage target with the entries of the sample covariance matrix scaled by $\sqrt{n}$. $\gamma$ is the measurement of the misspecification of the (population) shrinkage target. If $\kappa$ is known, $\kappa/n$ is used as the shrinkage intensity in practice. Unfortunately, $\kappa$ is unknown, thus a consistent estimator for $\kappa$ by $\hat{\kappa}$ is based on consistent estimators for the three estimators $\pi$, $\rho$ and $\gamma$ that is $\hat{\pi}$, $\hat{\rho}$ and $\hat{\gamma}$. The proposed methods will ensure the covariance matrix always a positive definite and well defined. Table 1 shows the shrinkage target and shrinkage intensity for ShrinkA, ShrinkB and ShrinkC.
<table>
<thead>
<tr>
<th>Type</th>
<th>Shrinkage Target</th>
<th>Shrinkage Intensity</th>
</tr>
</thead>
<tbody>
<tr>
<td>ShrinkA</td>
<td>( T_{Ai,j} ) = ( \frac{s_{ij} \text{ if } i = j}{\sqrt{s_{ii} s_{jj}}} \text{ if } i \neq j )</td>
<td>( \hat{\kappa}_A = \frac{\hat{\pi} - \hat{\rho}_A}{\hat{\tau}_A} )</td>
</tr>
<tr>
<td>ShrinkA</td>
<td>( \hat{\pi} = \frac{1}{n} \sum_{k=1}^{n} (X_{ki} - \bar{X}<em>i)(X</em>{kj} - \bar{X}<em>j) - S</em>{ij} )</td>
<td>( \hat{\rho}_A = 0 )</td>
</tr>
<tr>
<td>ShrinkA</td>
<td>( \hat{\tau}<em>A = \sum</em>{i=1}^{n} \sum_{j=1}^{n} (S_{ij})^2 )</td>
<td></td>
</tr>
<tr>
<td>ShrinkB</td>
<td>( T_{Bi,j} ) = ( \frac{s_{ij} \text{ if } i = j}{\sqrt{s_{ii} s_{jj}}} \text{ if } i \neq j )</td>
<td>( \hat{\kappa}_B = \frac{\hat{\pi} - \hat{\rho}_B}{\hat{\gamma}_B} )</td>
</tr>
<tr>
<td>ShrinkB</td>
<td>( \hat{\rho}<em>B = \frac{1}{p} \sum</em>{i=1}^{p} \hat{\rho}<em>{ii} + \sum</em>{i=1}^{p} \sum_{j=1}^{p} \frac{1}{2} \left( \frac{S_{ij}}{S_{ii}} \hat{\rho}<em>{ii,j} + \frac{S</em>{ij}}{S_{jj}} \hat{\rho}_{j,i} \right) )</td>
<td></td>
</tr>
<tr>
<td>ShrinkB</td>
<td>( \hat{\pi}<em>i = \frac{1}{n} \sum</em>{k=1}^{n} (X_{ki} - \bar{X}<em>i)^2 - S</em>{ii} )</td>
<td></td>
</tr>
<tr>
<td>ShrinkB</td>
<td>( \hat{\rho}<em>{ii,j} = \frac{1}{n} \sum</em>{k=1}^{n} (X_{ki} - \bar{X}<em>i)^2 - S</em>{ii} (X_{kj} - \bar{X}<em>j) - S</em>{ij} )</td>
<td></td>
</tr>
<tr>
<td>ShrinkB</td>
<td>( \hat{\rho}<em>{j,i} = \frac{1}{n} \sum</em>{k=1}^{n} (X_{kj} - \bar{X}<em>j)^2 - S</em>{jj} (X_{kj} - \bar{X}<em>j) - S</em>{ij} )</td>
<td></td>
</tr>
<tr>
<td>ShrinkB</td>
<td>( \hat{\gamma}<em>B = \sum</em>{i=1}^{n} \sum_{j=1}^{n} (f_{ij} - S_{ij})^2 )</td>
<td>( f_{ij} = \sqrt{S_{ii} S_{jj}} )</td>
</tr>
<tr>
<td>ShrinkC</td>
<td>( T_{Ci,j} ) = ( \frac{s_{ij} \text{ if } i = j}{\sqrt{s_{ii} s_{jj}}} \text{ if } i \neq j )</td>
<td>( \hat{\kappa}_C = \frac{\hat{\pi} - \hat{\rho}_C}{\hat{\gamma}_C} )</td>
</tr>
<tr>
<td>ShrinkC</td>
<td>( \hat{\rho}_C = \hat{\rho}_B )</td>
<td></td>
</tr>
<tr>
<td>ShrinkC</td>
<td>( \hat{\gamma}<em>C = \sum</em>{i=1}^{n} \sum_{j=1}^{n} (f_{ij} - S_{ij})^2 )</td>
<td>( f_{ij} = \tau \sqrt{S_{ii} S_{jj}} )</td>
</tr>
</tbody>
</table>

4. **A Simulation Study.** In order to evaluate the performance in the shrinkage covariance matrix, simulated data sets were developed by introducing the inter group correlation structure into the simulated data to imitate the multivariate structure in gene set. For a better interpretation of multivariate structure in gene set, the correlation matrix was used. The multivariate normal distribution data were generated using `mvrnorm` function in the `MASS` package. The generated data were assumed as correlation matrix using `rcorrmatrix`
function in the *clusterGeneration* package. All programming codes and packages were written in *R* language (http://cran.r-project.org/).

The separation between the two groups measured the difference in the means of the multivariate normal distributions where \( \mu \) was the vector of gene means and \( \Sigma \) was the covariance matrix of the gene expression on the following density function:

\[
fx(x_1, \ldots, x_p) = \frac{1}{(2\pi)^{p/2} |\Sigma|^{1/2}} e^{-(x-\mu)^T \Sigma^{-1} (x-\mu)/2}
\]  

(8)

The gene set variances were set at one and assumed that the number of samples for both groups is equal. Each case was permuted 10000 times and 100 data sets were generated. The simulated data sets were set to explore the performance of proposed method for two hypotheses:

Case 1: No difference (separation) exists between two groups (null hypothesis)

Case 2: There was difference (separation) exists between groups (alternative hypothesis)

The performance of our approach was evaluated by comparing the results with those obtained from two other methods: (1) by using principal component analysis to solve the high dimensionality problem proposed by Kong et al. [10] denoted as KPCA, and (2) the Regularized Covariance Matrix Approach (RCMAT) introduced by Yates and Reimers [11]. The RCMAT is quite similar with our proposed methods but the covariance matrix in Hotelling’s \( T^2 \) is regularized using the following identity matrix to replace the shrinkage target in equation (5):

\[
T_{ij} = \begin{cases} 
1 & \text{if } i = j \\
0 & \text{if } i \neq j
\end{cases}
\]

(9)

Since the shrinkage target was penalized to zero and the diagonal to one, consequently information from the covariance matrix is not fully utilized. The shrinkage intensity, \( \alpha \) in equation (6) was reduced from 1 towards 0 by increments of 0.01 and the optimum shrinkage intensity would be achieved when the smallest positive eigenvalue was bigger than the reciprocal of the number of genes in the gene set. The optimum intensity would ensure the covariance matrix is a positive definite and invertible. RCMAT and KPCA were comparable with our approach since they were also using Hotelling’s \( T^2 \) for testing differentially expressed gene sets.

4.1 Case 1: No difference (separation) exists between two groups (null hypothesis)

A simulation study was performed with parameter combinations under the null hypotheses as display in Table 2. A total of four parameter combinations consisted of two default setting and two changed settings were examined. The default setting used major of axis of separation and no amount of separation at all. For each of the parameter combinations in this simulation study, parameters setting were changed relative to the default setting:

i. Increasing number of variables of 10 and 30;
ii. Increasing number of sample sizes of 10, 20 and 50;
iii. A major axis of variation and;
iv. No amount of separation.

The above parameter combinations were employed to monitor the performance when the three conditions are applied: \( n > p \), \( n=p \) and \( n<p \). The distribution of \( p \)-values was evaluated when no difference exists between the groups in the mean of expression measures of genes in the gene set. In a two-group comparison, each \( p \)-value between 0 and 1 was equally likely. The distribution of \( p \)-values for ShrinkA, ShrinkB, ShrinkC, RCMAT and KPCA when no difference was detected between the two groups is displayed. All the 100 ranked \( p \)-values of the simulation results were displayed using QQ-plot against the uniform distribution.
TABLE 2
The parameter combinations under null hypothesis

<table>
<thead>
<tr>
<th>Parameter combinations</th>
<th>No. of variables</th>
<th>Sample size</th>
<th>Axis of variation</th>
<th>Amount of separation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10</td>
<td>10</td>
<td>Major</td>
<td>0.00</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
<td>20</td>
<td>Major</td>
<td>0.00</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
<td>50</td>
<td>Major</td>
<td>0.00</td>
</tr>
<tr>
<td>4</td>
<td>30</td>
<td>10</td>
<td>Major</td>
<td>0.00</td>
</tr>
<tr>
<td>5</td>
<td>30</td>
<td>20</td>
<td>Major</td>
<td>0.00</td>
</tr>
<tr>
<td>6</td>
<td>30</td>
<td>50</td>
<td>Major</td>
<td>0.00</td>
</tr>
</tbody>
</table>

4.2 Case 2: There is difference (separation) exists between groups (alternative hypothesis) We focus on the power of our proposed methods and discover that our simulation study spans both highly significant to clearly insignificant separations as determined by the mean nominal $p$-value. The simulated data for twelve parameter combinations were generated under alternative hypothesis as summarized in Table 3. Four parameter settings, which included one default setting and three altered settings were studied. For presentation, the default setting used only 20 samples. Specifically, the simulation setup for each of the parameter combinations with three variables were altered relative to the default setting was as follows:

i. Increasing number of variables of 10 and 30;
ii. Number of samples is 20;
iii. Different axis of variation of a major axis of variation and a minor axis of variation and;
iv. Increasing amount of separation between groups of 0.25, 0.50 and 1.00.

Such parameter combinations above were generated to monitor the performance when the two conditions were applied: $n>p$ and $n<p$. Then, all results of the cumulative distribution function of nominal $p$-values were observed.

TABLE 3
The parameter combinations under alternative hypothesis

<table>
<thead>
<tr>
<th>Parameter combination</th>
<th>No. of variables</th>
<th>Sample size</th>
<th>Axis of variation</th>
<th>Amount of separation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10</td>
<td>20</td>
<td>Major</td>
<td>0.25</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
<td>20</td>
<td>Minor</td>
<td>0.25</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
<td>20</td>
<td>Major</td>
<td>0.50</td>
</tr>
<tr>
<td>4</td>
<td>10</td>
<td>20</td>
<td>Minor</td>
<td>0.50</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>20</td>
<td>Major</td>
<td>1.00</td>
</tr>
<tr>
<td>6</td>
<td>10</td>
<td>20</td>
<td>Minor</td>
<td>1.00</td>
</tr>
<tr>
<td>7</td>
<td>30</td>
<td>20</td>
<td>Major</td>
<td>0.25</td>
</tr>
<tr>
<td>8</td>
<td>30</td>
<td>20</td>
<td>Minor</td>
<td>0.25</td>
</tr>
<tr>
<td>9</td>
<td>30</td>
<td>20</td>
<td>Major</td>
<td>0.50</td>
</tr>
<tr>
<td>10</td>
<td>30</td>
<td>20</td>
<td>Minor</td>
<td>0.50</td>
</tr>
<tr>
<td>11</td>
<td>30</td>
<td>20</td>
<td>Major</td>
<td>1.00</td>
</tr>
<tr>
<td>12</td>
<td>30</td>
<td>20</td>
<td>Minor</td>
<td>1.00</td>
</tr>
</tbody>
</table>

4. Results and Discussion. The simulation study was performed using four parameter combinations consisted of major of axis of separation and no amount of separation at all as default settings and two set of variables; 10 and 30 and three different sample sizes; 10, 20 and 50 (refer Table 2 for detail explanation of
parameter combination). The distribution of \( p \)-values was evaluated when no difference existed between the groups in the mean of expression measures of genes in the gene set. Table 4 provides a summary of the mean nominal \( p \)-values of ShrinkA, ShrinkB, ShrinkC, RCMAT and KPCA under the assumption that no difference (separation) exists between two groups (null hypothesis).

**TABLE 4**

Mean nominal \( p \)-values of ShrinkA, ShrinkB, ShrinkC, RCMAT and KPCA with the assumption that no difference (separation) exists between groups.

<table>
<thead>
<tr>
<th>Parameter combinations</th>
<th>Method</th>
<th>Shrink A</th>
<th>Shrink B</th>
<th>Shrink C</th>
<th>RCMAT</th>
<th>KPCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>0.4648</td>
<td>0.4666</td>
<td>0.4698</td>
<td>0.4822</td>
<td>0.4874</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>0.4993</td>
<td>0.5316</td>
<td>0.5094</td>
<td>0.5177</td>
<td>0.5221</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>0.5030</td>
<td>0.5104</td>
<td>0.4962</td>
<td>0.4897</td>
<td>0.5063</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>0.5473</td>
<td>0.5624</td>
<td>0.5398</td>
<td>0.5223</td>
<td>0.5363</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>0.5001</td>
<td>0.4793</td>
<td>0.5009</td>
<td>0.5144</td>
<td>0.5100</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>0.4445</td>
<td>0.4766</td>
<td>0.4430</td>
<td>0.4631</td>
<td>0.4910</td>
</tr>
</tbody>
</table>

From Table 4, the highest mean \( p \)-value when number of variables was 10 and number of samples was 10 or parameter combination 1 was belong to KPCA with \( p \)-value 0.4874. When the condition number of variables was 10 with number of samples was 30 and 50 producing \( n > p \) condition (parameter combination 2 and parameter combination 3), ShrinkB had the highest mean \( p \)-value, 0.5316 and 0.5104 respectively and also when number of variables is 30 and number of samples was 10 (parameter combination 4) was 0.5624. In addition, RCMAT had 0.5144 as the highest mean \( p \)-value when number of variables was 30 and number of samples was 20 (parameter combination 5). The condition with number of variables was 30 and number of samples was 50 (parameter combination 6), the highest mean \( p \)-value once again belong to KPCA with 0.4910.

Table 5 contains the mean nominal \( p \)-values of ShrinkA, ShrinkB, ShrinkC, RCMAT and KPCA under alternative hypothesis (refer Table 3 for detail conditions). When number of variables increased from 10 to 30 with fixed number of samples, the mean \( p \)-value shifted from 0.3261 to 0.3373 for ShrinkA and 0.3362 to 0.3548 for ShrinkC along a major axis of variation and amount of separation is 0.25 (parameter combination 1 to parameter combination 7). On the other word, ShrinkA and ShrinkC exhibited good performance with increasing number of variables with lower mean \( p \)-value. For same conditions, the ability of detection was followed by RCMAT with mean \( p \)-value shifted from 0.3457 to 0.4213, ShrinkB from 0.3866 to 0.0577 and KPCA from 0.4053 to 0.4430.

**TABLE 5**

Mean nominal \( p \)-values of ShrinkA, ShrinkB, ShrinkC, RCMAT and KPCA with the assumption that a difference (separation) exists between groups.

<table>
<thead>
<tr>
<th>Parameter combinations</th>
<th>Method</th>
<th>Shrink A</th>
<th>Shrink B</th>
<th>Shrink C</th>
<th>RCMAT</th>
<th>KPCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>0.3261</td>
<td>0.3866</td>
<td>0.3362</td>
<td>0.3457</td>
<td>0.4053</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>0.4142</td>
<td>0.4738</td>
<td>0.4284</td>
<td>0.4175</td>
<td>0.4764</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>0.3255</td>
<td>0.2656</td>
<td>0.1183</td>
<td>0.1223</td>
<td>0.2395</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>0.2230</td>
<td>0.3547</td>
<td>0.3027</td>
<td>0.2877</td>
<td>0.3459</td>
</tr>
</tbody>
</table>
For the increase of amount of separation to 0.5 and 1.0 along a major axis of variation when number of variables increased from 10 to 30 with 20 number of samples (parameter combination 3 to parameter combination 9 and parameter combination 5 to parameter combination 11), the same situation was also observed with the mean p-values of ShrinkA and ShrinkC were still lower than other methods. We noticed that the detection power of the ShrinkA and ShrinkC method increased as the amount of separation between two groups increased.

From mean p-value, it showed that ShrinkA easily detected the difference (separation) between groups compared to other methods when axis of variation was changed from major to minor at most of the conditions. Interestingly, we observed that RCMAT and ShrinkC detected the separation easily, in that respective order. For example, when the axis of variation was shifted from major to minor, the mean p-value increased from 0.0001 to 0.0551 for ShrinkA, from 0.0014 to 0.0399 for RCMAT, from 0.0040 to 0.0516 for ShrinkC, from 0.0192 to 0.0956 for KPCA and from 0.0815 to 0.1519 for ShrinkB along the amount of separation was 1.0 (n = 20) with ten variables. (parameter combination 5 to parameter combination 6).

5. Conclusion. We concluded that ShrinkA, ShrinkB, ShrinkC, RCMAT and KPCAmatrix methods produced conservative bias comparative to the expected p-value. The deviation from the 45° straight line of q-q plot was also getting larger when number of variables were getting higher than number of samples. However, there was a good agreement between uniform distribution and ShrinkB and KPCA to accept the null hypothesis. In the other words, when no difference (separation) existed between two groups, the ShrinkB and KPCA performed better than other methods.

Basically, the real differences between the groups were easier detected with n>p than n<p conditions for all methods with certain axis of variation and amount of separation. Furthermore, from axis of variation’s perspective, the differences between the groups with any conditions with a major axis were easier detected rather than a minor axis because of the larger variance. As we expected, the differences between groups for large amount of separation were easier detected compared with smaller amount of separation. All methods were performed consistently according to conditions described earlier but detection ability of ShrinkA and ShrinkC method was higher than other methods across conditions especially along a major axis of variation.

This study discovered the potential of the shrinkage approach to estimate the covariance matrix for microarray data, particularly in comparing gene expression between independent samples. The shrinkage covariance matrix approach showed promising results for testing the differential gene sets expression compared to two established methods. This research provided a new platform and opportunities for further research or studies in microarray-based gene sets and the results were expected to be of interest for further applications in other areas of research with similar data characteristics.
REFERENCES


CONFLICT MANAGEMENT AND POVERTY ALLEVIATION: AN EXAMPLE FROM NORTHWEST PAKISTAN

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ABSTRACT. Conflicts in general, have adverse effects on the income and living conditions of populations worldwide. Keeping in mind the same theoretical postulation, this study has been conducted in northwest Pakistan to identify the effects of armed conflict on tomato production in the area. The study is based on the primary data collected from two villages namely Shilozan and Pewar in Kuram Agency in the northwest of Pakistan. The overall sample size for this study was 170 tomato growing farmers out of which 93 were selected from Shilozan and 77 from Pewar. A semi-structured questionnaire was used to collect information from all respondents. The results of the study are presented both in the form of descriptive statistics as well as through paired T-test. The results of the paired T-test reveal that there were significant effects of armed conflict on income of the farmers as depicted by the larger t-value. It has been mainly because due to restrained mobility during conflict, farmers had less or no access to input and output markets, irrigation facilities, and cultivable land which resulted in increased cost of production and decreased farm productivity of tomato. This further resulted into decreased overall net income of farmers from tomato crop in particular. The study concludes that poverty in these areas can be alleviated if government and non-governmental organizations (NGOs) play their role in promoting social cohesion and management of any conflict in future.

Keywords: conflict management; input market; output market; poverty alleviation; northwest Pakistan.

1. Introduction. Agriculture sector is the largest sector of Pakistan economy with a large impact on socio-economic conditions of rural population. Being the dominant sector it contributes 21.4 percent to GDP, employs 45 percent of the country’s labor force and contributes in the growth of other sectors of the economy (GoP, 2013). A sustained agricultural development is required for economic development, raising the living standards of the people and reducing poverty in the rural areas of Pakistan (GoP, 2011). Due to commercialization of agriculture, farmers, particularly smallholders prefer cash crops for quick and timely returns.

Cash crops contribute in foreign exchange earnings of a country. The major cash crops in Pakistan are cotton, rice, tobacco, fruits and oil seeds. These crops are exported to different countries and are a major source of earning for the farmers as well as for the country in the form of foreign exchange (Hussain, 2009). Kurram
Agency is one of the tribal areas located in the northwest of Pakistan where people are mostly growing cash crops as a main source of their living. In past people have been earning from fruits and vegetables such as apple, peach, tomato, onion, potato, and turnip (Wahid, 2012). However, due to armed conflicts in the area, farm productivity decreased resulting in decreased income of the farmers. Thus conflicts are major contributors to poverty severity and expansion in the area.

Conflict is an expressed struggle between at least two interdependent parties who perceive incompatible goals, scare resources, and interference from others in achieving their goals. Conflict results when there are incompatible goals, cognitions, or emotions with between individual or groups in that lead to opposition are antagonistic interaction (Paul, 2003; Fisher, 1996).

1.1. Conflict in Kurram Agency. Kurram Agency was a peaceful area, until Soviet Union invasion of Afghanistan in 1979. Pakistan allied with the US and this federally administrated tribal area was made nurturing ground for training and recruiting Mujahideens from all over the world. They were trained and armed and were sent to Afghanistan. Due to war, millions of Afghan refugees migrated from Afghanistan into tribal areas that became a burden not only on the resources, but also created economic and social problems. Besides, the Afghan war left grave and long lasting consequences for Pakistan that can be felt even today in the shape of growing militant extremism, insecurity, intolerance, militancy in religious and sectarian groups and terrorism all are results of the Soviet war on Afghanistan (Zaman, 2010). After the influx of Afghan Refugees and Mujahideens in Kurram agency who participated in upsurge of sectarian conflict for which there was no precedent in the area. These conflicts would occur periodically; decade after decade, however, not extending over a long period.

1.2. Research Problem. Pakistan is the world 6th populous country with a population of almost 184 million. Out of this huge population, 62 percent lives in rural areas (GoP, 2013). Majority of the rural population depends on agriculture as the mainstay of their living. The government under the paradigm of the new growth strategy envisioned to enhance growth in agriculture sector so that to enhance growth of the overall economy. Agriculture in the country is, however, highly affected by armed conflicts as people are unable to practice on farm, manage irrigation, and access input and output markets. These issues immensely affect those farmers who are growing cash crops. Thus due to conflicts in Kurram Agency, farmers income is effected which contribute into the overall poverty in the region. Therefore, there is a need to identify the reasons of conflict in the area and its potential effects on farmers’ income from cash crops having overall effects on poverty in the area.

1.3. Objectives of the study and hypothesis. The specific objective of the study is to analyze the effect of conflict on farmers’ income from tomato crop. The alternative hypothesis of the study is that conflict has adverse effects on farmers’ income from tomato production in the area.

2. Review of Literature. Conflict, both military as well as sectarian, has affected Pakistan severely in the recent past both in terms of human as well as economic losses. In 2007-08 in Pakistan, the death toll due to violence rose to 5000 people leaving another 10000 injured. Similarly, the country incurred a loss of around $ 35-40 billion from 2001 to 2007-08 (Ali, 2010). In Swat valley which has been exposed to continuous attacks in the form of war on terror, farmers have been severely affected by losing their crops due to conflict. This also resulted in huge displacement of the local population having indirect socio-economic impacts on the host populations in the nearby cities (Fazal, 2009). Ahmad et al. (2009) also studied the effects of conflict on farming and overall poverty of small farmers in Bangladesh. According to their study farmers mostly migrate due to conflicts and those who stay in their places depend mainly on subsistence farming. It becomes more
difficult for small farmers to rely on cash crops as their income sources due to either desertion of belongings in the face of threatening rebels or non-access to transportation to the local outputs markets.

Similarly, the UN (2008) observed that armed conflicts are major hurdles in achieving food security. There is a well-established correlation between conflicts, food insecurity, and economic development. Violence disrupts food production through physical destruction and plundering of crops and livestock, harvests and food reserves; they prevent and discourage farming; they interrupt the lines of transportation through which food exchange and even humanitarian relief take place.

A number of other studies (Bardhan; 2007; Ian, 2006; Pierre, 2006) also identified the inter-linkage between conflicts, food insecurity, and poverty. The internal conflicts in Cameroon have resulted in deceased farm productivity and have adversely affected the sustainable development in the country (Bardhan, 2007). Similarly, Ian (2006) reported that conflicts result in damage of the infrastructure, social and economic systems, and livelihood in Republic of Angola. This conflict has resulted in retarded developmental efforts and recommends that conflict management is an effective means of long-term growth and improvement in living standard of the people.

After the study of literature review it is concluded that conflict is the one of main causes of low productivity because conflicts destroy lands, water, biological and social resources for food production while military expenditures lower investments in health, education, agriculture and environmental protection. This mainly affects the process of economic development in a country. This particular study identifies the effects of armed conflict on overall poverty in northwest Pakistan.

3. Data and Sample Design. The research was conducted in two villages, namely, Pewar and Shilozan of Kurram Agency in northwest Pakistan. These villages were purposively selected for two reasons; firstly, majority of the farmers in these villages were tomato growers, and secondly, being severely affected by the conflict. The total number of tomato grower farmers in these villages was 1700 out of which 170 farmers were selected through randomization. The sampling design is illustrated in table 1 below.

<table>
<thead>
<tr>
<th>Village</th>
<th>Total number of farmers</th>
<th>Sample size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shilozan</td>
<td>935</td>
<td>93</td>
</tr>
<tr>
<td>Pewar</td>
<td>765</td>
<td>77</td>
</tr>
<tr>
<td>Total</td>
<td>1700</td>
<td>170</td>
</tr>
</tbody>
</table>

Source: Anjuman Hussaina, 2012

Both primary and secondary data were collected to analyze the effects of conflicts on the overall income and living standards of the population. For primary information, a semi-structured questionnaire was used were as secondary data were collected from the concerned line agencies. Descriptive statistics as well as paired T-test
was used to identify the effect of conflict on the overall production as well as net income of the farmers.

\[
t = \frac{\bar{d}}{\text{sd} / \sqrt{n}}
\]

\[
\bar{d} = \bar{x}_1 - \bar{x}_2
\]

Sd = standard deviation
n = Number of observations

4. Results and Discussion. In this section a brief overview of the land cultivation and farming practices, and income from land is provided. The effect of conflict on income both in with and without scenario is also provided by using paired T-test.

4.1. Total land cultivated in with and without conflict scenario. The size of land under cultivation is an important determinant of increased agricultural production. A farmer having more area under cultivation can get more production compared to those having less land. Risk and vulnerability depend on the nature of shock and the coping strategies of a household. In some cases, however, it becomes difficult for farmers to adopt any coping strategy as the nature of the conflict and the size of asset are immense and large. Figure 1 shows the total land cultivated by the respondents during and after conflict in both villages. The land holding is divided into two categories, viz., 1 to 15 jarebs and over 15 jarebs. In the first category 41 percent in Shilozan and 42 percent in Pewar cultivated land during conflict whereas this percentage increased to 59 percent for Shilozan in 58 percent in Pewar after the conflict. The same results were observed in the second category as well where the proportion of farmers increased from 40 percent in Shilozan and 45 percent in Pewar during conflict to 60 percent in Shilozan and 55 in Pewar after the conflict.

![Figure 1. Total land cultivated by the respondents during and after the conflict](2143)
4.2. **Total land under tomato crop in with and without conflict scenario.** The main aim of the shift in agriculture system from traditional to modern is to bring more profit oriented ventures to farmers. Tomato production increases cash income of farmers. The size of land under tomato cultivation is an important detriment of farmers’ income from this crop. Cultivation, weeding and harvesting of crops is rather impossible in areas where landmines are laid in the fields and irrigation channel. Figure 2 shows the land use by the respondents for the production of tomato. The first is from 1 to 5 jarebs which shows 49 percent for Shilozan and 48 percent for Pewar during the conflict which increased to 51 percent for Shilozan and 52 for Pewar after the conflict. The second category is greater than 5 jareb, which shows 45 percent for Shilozan and 42 percent for Pewar during the conflict which increased after conflict to 55 percent for Shilozan and 58 percent for Pewar.

![Figure 2. Total land under tomato production in the research area](image_url)


4.3. **Total income of households in with and without conflict scenario.** Figure 3 shows the total income of respondents from all sources during and after conflict. This investigation is important due to the point of view of making comparisons during and after conflict. This income level affects the production of tomato in the villages. The total income level from 10,000 to 200,000 is 75 percent for Shilozan and 60 percent for Pewar. This lowers to 63 percent for Shilozan and 39 percent for Pewar. The second income level is 201,000 to 400,000 contain 8 percent for Shilozan and 5 percent for Pewar which improved after conflict to 14 percent for Shilozan and 18 percent for Pewar. The third level is 401,000 to 600,000 having 1 percent for Shilozan and 17 percent for Pewar improves to 3 percent for Shilozan and 21 percent for Pewar. The last level is more than 600,000 having 16 percent for Shilozan and 18 percent for Pewar which increased after conflict to 19 percent for Shilozan and 22 percent for Pewar.
4.4. **Total income of households in with and without conflict scenario.** One of the aims of this study is to find out the income generated from tomato production in both villages during and after conflict. Figure 4 shows the income of respondents from tomato crop during and after conflict. The Figure specifically shows that 34 percent respondents in Shilozan and 39 percent in Pewar earned between Rs. 10,000 and Rs. 200,000 from tomato during conflict. After conflict, however, the percentage of respondents earning this level of income reduced to 13 percent in Shilozan and 20 percent in Pewar. This reflects the fact that income of farmers from tomato increased after the conflict was over. During conflict, 8 percent of respondent in Shilozan and 4 percent in Pewar had income of more than Rs. 600,000 from tomato, whereas the percentage of respondents earning the same income increased to 24 percent in Shilozan and 11 percent for Pewar after conflict. Based on the information in the Figure, it can be concluded that the income level of farmers was affected due to conflict, which significantly rose immediately after the conflict was resolved.
4.5. **Comparison of household income in with and without scenario.** A paired-samples t-test was conducted to compare the income of the farmers from all sources during and after conflict. There was a significant difference in the scores for conflict. (P-value < $\alpha =0.01$). These results suggest that conflict effect the farmers income. Specifically, our results suggest that during conflict the income of the farmers from tomato crop was low as compared to after conflict.

Table 2. Results of paired sample t-test for the income of the farmers from all sources.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Mean</th>
<th>Std. deviation</th>
<th>t</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income from tomato crop after conflict</td>
<td>469323</td>
<td>349115</td>
<td>135547</td>
<td>286443</td>
<td>6.17*</td>
<td>169</td>
</tr>
<tr>
<td>Income from tomato crop during conflict</td>
<td>333776</td>
<td>205196</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*significant

Note: mean values, standard deviation, and differences have been rounded

4.6. **Comparison of income from tomato crop in with and without scenario**

A paired-samples t-test was conducted to compare the income of the farmers from tomato crop during and after conflict. There was a significant difference in the scores for conflict and after conflict (P-value < $\alpha =0.05$). These results suggest that conflict effect the farmers income. Specifically, our results suggest that during conflict the income of the farmers from tomato crop was low as compared to after conflict.

Table 3. Results of paired sample t-test for the income of the farmer from tomato crop

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Mean</th>
<th>Std. deviation</th>
<th>t</th>
<th>Df</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income from all source after conflict</td>
<td>331735</td>
<td>391382</td>
<td>130129</td>
<td>141616</td>
<td>11.981**</td>
<td>169</td>
</tr>
<tr>
<td>Income from all source during conflict</td>
<td>201605</td>
<td>298104</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Highly significant

Note: mean values, standard deviation, and differences have been rounded

5. **Conclusion and Recommendations.** The research has been conducted to study the effects of conflict on income form tomato in village Shilozan and Pewar. The number of those farmers having low income from tomato during conflict reduced in both villages as income of many farmers increased after the conflict period. In other words, income level of farmers has been increased after the conflict. An important aspect of determining the income of the farmers is to know about their cost of production. It was found from the field work that overall cost of production of the farmers was more during the conflict period which was reduced after the conflict. Based on the findings of the study, it is recommended that government and non-governmental organizations (NGOs) should play their role in promoting social cohesion and management of any conflict in future so that farmers get better opportunities to increase their income.
REFERENCES


STUDY OF QUALITY MANAGEMENT SYSTEM IN CONSTRUCTION INDUSTRY OF PAKISTAN

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ABSTRACT. Two things are of great importance to check the level of quality management implementation in the building projects of Pakistan. a. Technical system of quality management b) Managerial system of quality management. The technical system includes the tools and techniques whereas management system includes critical factors of quality management. The construction industry of Pakistan has been endeavoring for quality since long time. The absence of quality regulatory body and the non-availability of local quality standards could not give a clear direction to local construction materials industry.

An exploratory approach was adopted by studying the available literature to create a quality management framework for building projects and based on these a questionnaire was prepared, which was administered to project engineers, managers, supervising consultants and contractors. The important quality factor for the construction inputs and processes were included in the survey, which was also supported with the interviews of the selected major stakeholders. Quality check lists were developed in consultation with the field staff and actual projects were analyzed. The results showed that there an increasing awareness among the major stakeholders but the tools and techniques used for quality control are are not reliable and consistent. There is a need to further standardize the procedures and processes as well the inputs for the construction industry of Pakistan to adopt the Total Quality Management in true spirit.

Keywords: quality management, technical, systems, Pakistan, construction industry, material, stakeholder

1. Introduction: Quality, in general, can be defined as meeting or exceeding the requirements whether, legal, aesthetic or functional of a project, product or service. In construction industry, the definition of quality can be relatively difficult due to diversified nature of inputs and stakeholders. It can be defined as meeting the requirements of the designer, constructor and regulatory agencies as well as the owner. For public sector construction projects, the expectations of the community and end users have prime importance.

The quality management started from very marginal function of quality inspection to quality assurance and quality control, thereby making the quality of products and services more important in the last many decades. However the Total Quality Management (TQM) emerged as new and integrated philosophy in Japan manufacturing industry in early 50's. TQM is based on the principles of Continuous Quality Improvement (CQI), importance of the customer satisfaction, preventive measures rather than rejection and Employee
Involvement (EI) in all the process [1].

The implementation of TQM principles, require broad based changes in the cultures, processes, procedures, strategic priorities and plans as well as organizational operations. This is often a big challenge for all the stakeholders and require a detailed strategy for “Change Management”. This becomes even more challenging in the construction industry, where the traditional labor and construction techniques are more dominant. Sommerville & Robertson [2], identified some of the elements impeding implementation of TQM in to construction industry, which include the following:

i. Construction inputs are diversified in nature and the customized solution of construction has to come from material and processes having different specification and standards. Hence the satisfaction of end user is relatively difficult.

ii. The dedication to TQM processes and philosophy, would require some minimum time to get the benefits and returns as these are not possible in short term. In present recession of the global economy and highly competitive environment, in the construction market, no one will be ready to experiment, the TQM.

2. Total Quality Management and Construction Industry: The basic philosophy of TQM evolved from manufacturing industry and its application to construction industry came in later part of the 20th Century. Various studies have revealed that application of TQM procedures to small sized construction projects is relatively difficult [3] and [4]. The implementation of various TQM tools such as project management, partnership, Quality Assurance Plan (QAP), Quality Function Deployment (QFD), Jobsite Quality Planning (JQP), to construction industry demonstrated mixed results [5]. Hoonakker faced the same situations during study of construction industry in Netherlands regarding implementation of the TQM principles to construction projects. Most of the construction firms adopt only those innovative solutions and techniques, which have proved successful in other projects [6].

The TQM has been adopted by various major construction companies in the world as per their requirements and priorities for cost reduction, improved productivity and better health & safety environment for construction projects. Kuprenas & Kenney [7] and Kuprenas, Soriano, & Ramhorst, [8] observed, on the basis of their two studies on TQM, that the overall motivation for implementing TQM remained essentially the same over a period of three years. The methods and effectiveness of implementing TQM, however, did vary substantially between companies over the three years. Some firms completely abandoned their TQM implementations while others achieved award-winning results. Most of the construction companies focus on cost reduction rather than quality control and improvement. Hence the cost reduction in the long run remains the major attraction for the construction industry to implement TQM at selective major projects.

Total Quality Management (TQM) is defined as “a set of concepts which can be extended to the whole organization, which permits producing products and/or services which satisfy customer demands at the lowest cost possible, and trying to make all the staff within the company feel satisfied with their work”. The TQM has been employed by many construction organizations as an initiative to solve their quality problems [9]. TQM philosophy throughout the projects can help an organization to improve its productivity, performance, and both customer and employee satisfactions by eliminating and/or reducing poor quality. This cost reduction is mostly related to the cost of redoing the rejected works and in order to achieve this goal, it is essential to diminish costs related to not doing things correctly the first time. And this is only possible if these costs are identified and evaluated or put in other words, if quality costs are measured and analyzed [10]. Construction firms, therefore, need to understand the TQM Critical Success Factors (CSFs) for the successful implementation of TQM.

Implementation of TQM can bring a lot of improvements in the construction industry. Though the number of studies supporting this argument is limited yet the benefits can be in the form of economic returns, fast and speedy project completion, higher profitability, enhanced customer satisfaction, better quality of end products etc [11].
The following facts must be considered before applying any quality improvement program to construction industry.

i. Almost all construction projects are single and unique in terms of its design, site, construction material etc. They are single-order as the client of the project is mainly the sponsor (s) and single-manufacture products, having the main contractor as the major accountable entity.

ii. Unlike other industries, which typically have a fixed site through similar conditions for production, each construction production site constantly shows different circumstances. The external circumstances of the construction projects change constantly.

iii. The life-cycle of a construction project is much longer than the life-cycle of most manufactured products.

iv. There is no vibrant and proactive appraisal system to measure construction excellence thus, construction projects quality is usually evaluated subjectively.

v. Construction projects are a single order design project, the owner usually have direct impact the production.

vi. The participants in the construction project owner, designer, general contractor, subcontractor, material provider, etc. Differ for each project in terms of their knowledge, skills and attitudes.

Several models have been presented for cost of quality. However, the most significant models can be classified into the following groups [12].

i. Opportunity or intangible cost models

ii. Process cost models:

iii. ABC models: Value added + non-value added

iv. Crosby’s model

v. P-A-F models:

Further details about the models can be obtained from above reference.

3. Construction industry of Pakistan and Total Quality Management: The construction industry of Pakistan is characterized by low productivity as its contribution to the GDP is merely 4%, whereas it employs more than 7% labor force. The cost overrun, poor quality and time delays are the three major challenges faced by the construction industry, which often leads to litigations and conflicts at the projects. The construction industry in Pakistan requires, a cultural and behavioral shift in the mind-set of all participants including top and senior level management and project staff. The basic philosophy of the TQM focus on the involvement of all major stakeholders in the quality control and quality assurance process. Unfortunately, the construction industry of Pakistan has not adopted the TQM philosophy into their routine operations. The high boom of construction industry in the early twenty-first century, led to shortage of skilled man power at one hand and competing for resources on the other hand. This required to apply the TQM in major projects, mainly to save the resources and costs. Hence Continuous Quality Improvement (CQI) became an important consideration in major projects in Pakistan. However in general for medium and small projects, the application of TQM remained a remote possibility.

The quality management in construction projects in Pakistan is not given prime importance. In most of the construction projects, there are no dedicated staff for quality assurance and quality control, which renders the quality as the most neglected prioritiy in the construction industry. The typical contractors at construction projects are more focused over cost saving but they are least aware of the cost of poor quality, they have to pay at construction sites, in case of imperfect and substandard works. Through awareness about TQM among the contractors, we can make them realize the benefits of quality management and TQM. In this work, research was undertaken to assess the existing tools and techniques adopted by the construction industry in Pakistan for the quality management.

4. Research objectives and research methodology: The main aim of the research was to assess the present tools and techniques employed by the construction industry of Pakistan for the quality management and recommend further improvement for the same.
To assess the critical factors for the quality management in construction industry and its implementation at construction projects, the following three tools were used for data collection:

i. **Questionnaire Survey**: The questionnaire was divided into two parts, Parts-A gives the information of respondents and his familiarity with construction projects, role and responsibilities & experience etc. The part-B of the questionnaire comprises 32 factors for quality assurance and quality control in projects under some major heads of input factors, internal environment and external environment. For contractors and project executing firms, the list of contractors who executed projects of various magnitude in Pakistan at different places was used and 20 contractors were randomly selected from the list of these contractors. Similarly 10 consultants were randomly selected from the list of Architectural Planning and Engineering design consultants. Out of total 50 questionnaires sent to the various stakeholders in the study, 30 responses were received back.

ii. **Interview**: The questionnaire survey was followed by interviews with the project staff and representatives of the consultants.

iii. **Case Study**: To check the implementation of various quality assurance and quality control tools, a real site was visited at Islamabad Pakistan.

5. **Observations:**

5.1 **Results of questionnaire survey**:

i. Based on the results of questionnaire survey, almost 60% of the respondents think that customer satisfaction is regarded as the basic perception for quality.

ii. The firms mostly follow the Pakistan Engineering Council Code of ethics.

iii. The order of priority for various important factors in planning is cost, quality, time, scope and safety. Hence quality is the next most important factor after cost and planning in construction projects.

iv. Most of the firms believe that project quality plan is as important quality control input, followed by checklists, quality metrics, organizational assets.

v. The firms mostly think that implementation of TQM will mainly improve the project design and cost estimation.

5.1 **Interview with construction supervision staff and contractors**:

1. During interaction with construction supervisory staff and contractors regarding quality, it has been observed that contractors give only average importance to issues related to TQM such as quality in the organization, employee training and organizational culture. The general trend of the contractors is to associate quality with cost and they argue that better quality would mean more investment in the projects. They are least aware of the cost of non conformance and non quality.

2. The organizational existing practices for quality control are given more importance and the TQM is exercised to the extent of cost estimation and warranty claims etc. In addition the interviews conducted with higher officials and project staff believe that quality has prime importance but they rarely practice, TQM practices as they believe that additional cost of the quality is not given in the approved cost of project.

3. The quality control and quality assurance tools adopted at construction sites are mostly arbitrary. Formal QC/QA tools are rarely employed. The contract of the construction projects in public sector seldom have focus on the implementation of TQM and the specification followed are mostly redundant and outdated in most cases.
4. Lack of awareness has been observed as the major impediment to the quality in the construction industry. The level of information available with the contractors and project staff

5.2 Case study of construction projects at Allama Iqbal Open University: During visits to the projects of Allama Iqbal Open University Islamabad Pakistan, the following observations have been made:

i. There is general awareness and sensitivity amongst the project staff and contractors regarding importance of the quality in the projects and the culture developed at project sites is quality focused. But in most of the cases the knowledge of the supervisory staff about QC/QA tools is based on traditional practice.

ii. The knowledge of the staff about TQM was found insufficient and shallow. The application of modern quality control tools and techniques is rare at the construction projects.

iii. The organization has established a metrial testing lab, however its use in the projects is not up to the mark. The Project Directorate has started testing of input like cement, aggregates, bricks etc at the lab, but the support from the site staff in this context is not sufficient. The dedicated staff for the laboratory is also not sufficient to undertake the task of material testing.

iv. Overall, commitment of the staff to the quality in construction project at AIOU, has been observed, but there is a need to implement the modern TQM tools and techniques. To this end, training of the staff is required at all levels.

6. Conclusions

i. The knowledge and awareness of the major stakeholders of construction industry related to TQM was found insufficient. They, most of the times follow the traditional quality control techniques.

ii. The adherence to quality in construction projects by the contractors is limited to the contractual obligations and unfortunately, most of the projects’ contracts don’t oblige the contractor to follow the TQM tools and techniques.

iii. The contractors are least aware about the cost of poor quality and hence they are most of the time relate quality to additional cost. Hence quality is exercised to the extent of cost estimation and warranties etc.

iv. There is no organized system employed by the project staff for deployment of TQM tools and techniques in medium and small projects.

v. The quality control is mostly based on inspection of the work completed by the supervisory staff, which often leads to rejection of imperfect works. The basic philosophy of the TQM i.e. “rejections” is not followed in true spirit. This leads to wastage of time and resources.

vi. There is no mandatory provision in the construction contracts for strict compliance to the TQM standards, tools and techniques.

7. Recommendations

i. The construction project contracts needs to be revisited. The specification part of the contracts and special conditions regarding quality control needs to be reviewed and modern TQM tools and techniques may be incorporated in such documents.

ii. The Pakistan Engineering Council (PEC), being the major regulatory organization for project procurement and to develop the bidding documents for the projects in Pakistan, need to revise the specification of civil work items for construction project. The Pakistan Institute of Contract and Cost (PICC) which is defunct now, may be revitalized under senior and experienced Engineers.

iii. Awareness and capacity building workshops on TQM for construction projects may be held under the Continuous Professional Development (CPD) pragram of PEC. The renewal and upgradation of the contractors may also be linked with the participation of the core Engineering staff of the contractors in such workshops and seminars.
REFERENCES


LOCALIZING LESSON STUDY FOR THE MATH TEACHERS' PROFESSIONAL DEVELOPMENT, NECESSITIES AND PROHIBITIONS

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ABSTRACT: The century in which we live, Elvin Toffler declares, called ‘the Wisdom Century’. Therefore the education of the 21st century should foster thoughtful and disputatious people, who are able to discuss, criticize, and make decision, process information, choose, and be responsible persons as well. Thus, the role of teachers as the main training agent, in achieving this goal, is so significant and noticeable, for teachers with no skill and professional expertise are not deserved to train pupils properly. Recently, lesson study which its headquarter is Japan, as a strong tool to math teachers’ professional development, attracts so much attention to itself, and researches through exact studying of that, represented local models matching economic, social, and cultural conditions of their countries. In this paper, we represented different lesson study models after considering and giving exact description of Japan math lesson study, and eventually considering lesson study local problems and representing some proposes to localize the model will be the epilogue of this paper.

Key Words: Lesson Study, Teacher's Professional Development, Teaching Feedback, Group Cooperation Culture (Approach)

Introduction: Gained results from analyzing math classes recorded film in Germany, Japan, and America TIMSS (Third International Math and Science Study) reveal Japanese students success secret in the international exams like FIMSS (First International Math and Science Study, 1964) and SIMSS (Second International Math and Science Study, 1980). Paying attention to Japan consistent high ranks in such international researches causes some accurate consideration, and at last to recognize lesson study as Japan success main factor in teaching math. The Japanese word ‘Jugyou Kenkuu’ translated for the first time as ‘lesson study’ by Yoshida (1999). Lesson study literature precedes the 20th century. Isoda (2000) states: "By using lesson study, teachers improve their teaching styles. In the early years of NiGi sovereign, around the year 1870, such lesson study which includes observing each other’s teaching, was introduced to Japanese teachers of elementary level Tessoya University and it made them familiar with lecturing teaching method. Since in passed periods, tutoring was the only teaching method, Japanese governors attempted to introduce new teaching methods as early as possible. Such strives, after more than 100 years, resulted in a Japanese method to lesson research and applying new curriculum, as well professional development. In fact, Japanese teachers are expected to be a teaching researcher rather than a common teacher (Ayoubian, 2006)."
According to Stigler and Hebert (1999) in *The Teaching Gap*, lesson study logic is so simple, if you are to improve teaching, then select class. If you begin with lessons, the problem of how applying the research results in class disappears. Improving in class is the most important point, and then recognizing all the types of changes which make students learning improve. After such recognition, it’s time to cooperate the knowledge with other teachers, those who encounter similar difficulties, or possess common aims in class.

Lesson Study Features and Procedures

Fernandez and Yoshida (2004) summarized a lesson study procedure in 8 phases:

1. **Cooperating in addressing and raising the problem:** Generally, lesson study is a solving procedure. Therefore, the first step is to raise a problem which leads lesson study group activity. The problem can be a general question (e.g. stimulating students’ interest in math) or a detailed one (e.g. improving students’ understanding of how to sum up (count up) fractions with unequal denominators), then the problem gets a determined form so that can be raised in class. Teachers generally choose an achieved problem from their own activities, or one which poses a challenge to the students.

2. **Planning:** After choosing a learning aim, teachers hold a meeting to plan and compile the lesson scheme. Although a teacher teaches the lesson finally, the lesson itself is a cooperative product. Here, the end is not just to produce an effective lesson, but to figure out the teaching method in order to increase students learning. Frequently, the primary produced plan by the group represented in a meeting for all the teachers to be criticized and provided some feedback. Based on such feedback, the revised edition executed. It’s worth mentioning that the primary planning procedure may take months.

3. **Teaching the schematic lesson by teacher:** The schematic lesson taught by one of the teachers at a definite time. Through teaching the other teachers sit in the back of the class and watch the teaching method. While students are doing activities, they walk and watch them, and as teaching continues, they take notes from the activities, misunderstandings, and solving problems. Sometimes the teaching procedure recorded on film to be analyzed later.

4. **Evaluating the taught lesson and feedback:** After teaching, the group holds a meeting to consider and critique the lesson (it’s worth mentioning that evaluation focus is upon the target lesson, not the teacher). In this meeting, the teacher makes a speech about the teaching and its features, and then the group expresses opinion about the teaching challenges and the weak parts. It’s worth mentioning that such critiques are perfectly useful and address all the members, for the taught lesson is a group product, not just an individual one. Such critiques cause improvement of later lessons scheming procedure, as well increase the group self-improvement ability.

5. **Revising and editing the taught lesson:** The group revises the lesson according to observations and feedbacks. They may change teaching materials, activities, questions, and raised problems or all of these matters. They often emphasize on issues of which essentiality proved in class.

6. **Re-teaching the revised lesson:** After editing the taught lesson by the group, its revised version will be provided for re-teaching in another class and by another teacher of the group. It’s interesting to know that the number of invited teachers is greater than the students!

7. **Re-evaluating:** After re-teaching the lesson, all of the invited teachers and the lesson study group members consider and critique the teaching procedure in a long lasting meeting. Frequently, an expert from other teaching institutions or other schools is invited to the meeting. In discussing the lesson, all the general problems represented through lesson study main principles are important, not just students learning and understanding, eventually they discuss whatever learned from the lesson and teaching.
8. Compiling and sharing the final lesson study report: At last, a comprehensive summary of all the meetings, discussions, and teaching framework will be compiled and put in the school library, called lesson study booklet, to be used by other school teachers, and as well by future amateur teachers of the school. Teachers share in the gained results differently:

- Writing report and lesson study booklets: teachers’ booklets will be sold in Japan bookshops, and school teachers not only can use their own school lesson study resume, but also can exploit other schools experiences. Reports show that teachers publish reports even more than researchers.
- External aware supervisors: external aware supervisors, who are present in school teams, exchange such experiences with other schools.
- Open house: in some Japanese schools hold meetings called ‘open house’ in which the group request from the invited school teachers to observe their school lesson study results. Finally, a teaching conference will be organized to critique the executing teaching. It’s worth mentioning that any teacher in Japan will remain at a determined school for at most 10 years, and teachers frequently change levels to which they teach, thus their information and experiences continuously change and improve.

Reviewing different lesson study models: Although lesson study research history in several countries except Japan is about 2 decades, a great number of researches have been done. During this short period, countries have planned local models in line with their own conditions, and been very active in executing the Japanese lesson study model. Some models are introduced in the following pages. Even though such models are separate, they cover each other so well, and their common aim is to increase teaching quality and teacher professional improvement. Some lesson study models are as follows:


1. Forming a lesson study group
2. Focusing on lesson study
3. Planning and scheming the lesson to teach
4. Being prepared to observe
5. Teaching and observing
6. Getting information from the teaching
7. Feedback and planning for the following steps

Another interesting model to introduce is Takahashi model (2001) which you can observe its cycle in Figure 1. Novel thoughts and new ideas determine the main identity of the model. The model principle output is novel creative ideas which are able to solve students’ new learning problems (Takahashi, 2005; Khakbaz, 2007; Ayoubian, 2006; Takahashi and Yoshida, 2004).
The word ‘researching lesson’ in Figure 1 means the group prepared lesson to teach. Ektefaei Nejad and Fadaei (2006) planned a local model in 4 stages:

**Stage 1**: planning sessions

**Stage 2**: group sessions to compile and revise the lesson

**Stage 3**: teaching the lesson in class

**Stage 4**: feedback and revising the executed lesson, as well representing the results

The represented local model by Ayoubian in 12 phases is to be executed in Teacher Training Centers (TTC):

1. Researching centers and teachers deciding
2. Selecting the study team, hiring new members, and arranging the schedule
3. Determining slight aims
4. Scheming the plan

**Figure 1**: Lesson study model from Takahashi’s viewpoint (Khakbaz, 2007)
5. Being prepared to observe
6. Executing the study
7. Feedback on learners believes and new needs
8. Feedback on teaching
9. Deciding about the teaching repetition
10. Teaching the revised lesson
11. Feedback on the changed teaching
12. Concluding and compiling the lesson study booklet

This model difference is the 7th step in which the emphasis is on knowing whether the study covers students weak points or not. The following is Yoshida-Fernandez model (2004) which includes 6 main phases:

- Lesson study planning
- Observing the lesson teaching
- Discussing the taught lesson
- Revising the taught lesson
- Teaching the revised lesson
- Discussing the revised teaching

Khakbaz (2007) used Yoshida-Fernandez lesson study model (2004) to math teachers’ professional develop in the reign 2 of Kerman, and got interesting results. Although he was not going to scheme a local model for lesson study phases, represented one. See Figure 2.

Figure 2: math teachers’ professional development model based on Yoshida-Fernandez cyclic lesson study
Conclusion and Discussion: In this paper, lesson study literature, lesson study different models, as well their differences and similarities have been discussed, however, the most important issue is to recognize whether we can scheme an accurate local model in accordance with social, cultural, economic, and political conditions of Iran provinces or not. As mentioned previously, there are so many lesson study models which cover each other, therefore planning a lesson study model will not be difficult; the main point is to discover the essential conditions for scheming practicable local models. The most major problem in executing lesson study in Iran is the lack of strong cooperative culture, simplification and lucidity, as well teachers and headmasters negative reaction to critique. The stress resulted from critique causes teachers disinterest in cooperative executing the lesson study method. Despite lesson study apparent simple phases, Richardson claims, it’s so dependent upon the cooperative culture, therefore makes some difficulties in successful execution. Lesson study chance success is various among different countries. Lesson study model will be more successful in a culture that teachers can express teaching problems easily and with no stress than a culture in which teachers feel any need for expressing teaching problems and consider this issue as teachers’ weakness. A good solution to increase cooperative culture and the ability of accepting criticism among teachers and headmasters is to make them familiar with the lesson study philosophy, for lesson study is a group job and the lesson is a common product, as well. The group critiques their own tasks, not just one member, and the only aim is to improve the next lessons compiling procedure, individual development, and students’ conceptual learning.

Lewis (2002) states that we cannot copy lesson study from Japan different teaching system, but adjust it to our culture and education system, even we can encourage some innovations. In The Teaching Gap, Stinger and Hebert (1999) claim that teaching is a cultural system. One society culture is a set of customs, rituals, and beliefs which has formed gradually and by the pass of time, therefore cultural changes are gradual and slow. Lesson study is a complex and time-consuming procedure with gradual results, thus it’s not rational to expect early and significance results while executing a local lesson study model.

Another big problem in successful executing the local lesson study model is lack of teachers and researchers who are familiar with the lesson study procedure, challenges, and method. It’s interesting to know that the number of experts in this field is so small! The solution of this problem is to invite expert teams and supervisors from other countries, especially Japan, thus they can hold teaching workshops and train local lesson study teams to improve the local knowledge of lesson study and solve the problems in executing the lesson study method (the best place for forming and teaching the lesson study teams are Teacher Training Centers). As mentioned, lesson study is a time-consuming activity and teachers’ main time activity is after school and after doing routines, therefore one of the main principles of taking part in this common activity is to be relaxed, at least in the case of life. Improving teachers living situation cause them to be relaxed and more interested in forming lesson study teams, but

Whatever the situation is, the best efforts should be made to make it better.

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THE BEAT GENERATION  
IN SOCIAL and CULTURAL CONTEXT  

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ABSTRACT. Post-war era significantly irreversibly changed the concept of the US nation and identity at all. The Great Depression in the 1930s had seriously affected the American Economy; however, the Second World War resuscitated the US economy. The USA became the world power; and in the postwar era, the Americans enjoyed an unprecedented personal prosperity and individual freedom. The widespread theories of Freudian psychology highlighted the individual’s origin of mind and the seriousness of importance of the individual, which was also the social impact of World War Two. Secondly, gender issues were significant social matter of the American Society in the post-war America. Contributing much to changing concept of identity, the Beat Generation is one of the most significant results of the history of literature and literary movements during the post-war era. Thirdly, against the traditional methods of composition, together with the publication of Kerouac’s On the Road in 1957, this period would be a newly bred movement in American Literature. The members of Beat Generation Literary Movement made an all-out effort to open up new possibilities of modern composition. The phrase ‘to be on your own’ is at the heart of our understanding of the aspect of the language that the Beat Generation Literary Movement had formed.  

Keywords: Post World War II; identity; Beat Generation;  

1. Introduction. ‘...and everything is going to the beat – It’s the beat generation, it be-at, it’s the beat of the heart, it’s being heat and down in the world and like old-time lowdown and like in ancient civilizations the slave boatmen rowing galleys to a beat and servants spinning pottery to a beat... -Jack Kerouac  

The Great Depression in the 1930s had seriously affected the American Economy; however, the Second World War resuscitated the economy. As a result, the United States of America became the world power; in the postwar era, the Americans enjoyed an unprecedented personal prosperity and individual freedom. After the Second World War, the face of the country had changed both socially and culturally. The increase in the number of those who had higher education, and the prevalence of TV let ordinary people access knowledge ‘on their own’ and in the end made them more sophisticated. Endless facilities and large and attractive suburban houses to consumerists let the middle class become more independent. The widespread theories of Freudian psychology highlighted the individual’s origin of mind and the seriousness of importance of the individual. Birth control ‘pill’ liberated the women from the strict biological norms that they had always been the slaves of them. For the first time in the human history, many ordinary people got used to satisfactory life and could argue that there was an individual dignity hereafter.  

2. Social and Cultural Repercussions of World War Two. Firstly, the revival of individuality was the social impact of World War Two. WWII and the Great depression had unprecedented effects on America. Lifestyles had been kept within bounds and this required an urgent need of social change. In the wartime, women were given the opportunity to do men’s job. This opportunity proved that women could do
‘masculine’ jobs during the absence of men. However, the everlasting social conflict between men and women should carefully be discussed in the context of gender issues at time of warfare and post-warfare.

Gender issues were another significant social matter of the American Society during the 1950s. It was in this decade that men and women’s social roles had returned to its original, its stereotypical notions that once each sex had been required to do. During the WWII, unlike the lasting culture, the role of the women worker in the workplace had risen up whereas men were fighting in the war. After the war, when veterans came back their sweet homes, women faced setbacks in the business world. The two postwar years were very hard for women, as that two million women lost their jobs (Halberstam, 589). The women soon were forced to take over their traditional social roles as homemakers, notwithstanding with the fact that men began to take up on the workforce again. After being in the workforce during the war, women now were expected to be a good homemaker, a good mother and a wife. The thing that did not change was that many families supported themselves on one income. In traditional sense, it was unsurprising that most families again depended on one income, namely men’s, and there was no need for the women to work (Halberstam, 589).

When the war ended, the veterans of the war returned, America was ready ‘to enjoy life with Dwight David Eisenhower presiding over a nation both at peace and enjoying prosperity’ (Russell, 8). When veterans returned their homes, this situation resulted in a huge house crisis. It was because no new houses had been built in 20 years or so1. This crisis, however, brought about two other results that were crucial for understanding the social issues of the 1950s. The house crisis began to push families to move to suburbia. This newly emerging community gradually appealed nearly all types of families catering to everyone through the lower middle-class to the upper class2. By 1960, in fact, the number of homeowners reached over ten million3. Another result was the revival of the traditional roles of women just before the 1950s that women, for Halberstam, were isolated by this move and move away from their jobs and placing them amongst other women just like themselves. ‘In the home it was to a new, even an easier age, the good life without sweat’ (Halberstam, 496). The writer illustratively defined the basis of the consumerism. This new culture had all the options for women to stay as homemakers.

The postwar America happened to be defined as that ‘America had irrevocably changed’ (Russell, 8). As well as gender issues, economic situation of the society contributed much to the social change, and the new movement ‘Beat Generation’ in the end. Before discussing the new generation, I would like to focus our attention to the social changes contributed to the origin of the Beat Movement. ‘Never before had there so total and dramatic a transformation of a portion of the landscape, so sudden an evolution in habits, not such a flowering of popular architecture.’ J.B. Jackson4, ‘considered to be America’s greatest (...) writer on the forces that shaped the nation5', obviously indicated in Landscape Magazine concerning the presentation of the automobile industry to the American Society that ‘Americans had the chance to experience the mobility for the first time thanks to vehicles’ (Bischoff, 39) This rapid pace of the technological advances of this period and its social, cultural and literary reflections would suddenly transform the landscape in question after the Great Depression, and the new community would be established in this landscape.

The establishment of the new communities benefited another industry, as it is aforementioned: automobile business. As they began to live away from the city centers, jobs, schools, there had been an increasing need of cars. The need for this type of transportation gave a rise to need for cars. General Motors and other car companies produced roughly eight million new cars per year during the Fifties6. This situation surprised even the people working at General Motors: No one at GM, Halberstam states, could ever have dared forecast so much prosperity over such a long period of time (Halberstam, 487). The new motto of this prosperity is ‘success begat success’ (Halberstam, 487). To exemplify this success of GM, 49.3 million motor vehicles were registered when the decade began, 73.8 when it ended, and half of them sold by General Motors.

2 Ibid.
3 Ibid.
4 J.B. Jackson is a landscape theorist.
6 Ibid. Social Changes.
3. The Beat Generation. As mentioned already, the social transformation formed a new generation: the Beat. At the end of the spectrum, there were teenagers. Halberstam states in his book: the Fifties that thirteen million teenagers were in the country. These teenagers constituted the new generation as they broke away from their parents. This breaking led them to define themselves in new ways: music. During the fifties, beginning with the revolutionary change of American Music, the society faced unprecedented radical transformation especially in aspects of race and music, the kind of music mainly between the African-American artists. The new decade (the 1950s), as scholars so call it, is ‘a radical challenge to the rigid color line in American popular music and entertainment’ and a cultural revolution as well. This revolutionary moment of the 1950s can be defined as a rise in Black artists and their music. Another important moment in this challenge is ideological intermingling of white artists, white audiences, black artists and black audiences. An assistant professor of sociology, Paul Lopes’ definition of the perspective and the content brought into mind the new music form: Rock and Roll (Lopes).

Rock and Roll was a new form of music including pop, jazz, rhythm and blues; namely ‘a rigid color line’ (Lopes). It appeals to all cultures and this ‘beat’ became ‘hit’ among teenagers immediately after its emergence. This form of music has been named after an old blues song, which sang, ‘My baby rocks me with a steady roll’. Unlike the old slow, sentimental melodies, which reflect the hard times of the war, rock and roll is energetic and ‘get the music back to feet’. Became the legends of Rock and Roll, Elvis Presley, Bill Haley and Chuck Berry changed the ongoing mood of the people not just in America but also around the world. Slightly different from other companions, Elvis Presley was known as ‘the king of Rock and Roll.’ As it has already been stated, Rock and Roll had a powerful effect on society, but especially on the young generation. It is because they had a desire for rebellion.

As Paul Lopes strikingly describes the precise scene of the 1950s that ideologically intermingling of the artists under the framework of this cultural movement what Norman Mailer calls it 'The White Negro'. As 'the White Negro,' (Mailer) Mailer defines his new character 'hipster' and his new doctrine 'Hipsterism.' Norman Mailer, however, particularly used the very concept of the hipster in his riveting essay 'White Negro' in 1957. He appreciably outlined the characteristics of the new rebellious man in detail. He has a rebellious instinct and his eyes are wide open. As David Kamp defined in his essay on the White Negro Problem (New York Times, 2004), the word 'hip' derives from the Wolof term 'hepi' or 'hipi' meaning 'to see' or 'to open one's eyes.' Not to mention his awareness of what is revolving around, the hipster has his own cultural and social norms that he established on his own. This is what Mailer calls this phenomenon, the American Existentialist. The underlying principles of existentialism are that one creates moral and ethical values through his choices and actions. According to his newly established norms, there is no right and wring up until he makes his choice. In addition, to hearken Mailer, in order to be an existentialist, there are some prerequisites. He juxtaposed these conditions: one must be able to feel oneself; one must know one's desires; one must be aware of the character of one's frustration… To sum up, the common denominator for being existentialist is 'the individual' and 'the individual's own choices.'

In one-way or another, the hipsters were individualistic. They wanted to break away from conformity as it is already discussed. This young generation, unlike the previous generation, had not seen America in a depression or in the war. Economy was on the upheaval since the Great Depression. This new generation was surrounded by Rock and Roll that ‘caused teenagers to question authority and their lives.’ One can directly come to this idea that the new generation would not think that the life was perfect as they were rebellious;

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7 Ibid.
8 Ibid.
9 Ibid.
10 Ibid.
11 Norman Mailer, “The White Negro,” IV Dissent, (Spring 1957). While Mailer has popularized the term White Negro, it does not owe its origin to him. The term has been used for several centuries in the West Indies to describewhite men who have become submerged among their Negro servants and concubines.
12 David Kamp is a contributing editor for Vanity Fair and GQ.
13 Ibid. Social Changes.
they question everything; and they did not plan out their future. This would give them the sense of questioning which in the end would drive the society nuts: “Offer them what they secretly want and they of course immediately become panic-stricken” (Kerouac, Part 3, Ch. 5). In conclusion, they became the new movement in the society and did not resemble the previous generation that is “what made the Fifties a turning point”.

One of the most significant arguments in the history of literature and literary movements of the 1950s is the Beat Generation. It is arguably difficult to ignore this idea that ‘the cores of this literary and social phenomenon were three men -Jack Kerouac, Allen Ginsberg and William S. Burroughs’ (Russell, 7). These leading characters were ‘the core of a rebellion to the American post-second world war society,’ namely known as the ‘Beat Generation.’ In addition to first definition of ‘beat,’ Allen Ginsberg defines in an issue of the journal Friction in 1982, was originated from ‘a remark by Jack Kerouac, un-naming of his generation.’ Ginsberg compared his generation with the lost generation writers (Ernest Hemingway, Francis Scott Fitzgerald) that his generation was ‘nothing but a beat generation’ (Ginsberg, 50-52).

The Beat Generation became the central issue for the 1950s, since the Beat Phenomenon ‘transformed American society.’ Allen Ginsberg was one of these ‘beats’. For him, beat means emptied out, exhausted or else, finished. For Kerouac, ‘beat’ was ‘connected to words like beatitude and beatific.’ Beat, moreover, musically means the depressive beats like in jazz, beatitude or being blessed, on the other, it refers to ‘beat up’ echoing being exhausted or beaten up. The word ‘beat’ is also said to have derived from the word ‘beatitude.’ The people constitute this group called Beat Generation.’ It refers to a group of friends (as Ginsberg, Carr, Kerouac and Burroughs are friends) who had worked together on poetry, prose from the mid-forties to late fifties. Moreover, Ginsberg ‘refers to the broader influence of literary and artistic activities of poets, filmmakers, painters, writers, and novelists ‘ who “refreshed the long-lived bohemian cultural tradition in America” (Ginsberg, 50-52). For Ginsberg, there are essential parts of beat generation such as spiritual liberation, sexual revolution; liberation from censorship, decriminalization of drugs (this partly refers to aforementioned birth control pills), evolution of R&B, the spread of an ecological consciousness (respect for everybody regardless of his race, color), opposition to the military-industrial machine civilization. Beats inspired from jazz, eastern religions or from a bummer life. Beat poetry was the most heterodox literary form in the United States of America; but the senses of patriotism remains. Ginsberg revolutionized the traditional poetry in his poem ‘Howl’ (1956):

\[
\text{I saw the best minds of my generation destroyed by madness, starving hysterical}
\]
\[
\text{naked, dragging themselves through the negro streets at dawn looking for an angry}
\]
\[
\text{fix, angel headed hipsters burning for the ancient heavenly connection to the starry}
\]
\[
\text{dynamo in the machinery of night.}
\]
\[
\text{Allen Ginsberg, Howl, For Solomon, Part I}
\]

In a certain way, as the new generation did, the desire for the autonomous work of art shaped the new generation. The desire for the autonomous work of art faded in the desire to replicate life. Published in 1957, Jack Kerouac’s riveting novel, On the Road, tells us of these things. Kerouac, documenting his journey around America, written in three weeks rich of different experiences, calls his work “an improvisational Beat prose.” Professor Amy Hungerford, a professor from Yale University, discusses in her class that replication of desires, in fact, meant the replication of the experience the writer himself had had.

Literarily, the publication of Kerouac’s On the Road in 1957 “signaled the emergence of a new movement in American Literature” (Hopkins, 279). To continue with Hopkins’s ideas, along with Allen Ginsberg’s ‘Howl’ in 1956, Kerouac’s On the Road brought about a counter-culture bubbling in such a conservative frame of the 1950s. Against the traditional methods of composition, the members of Beat Generation Literary Movement made an all-out effort to open up new possibilities of modern composition. Kerouac’s On the Road and Ginsberg’s Howl are two of those works of art of Beat Generation in the Fifties. To further this newly emerged culture; needless to say, they needed a new language to express themselves in this culture, which in the end came to be called ‘hip language’ (Ginsberg, 50-52). To exemplify this unique language: “’Man, I’m beat,’ meaning being without money and without a place to stay; ‘would you like to go to the Bronx Zoo?’ ‘Nah, man, I’m too ‘beat.’ I was up all night,’ meaning to be exhausted, sleepless, wide-eyed perceptive,
rejected by the society he was used to live in and to be on your own (one of the basis of this movement). The phrase ‘to be on your own’ is at the heart of our understanding of the aspect of the language that the Beat Generation Literary Movement had formed. What the language of the Beats intended to write was ‘to make the language totally autonomous, to separate from the world’ (Hungerford, Lecture on Jack Kerouac at Yale University). However, the notion of creating an autonomous work of art enabled us to deeply get in the Beats. Hungerford’s phrase of autonomous work of art can be characterized through the term Ginsberg had already made. With his companions, Ginsberg desired for ‘liberation of words from censorship’ (Ginsberg, 50-52). Their desire for being free was obviously reflected through their works of art.

3. Conclusion. In this respect, in conclusion, we can state that Kerouac’s relentless seeking sense is at the heart of our understanding Kerouac’s work (Hungerford). What is interesting in this writing is that Kerouac together with Ginsberg and his other ‘hip’ friends became the name of the transformation in the 1950s. Despite the negative results of the Great Depression and WWII, sudden evolution in habits, flowering of new social communities could also be defined as that for the first time in American society, people saw a rapid change of technological advances in the Fifties and its social, cultural and literary reflections transformed this landscape forever. ‘Cozy’ 1950s, safe, secure notions of the Fifties affected American society to feel that the decade the 1950s were the happiest time in America, cherished by all people leaving behind good memories. In addition to the affluence of the fifties, they were the Beats who became the voice of the younger generation of the Fifties who did not appreciate their parents’ ‘fake optimism’ anymore.

REFERENCES

WOMEN MANAGERS IN PAKISTAN: CHALLENGES FACED IN CROSS-CULTURAL WORK ENVIRONMENT.

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ABSTRACT: The present economic boom and the influx of modern organization has brought many opportunities for women. They are now joining many different fields which were previously considered male domain. Modern organizations practice western management style of working and the socio cultural norms of Pakistani society posit different norms. The prodigy has thus brought challenges for women mainly in two ways, first, gender construction of inside/outside paradox defines women's position in reproductive role. Second, women's entrance in market are not welcomed whole heartedly, gender stereotyping and glass ceiling keep women from many occupational growth. This study aims to explore those challenges that women managers face due to these inconsistencies between socio cultural values and modern organizational demands. The phenomenon has tried to be explored from Pakistani context. The researcher of the study adopted Quantitative research approach to explore the phenomenon. For this purpose self administered questionnaire was developed and circulated to 110 women managers through purposive sampling technique across the twin cities of Pakistan; Rawalpindi and Islamabad. The study explored that women managers face different subtle and obvious societal and organizational challenges that includes structural barriers, glass ceiling, male ego, networking, and mentoring relations in the organization.

Key Words: Women managers, Cross-cultural environment, Organizational barriers, Gender stereotyping, Glass Ceiling, Pakistan.

Introduction: Contemporary influences of modernization and urbanization, with more influx of multinational corporations has opened up new pathways for women as more and more women are joining the fields which were previously considered as males’ domain (Naqvi, 2009; Guney, Gohar, & Akinci, 2006). The under-representation of women in management positions continues to persist globally even in the developed countries in the world (Economist, 2005). Mitra (2003) argues that gender-related differences still prevail in the developed world although at implicit level. In the developing countries this phenomenon of differential echelon of male’s and female’s career is very much explicit.

Pakistani managers and entrepreneurs have now adopted the North American management and human resource management practices as strategies to attain above average growth and sustainable survival in the changing market (Saher, 2010). In line with this perspective, women workers are hired on priority to create the North American, gender egalitarian, impression. Thus, more women are joining professions which were previously considered male domains; and a good number of women professionals are working on managerial level (supervisors, managers and even directors) in local organizations. On the hand the socio cultural values of Pakistani society has not changed which posit women in the subordinate position. There are certain rules/demands which are inconsistent with societal norms of Pakistani society for example managerial positions...
demand employees to be more assertive, aggressive and empowered whereas the socio-cultural values of modesty, family honour encourages women to be humble and subservient (Syed, 2008).

This situation becomes more aggravated for women at top hierarchy and managerial positions in the organizations which creates number of challenges for women managers. Reasonable amount of scholarship is available on the barriers women managers experience in gender based societies (Budhwar, Saini, & Bhatnagar, 2005; Kaila, 2007; Tlaiss and Kauser, 2010; Kauser & Tlaiss, 2011). These barriers related to the nature of challenges Pakistani women managers experience in the cross cultural environment of modern organization in Pakistan are still unexplored. This paper focuses on this gap in current literature and explores the challenges for women managers in the service sector firms in Pakistan. The use of mix method approach gives helps to explore the phenomenon at hand more holistically.

In line with the challenges, this paper is significantly unique as it provides theoretical and practical contribution. From theoretical perspective, this paper provides an insight from an emic perspective. A number of scholarships shows the importance of contextual human resource practices in the organization around the world which demands more focus on the context specific knowledge of the organization's human resource practices. This study will help to understand the phenomenon in the context of Pakistan that how human resource practices in Pakistan are different from the rest of the world due to the strong patriarchal structure of Pakistani society. Second, this paper will provide the practical contribution by helping to develop strategies for women managers, organizations and policy makers. As scholarships suggest that women are entering the market in large extend, by understanding the reality from an emic perspective these women can develop strategies to survive and grow in the market. Similarly this study will provide help to managers to understand the potentialities of women and to make viable strategies to include women in the mainstream by creating more context specific work environment. This will further help organizations to expand gender diversity and grow while avoiding the conflicting situation. The study will also help policy makers to develop pragmatic policies on the structural level with a clear understanding of socio cultural values and modern organizational demands. Third, the study will contribute in the academic knowledge. As large number of women are now pursuing the career by undertaking management courses in universities equal to or greater than that of men's proportion. To the best of our knowledge, limited scholarships are available on the topic at hand. This study will help academia to prepare women and men before entering the market by understanding the context specific phenomena.

In this paper, we will start with the review of relevant literature, preceding with developing our theoretical and research framework and then explain our research and analysis methods. In the subsequent paragraphs, research results and discussion will be presented. The last section will comprise of conclusion, research limitation, research implication and future research directions.

**Women, Management and Socio Cultural Barrier:** Scholarships revealed that organizational work culture in Pakistani organizations are changing in the last two decades. Now many organizations are trying to develop international standard in the local market by following western especially the North American human resource management practices. Western human resource practices are based on individualism, equality and gender egalitarianism to compete and survive in international market (Safer, 2010). This demand has attracted many women in the market on different occupational positions especially in the higher echelon of the organizational hierarchy. Large number of women are also joining management degrees in the universities even in greater proportion than men (Ghaus and Raja, 2013) which explicitly shows change in the outlook of society.

However, on the other hand, there is no significant change implicitly in the socio cultural values of Pakistani society. According to Lyon and Safer Pakistani society is based on collectivism, asymmetrical relationship and gender segregation (Safer, 2010; Lyon, 2002). Women are the sign of family's honor and respect. Female modesty is associated with the mobility and interaction of women. This gender construction encourages women to be humble, submissive and caring in dress, conversation and action (Kauser and Tlaiss, 2011) and consider women to be appropriate for reproductive domain (strategy article). UNDP (1996) describes the strong “inside/outside” dichotomy in Pakistan, where women are restricted to the “inside” space of home and household, heavily sexualised with the concept of Purdah (veiling). In contrast to Pakistani cultural values,
modern organizations demands certain rules which are not consistent with societal norms of Pakistani society for example managerial positions demand their employees (male and females) to be more assertive, aggressive and empowered whereas the socio-cultural values of modesty, family honour encourages women to be humble and submissive (Kauser and Tlaiss, 2011). Anyhow women are joining different professions which were previously considered as male domains. These women are exposed to different social cultural and organizational expectations. This phenomenon creates an invisible yet continuous conflict among employees leading to a constant threat to superiors’ (women as managers) authority and effective (individual, work-team, departmental and organisational) performance.

Scholarships reveal that women's under-representation in high echelon of the organizational hierarchy are deterred by many socio cultural, governmental, and economic factors (Jamali, 2009). Kauser and Tlaiss (2011) conferred that socio cultural values and expectations shape women's lives and career. The gender configuration of society often question women's suitability for decision making and management position. Patriarchy and the resulting ideologies created normative barriers for women's progression on such positions. Alvesson and Billing (1997) discussed these barriers as macro level means looking at society from above which includes historical perspectives concerning the division of roles in society between men and women. Women face continuous normative pressures expected women to primarily serve their family roles which resulted with aggravating idea about women's suitability for higher positions (Tlaiss, 2013).

**Organizational Level Barriers:** Budhwar states that women look for work from economic necessity and for personal goals. Women in lower to middle socioeconomic status seek income opportunities, and those in the upper middle class pursue a career for professional ambitions. Women with higher education have more interest in independence, are career-oriented and interested in quickly moving up the organizational ladder (Budhwar et al, 2005). Goheer (2003) contends “the modern cosmetic ting of equality, though shows number of women in the labour market but it sometime positively discriminate women because the interest of patriarchal system still work behind the scene which maintains the status quo”. Blair-Loy (2001,p 687) states that despite dismantling barriers to gender equality, gendered cultural models of work and family continue to constrain women's workplace achievement. Much research has also been conducted at organizational level which shows that culture and structure of organizations serves major role in relation to women’s opportunities of getting a top leader position (Ahl 2004, Alvesson, Billing 1997).

**Gender Stereotyping:** Scholarships defined that organizational work culture is based on patriarchal structure. Khilji (2003) defines that organization's HR practices reflects the practices of their national culture in which they operate. Generally management is seen as a career for men and most of the top positions are filled by men (Powell and Graves, 2003). Women possess mostly the marginal position in line with many challenges such as gender stereotyping which held them back in term of exercise of duty and performance (Chuma and Ncube, 2010). Lämsä (2003) argues that women face a gender paradox: in one hand she has to be “a real woman” by developing a feminine attribute of care giver and on the other hand she has to possess masculine attribute to fulfil the demand of managerial position by being “a real manager”. Budhwar and associates (2005) also depict that woman managers have to deal with the male ego which is viewed as serious barrier to women’s up ward growth on the managerial ladder. When women managers order men in general and to older men in particular, they feel emotionally challenged. Chuma and Ncube (2010) assert that women's performance on managerial position is often jeopardized by their male colleagues especially the older colleagues as they feel insecure from women and consider managerial position as their right. This is because of gender role socialization and role expectations in patriarchal societies. This phenomenon of gender role expectation and in turn power relation actually restrains women to associate themselves with male colleagues and lead them from the front in the organization. And interestingly women managers face more retaliation and denial of their authority from their junior colleagues as they perceive management as male's domain and women as less appropriate (Kattara, 2005). Gupta and colleagues contend that mostly women’s capabilities are less appreciated. Women are evaluated according to cultural conception of gender roles (Gupta, Koshal and Koshal, 2006). Shah contends that men in Pakistani society find it hard to accept women in the
positions of authority even in a professional context, which suggests home-to-job transferring of role
relationships (Shah, 1999). Men's dominance in the domestic setting is replayed in the 'public'. Women managers
are further stereotyped because of their role as mothers as not being serious or reliable enough to take positions
as managers because their priorities tilted more towards caring and raising a family. This often aggravate the
argument over successful executives are unable to manage multiple priorities. Therefore, women are not taken
seriously at work (Pollard, 2006).

Glass Ceiling: Women are graduating and entering management positions yet there is a blockage at middle
management levels (Ghaus and Raja, 2013). The representation of women at senior management level is quite
despairing comparing with mid level management ratio. Women's experience of gender stereotyping aggravate
the glass-ceiling effects that keep them from climbing corporate ladders to levels above middle management.
Women around the world face different barriers (ILO, 2004) to the position where they can inspire and
influence organizational strategy and policies (Ghaus and Raja, 2013). These barriers are coined as 'Glass
Ceiling'-- which is defined as those artificial barriers based on attitudinal or organizational bias that prevents
qualified individuals from advancing upward onto managerial positions (US Department of Labor, 1991). Naqvi
(2009) also highlights that surely “more and more women in Pakistan are entering the workforce today, though
their growth is more horizontal than vertical”. Lyness and associates (2006) revealed that women managers
experience different horizontal and vertical occupational barriers. Kauser and Tlaiss’s (2011) study also
explored that women face different structural barriers together with discriminatory recruitment and promotions
practices favouring men for managerial positions especially on middle and senior positions.

Kauser and Tlaiss further defined that majority of men shapes hierarchies in the organization. This hierarchy and
manifestation of power isolate women from the main stream activities and power net works in the organization
(2011). These networks are male domains and women's virtual exclusion from their networks deprives them
from professional support, career planning and access to key personnel and organizational information (Al-
Lamki, 1999).

Kauser and Tlaiss (2011) have highlighted that women are deprived of formal access to opportunities of growth
and development such as training and education. They constitute a weak group in the organizational power
structure due to their low positions within the organizational hierarchy. Ultimately this result in their lower
access to informal power as a result of their exclusion from informal organizational networks. According to
Kanter's (1977) theory of sex discrimination, the structural characteristics of the organization such as the length
of career ladder, number of male-dominated hierarchical levels support men's rather than women's career
advancement. Exclusion from old boy's network further denies women from informal opportunities such as
mentoring and peer support. Thomas and associates (2013) described networking as an advantage of sharing vital
information, strategizing and planning career, increased visibility and offering professional support to women.
In a similar context, mentoring interaction can also help women towards the advancement of their career to top management position and breaking the glass ceiling metaphor because it provides women with emotional support to enhance their career. Gupta and associate (2006) further elaborates that women’s advancement to corporate leadership include lack of mentoring of women, lack of awareness by women of company politics and an inhospitable corporate culture (Khawer, 2009).

Research Method: The overview of the literature shows that women manager around the world face different
challenges. The study of the scholarships also showed that women managers in Pakistan also face various subtle
as well as obvious challenges on organizational and societal level. This research study aims to reveal those
challenges experienced by women managers in Pakistan on organizational and societal level.

The initial themes drawn after extensive review of literature are classified into different categories for examples socio cultural barriers, Organizational barriers: gender stereotyping and glass ceiling: male ego, networking and mentoring relation. Quantitative research approach is employed to conduct research on the issue at hand. Self administrated questionnaire was developed and data was collected through convenient sampling technique. Services sectors firms (banks, hospitals, universities, and telecommunication) from the twin cities of Pakistan (Islamabad and Rawalpindi) have been selected for data collection. The unit of analysis for this study was
women managers belonging to mid level and senior level ranks in the service sector firms. The responses of the study were measured through scale ranges of (1) Strongly agree (2) agree (3) neutral (4) disagree (5) Strongly disagree. Total 110 questionnaires were personally given to women managers in the selected organizations. The tool used for data analysis was SPSS version 18 (Statistical Package for the Social Sciences) software. The data was analysed with the help of SPSS to describe data into simple descriptive statistics.

Results and Discussion

Table 1. Basic Demographic Data

<table>
<thead>
<tr>
<th>Age</th>
<th>%</th>
<th>Qualification</th>
<th>%</th>
<th>Organizations</th>
<th>%</th>
<th>Marital Status</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-30</td>
<td>56.4</td>
<td>Matriculation</td>
<td>0.9</td>
<td>Banking</td>
<td>30.9</td>
<td>Married</td>
<td>80</td>
</tr>
<tr>
<td>31-40</td>
<td>36.4</td>
<td>Graduation</td>
<td>11.8</td>
<td>MNCs</td>
<td>14.5</td>
<td>Un-married</td>
<td>9.3</td>
</tr>
<tr>
<td>41-50</td>
<td>5.5</td>
<td>Master/BA</td>
<td>66.4</td>
<td>Educational sector</td>
<td>26.4</td>
<td>Widow</td>
<td>10.7</td>
</tr>
<tr>
<td>51 and above</td>
<td>1.8</td>
<td>M.Phil/MS</td>
<td>13.6</td>
<td>Hospital</td>
<td>21.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ph.D</td>
<td>7.3</td>
<td>NGO's</td>
<td>6.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>Total</td>
<td>100</td>
<td>Total</td>
<td>100</td>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 1 depicts the distribution of respondents in different service sector firms. Variance exists in the distribution of the respondents in these sectors. The reason for this variance is a purposive sampling, based on the availability of respondents and researcher’s purposive choice of respondents. The data depicts the distribution of respondents according to the condition of their ranks. The researcher chose to target the mid level managers and the senior level managers. The result shows the high percentage 56.4% respondents between the age of 20-30 and between the age of 30-40 with 36.4%. The table further shows 66.4% women have Masters or Honors degrees and 13.6% women have Mphil/MS degrees. Similarly, 50% respondents were married and 49% were unmarried women on managerial positions.

Table 2: Perspective on socio cultural barriers for women managers

<table>
<thead>
<tr>
<th>Statements</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women managers are expected to maintain balance between expected organizational and family roles.</td>
<td>39.1%</td>
<td>49.1%</td>
<td>10%</td>
<td>1.8%</td>
<td>0%</td>
</tr>
<tr>
<td>A good wife and a mother are considered good women.</td>
<td>39.1%</td>
<td>51.8%</td>
<td>4.5%</td>
<td>3.6%</td>
<td>0.9%</td>
</tr>
<tr>
<td>At time of pressure women managers give preference to family over professional roles.</td>
<td>22.7%</td>
<td>40%</td>
<td>13.6%</td>
<td>20.9%</td>
<td>2.7%</td>
</tr>
<tr>
<td>Woman manager has to give time to their other social relations too.</td>
<td>19.1%</td>
<td>55.5%</td>
<td>10%</td>
<td>12.7%</td>
<td>2.7%</td>
</tr>
<tr>
<td>Women are usually caught up between the norms of family and workplace</td>
<td>9.1%</td>
<td>38.2%</td>
<td>29.1%</td>
<td>20.9%</td>
<td>2.7%</td>
</tr>
<tr>
<td>Women’s work is still taken as nominal.</td>
<td>10%</td>
<td>40.9%</td>
<td>27.3%</td>
<td>18.2%</td>
<td>3.6%</td>
</tr>
<tr>
<td>Women are considered less preferred for decision making.</td>
<td>8.2</td>
<td>34.5%</td>
<td>24.5%</td>
<td>25.3%</td>
<td>5.5%</td>
</tr>
</tbody>
</table>

Table depicts the opinion of respondents that women face pressure of maintaining expected organizational and family roles. High percentage (49%) agrees that women have to balance expected role. Results reveal that 51.8% women agreed and 39% strongly agreed that good wife and mother are perceived good women. Similarly, at time of pressure women managers give preference to family role over professional roles. Majority
of the respondents (40%) agreed and 22.7% strongly agreed that women give preference to family over work. Women manager according to the result agreed (55.5%) that women manager in order to give more time to office often face strain and ties in their social relations. Results further shows that 38% women agreed and 29% were neutral regarding the statement that women are usually caught up between the norms of family and workplace. Similarly the results shows that 34.5% women agreed that women are still considered less preferred for decision making however, 24% were neutral and 25% disagreed that the mind set has changed and now women are considered for decision making positions. The result highlighted that women face structural barriers from the socio cultural views. Women's reproductive roles are always preferred over the professional career of women. Women manager have the higher pressure of fulfilling the demands of the managerial positions and their reproductive roles equally.

Organizational level challenges:

Table 3. Perspective of women on gender stereotyping in the organization

<table>
<thead>
<tr>
<th>Statements</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women desire less challenging tasks.</td>
<td>5.5</td>
<td>38.2</td>
<td>22.7</td>
<td>18.2</td>
<td>15.5</td>
</tr>
<tr>
<td>Women require more leaves than men for household matters.</td>
<td>15.5</td>
<td>40.4</td>
<td>23.6</td>
<td>12.7</td>
<td>8.2</td>
</tr>
<tr>
<td>Women managers leave their jobs in the early stages of career.</td>
<td>5.5</td>
<td>41</td>
<td>11.7</td>
<td>30</td>
<td>11.8</td>
</tr>
<tr>
<td>Women are non serious towards their jobs.</td>
<td>6.4</td>
<td>38.2</td>
<td>16.4</td>
<td>27.3</td>
<td>11.8</td>
</tr>
<tr>
<td>Women are weak decision makers</td>
<td>8.2</td>
<td>34.5</td>
<td>24.5</td>
<td>25.3</td>
<td>5.5</td>
</tr>
<tr>
<td>Male ego is one of the issues that women face at the decision making positions.</td>
<td>36.4</td>
<td>46.4</td>
<td>10</td>
<td>4.5</td>
<td>2.7</td>
</tr>
<tr>
<td>Junior colleagues show retaliation to take orders from female bosses.</td>
<td>6.4</td>
<td>40</td>
<td>28.2</td>
<td>22.7</td>
<td>2.7</td>
</tr>
<tr>
<td>Public attitude is generally negative.</td>
<td>6.4</td>
<td>50.9</td>
<td>27.3</td>
<td>11.8</td>
<td>3.6</td>
</tr>
<tr>
<td>The negative response of the male colleagues influences women's performances.</td>
<td>10.9</td>
<td>56.4</td>
<td>15.5</td>
<td>13.6</td>
<td>3.6</td>
</tr>
</tbody>
</table>

Table 3 illustrate the gender stereotyping in the organization. According to result, it is perceived that women usually desire less challenging tasks, 38% respondents agreed with the statement. Forty one percent (41%) respondents expressed that people perceive that women leave their jobs in the early stages of their career and 38% agreed with the statement that women are considered as non serious towards their jobs. Similarly, the result also shows that majority (34.5%) of the respondents agreed that women are considered as weak decision makers. Male ego is one of the issue that women face during their careers, 46% agreed and 36% strongly agreed with this statement. On similar account, majority of the respondents (40%) also agreed that junior colleagues often show retaliation to take orders from female bosses. Majority of the respondents (50.9%) agreed that public responses are generally negative and 56.4% women managers expressed that people's negative behaviour influences the performance of the women in the organization. Therefore, the overall result shows that women face multiple challenges based on gender stereotyping by male colleagues in the organizations which influences women's performance and other occupational growth.

Table 4. Perspective of women managers regarding glass ceiling.

<table>
<thead>
<tr>
<th>Statements</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women managers face more hindrance to career progress than other working women.</td>
<td>8.2</td>
<td>54.5</td>
<td>21.8</td>
<td>12.7</td>
<td>2.7</td>
</tr>
<tr>
<td>Women managers face challenge of lack of mentor in the organization.</td>
<td>0</td>
<td>50%</td>
<td>5%</td>
<td>38%</td>
<td>7%</td>
</tr>
</tbody>
</table>
Table 4 shows the perception of women managers regarding glass ceiling phenomenon. Consistently, majority of the respondents (54.5%) agreed that women managers face more hindrance to career progress than other working women. Majority of the respondents (50%) agreed that women managers face challenge of lack of mentors in the organization. Similarly, 50.9% women disagreed with the statement that women are equally included in informal networks/power relations and equal numbers show that women are also deprived of mentoring in the organization. Regarding the organization's family friendly policies 39% women agreed however, 40.9% women were neutral. According to result, more women were neutral and interestingly 34% agreed about the equal opportunities of trainings for women managers. Result found that women are excluded from the informal networks/power relations and they don't get mentoring in their organizations.

**Discussion:** This study aimed to explore the challenges women managers face in the service sector firms of Pakistan. Results unearth that women face many challenges in the managerial positions. Consistently the influx of modern organization has attracted more and more women in the positions which was previously considered male's domain (Naqvi, 2009). Whereas, result reveals that women face different structural barrier at societal level. Women have extended their boundaries by stepping into different positions but there is no structural change regarding women. Mitra (2003) argues that gender related differences still prevail in various degrees in developed and developing countries around the world.

The result shows that women have to balance both roles in Pakistani society. Women's reproductive role is the prime responsibility which cannot be negotiated. A good mother and wife is a sign of good women. UNDP report (1996) describes that Pakistani society has strong inside/outside dichotomy regarding the role of women and men which is utter in many respect. Women managers have to give preference to their family role at time of pressure over professional roles. Women’s confinement to reproductive role is due to the socio cultural norms of the Pakistani society and the religious obligation. Consequently, woman's prime responsibility to her family is taken as non seriousness towards her career and given an impression that women work temporarily. Respondents highlighted that these gender beliefs further create an immense challenge for woman when she has to step out for job and to survive and grow in her position.

The result further reveal that women managers are entangled between the norms of the family and workplace. They are expected to be masculine in behavior required for the managerial position and at home they have to be softer and flexible. Similarly there is difference in organizational culture and the culture at home. The study of Lämsä (2003) reveals that this gender paradox of a real women and real manager entangle women between these two role pressures. The present economic boom has emerged the egalitarian nature of workplace which demands women to be westernized but Pakistani culture is not changing at that pace. This dissimilarity creates challenges for women to switch from one role to another role.

This study also aimed to explore the organizational challenges that women manager face such as gender stereotyping and glass ceiling. According to the result, it is perceived that women are usually non serious and they drop their career any time. Similarly it is also perceived that women desire less challenging tasks in the job and they have weak decision making ability therefore are not suitable for the managerial position. Men also perceive that managerial position is male's domain and women unrightfully get this position. This gender stereotyping leads to glass ceiling phenomenon for women in the organization. Women managers face male ego and often junior colleagues show retaliation to take orders from female bosses. consistently, women face negative public attitude which further influence their performances. Study of Chuma and Ncube (2010) shows gender stereotyping held back women in term of exercise of duty and performance.
Gender stereotyping however, amplify the glass ceiling phenomenon for women in the organization. The result of the study shows that women manager face more hindrance to career growth than the other working women. They have less promotional opportunities due to strong gender stereotyping and organizational unfriendly policies. Similarly result also revealed that women lack mentoring relations which can help them to move up to promotional ladders. It is also revealed that women are excluded from informal networks/power relations which further aggravate the glass ceiling phenomenon for women.

**Conclusion:** This paper sets out to explore the challenges faced by the female managers in the service sector firms in Pakistan. There is limited scholarship available on the topic at hand, however, this study is unique because it gives an in-depth insight about the challenges that women managers faced in the contemporary organizations. The research has some limitations mainly because the results are based on the opinion of women managers in the service sector firms in Rawalpindi and Islamabad. Since, Islamabad is the capital city, therefore challenges that women managers face here might be different in its intensity and sensitivity from those of the responses from Rawalpindi which is semi urban. Therefore one should be vigilant in generalizing the findings. Future research could take into account the diversity in service sector firms through quantitative study.

The findings of the study show that women have double edge pressure of managing the expectations of modern organization and socio cultural values of Pakistani society. Research results showed that women on leading positions in this organization experience socio cultural and organizational barriers. These women not only experience barriers to move upward (the phenomenon of glass ceiling) but also face problem to develop horizontally (phenomenon of glass wall) mentioned by Amos-Wilson [24]. Women have limited access to male social networks that are sources of information, opportunity and influence and play major roles in the organizational life.

Furthermore the data disclosed that despite the legal authority, women heads and supervisors exercise less formal authority and more personalized ways of handling situation. Research findings also unleashed that there is more interference in the departments and teams headed by women rather than men. The result unleashed that women managers are not included in the male networks despite the support and favours to male colleagues. Consistently, these women remained less informed and isolated. The in-depth insight provided by this paper can be used to develop effective diversity management program in Pakistan. This paper can also be helpful to international as well as national managers to comprehend women issues at workplace in Pakistani and develop strategies to effectively incorporate women into the mainstream activities in the contemporary organizations.

**REFERENCES**


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BIRUNI’S CONTRIBUTION TO THE COMPARATIVE STUDY OF RELIGION

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ABSTRACT: Abū al-Rayhān Muhammad ibn Ahmad al-Bīrūnī is a pioneer in the study of comparative religion. He born 5 September 973 in Kath of Khwarezm and died 13 December 1048 in Ghazni. This article focuses Al-Biruni’s Contribution to Comparative Religion which is one of the outstanding achievement of his thought. Our study is informative and suggestive, especially based on his two famous books ‘kitab al-athar’ (999) and ‘kitab al-hind’ (1030). He wrote Kitab al-Athar mainly to satisfy his curiosity as to why different people used different cylindrical systems. And also clarify why certain nations preferred certain times and events for their festivals and commemoration days. In addition, this book pays great attention to festivals of various civilizations. On the other hand, Kitab al-Hind (1030) is based on his journey to Hind while Mahmud (998-1030) was setting up his political institutions in northern India. He provides in this book a detailed account of Indian life, religions, languages, and cultures and includes many observations on geography. Both Kitab al-Hind and Kitab al-Athar also include material on other religious communities, primarily the Jews, Christians, and Zoroastrians. Although Biruni’s knowledge of Hind’s civilization grew rapidly while he served Mahmud in northern India. Al-Biruni classifies Indian religions according to the religious outlooks found in Hindu texts or sayings of Hindu philosophers/theologians and in the attitudes of ordinary people in a popular context. He suggests five important elements to understand its people’s religious life. These are: the main Indian language (Sanskrit), major religious treatises, religious attitudes, their customs, and the Hindus’ attitudes toward others. Al-Biruni divides Hindus into an educated and an uneducated class. He describes the educated as monotheistic, believing that God is one, eternal, and omnipotent and eschewing all forms of idol worship. He recognizes that uneducated Hindus worshipped a multiplicity of idols yet points out that even some Muslims (such as the Jabiriyya) have adopted anthropomorphic concepts of God. He collected a lot of data about Buddhist cosmology from Abu Sahl ’Abd al-Mun‘im ibn ‘Ali ibn Nuh al-Tīflīsī Zarqan, and Abu al-‘Abbas al-Iransahr. Biruni studied more about Zoroastrianism, Judaism, Hinduism, Christianity, Buddhism, Manichaeism Greek religion, Judaism, Christianity, Sabeans, Khwarizmians, Arabian paganism and Islam. He explain religions objectively and tried hard to understand them on their own terms. Biruni expresses his thought in three Methods. Phenomenological Method, Dialogical Method and Comparative Method. In order to those methods we have tried to express his religious view elaborately.

key word: Biruni, comparative religion, Kitab al-Hind, Kitab al-Athar, Hinduism, Monotheism, polytheism, methods, philosophy.

Introduction: Mediaeval Muslim age, a period of philosophical development this began in the 2nd century AH of the Islamic calendar (early 9th century CE) and ended until the 6th century AH (late 12th century CE). The period was known as the Islamic Golden Age. During this time, Indian, Assyrian, Iranian and Greek knowledge was translated into Arabic. These translations became a wellspring for scientific advances, by scientists from the Islamic
civilization, during the middle Ages. Scientists within the Islamic civilization were of diverse ethnicities. Most were Persians, Arabs, Moors, Assyrians, and Egyptians. They were also from diverse religious backgrounds. The achievements of this period had a crucial influence in the development of modern philosophy and science. Medieval Islam was likely the key developing period of religious and cross-cultural studies in Islamic intellectual history. As Franz Rosenthal points out, “the comparative study of religions has been rightly acclaimed as one of the great contributions of Muslim civilization to mankind’s [sic] intellectual progress” (Rosenthal11, 1973:p 546). For example, from the eight to tenth centuries, Muslim historians, geographers, and travelers focused on seven great ancient civilizations: the Persians, Chaldeans, Greeks, Egyptians, Turks, Indians, and Chinese. In this period Al-Biruni was well known as a pioneer in the study of comparative religion. I used here his famous book Tahqiq Ma li al-Hind min Maq’lah Maqb’lah and Kitab al-Athar al-Baqiyah ‘an al-Qur’n al-Khaliyyah and tried to present his religious view elaborately.

Biography and works: Abu Rayhan Muhammad ibn Ahmad al-Khwarizmi was emerged as a famous scholar of Central Asia, Pakistan and India. He was also a prolific writer. His writings covered the areas of history, philosophy, society, culture, astronomy, mathematics, geography and others. The available literature does not agree on when and where Al-Biruni was bornii. There is no any historical record of his burial place. But some scholars mentioned that, he was born in 973 A.D. in Khwarizm, near modern Khiva in Uzbekistan, and died in 1048 A.D. probably in Ghaznah, today’s Afghanistan (G. Allana4, 149:1979). According to a Persian lexicographer, the root b-r-n means “the outside” (noun) and “outside” (preposition), indicating that al-Biruni came from a suburb of Khwarizm.

Muslim genealogists offer no further information about his ancestors (Sidu17, 1999: p 15), religious life, or childhood. His first teacher was an unknown Greek scholar. Afterward, he studied with ’Abd al-Samad ibn ’Abd al-Samad, who introduced him to scientific knowledge. He learnt astronomy and mathematics from his teacher Abu Nasr Mansuri, who was a member of the royal family at Kath. Al-Biruni made several observations with a meridian ring at Kath in his youth. In 995 A.D. Jurjani ruler attacked Kath and drove Al-Biruni into exile in ‘Ray in Iran. There he remained for some time and exchanged his observations with Al-Khujandi, a famous astronomer. Biruni later discussed about it in his work Tahdīd. In 997 A.D. Al-Biruni returned to Kath, where he observed a lunar eclipse that Abu al-Wafa observed in Baghdad. On the basis of his observation he invented time difference between Kath and Baghdad. In the next few years he visited the Samanid court at Bukhara and Isfahan of Gilan and collected a lot of information for his research work.

At the age of twenty, he traveled to Jurjan (Hyrcania) and met Abu Sahl ‘Isa al-Masih, an astronomer and physician. In addition, he was trained by Abu al-Wafa’a a.k.a. Nasr ibn ‘Ali ibn ‘Iraq al-Jabali (Dimirdash2, 1980:p 18), an astronomer and mathematician. Al-Biruni lived in Jurjan for many years and enjoyed the protection of Kabus ibn Washmgir Shams al-Ma’ali, a prince who ruled this city from 366-71 AH and 388-403 AH and to whom he dedicated his Al-Athar al-Baqiyah ‘an al-Qur’n al-Khaliyyah. (Al-biruni1, 2001:p2-3). Al-Biruni later returned to Khwarizm and stayed there until Mahmud of Ghazna conquered it and established his political authority throughout South and Central Asia in 1022 AD. Mahmud carried off scholars and respected people from Khwarizm, including al-Biruni, to India/Afghanistan. Among the savants were the physician Abu al-Khayr ibn Khammar and Abu Nasr ibn ‘Iraq. Mahmud also attempted to bring Abu Sahl ‘Isa al-Masih and Abu ‘Ali ibn Sina; however, they had already escaped Jurjan and Khwarizm (Right19, 1934: preface).

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1 He is also known as Al-Biruni, some pronounce his name as al-Birawni or al-Bayruni instead of al-Biruni.

2 Dimirdash, Albiruni, 17; F.A. Shamsi mentions fourteen different views on Al-Biruni’s birth date and place. For a detailed discussion of the subject, see F.A. Shamsi, ”Abu Al-Raihan Muhammad Ibn Ahmad Al-Bayruni 362/973-CA.443/1051,” in Al-Biruni Commemorative Volume (Pakistan: Hamdard Academy, 1979), 260-288.

3 960-1036 A.D

4 940-1000 A.D

5 He died in a dust storm in the deserts of Khwarezmia in 999–1000 CE

6 997-1012

7 971-1030

8 942-1017 A.D

9 970-1037

x 980-1037
Al-Biruni was then sent to the region near Kabul where he established his observatory. (Encyclopedia\textsuperscript{3}, 1937:p578) Later he was deputed to the study of religion and people of Kabul, Peshawar, and Punjab, Sind, Baluchistan and other areas of Pakistan and India under the protection of an army regiment. Biruni began studying languages at an early age because for him, language was one of the key elements for comparative study. Since Khawarizmian was his mother language, he was able to communicate well in both the Arabic and Persian languages. Later in his life he learned Sanskrit, Greek, Syriac, and Hebrew. (Kennedy\textsuperscript{6}, 1989: p 155) His command of Sanskrit reached a point where, with the aid of pundits, he was able to translate some Indian books into Arabic, and Arabic books into Sanskrit, as Al-Biruni himself informs us. (Sachau\textsuperscript{12}, 1958: p 7)

By this extraordinary skill, he wrote about 180 books in Arabic and Persian languages. Of these 103 were published in his own lifetime, 12 were completed after his death in his name by Abu Nasr, 12 by Abu Sahl and one by Abu Ali al-Hassan b. Ali Djili, thus making a total of 138, few have survived the test of time. (The Encyclopedia of Islam, 1954-2005: p 1237) after the death of Sultan Mahmud in 1030 AD, he completed his Kitab al-Hind, where he elaborately expressed his comparative religious thought.

He wrote Kitab al-Athar (390/999 AD) mainly to satisfy his curiosity as to why different people used different calendrical systems and to clarify why certain nations preferred certain times and events for their festivals and commemoration days. (Sachau\textsuperscript{13}, 1879:p 2) In addition, this book pays great attention to various civilizations’ festivals. In his Kitab al-Athar, al-Biruni collects information on various civilizations’ calendrical systems, which are related to religious events. The festivals and feast days, religious traditions, calendrical systems of the Jews, Persians, Christians, pre-Islamic Arabs, Sabians, and Muslims were the main topics of Kitab al-Athar. He discusses about them from two points of view. Some of the topics are discussed by astronomical and astrological views. Other topics are elaborated upon the religious events and festivals in various religious traditions. He tries in this book to observe the chronology of ancient nations, but he provides no proper method of classification. For the most part, the topics of discussion are collected from festivals or religious events. He finds the similarities and differences of traditions, religious institutions, and opinions within various groups or nations. On basis of them he presents a wide-ranging discussion of the divisions of religious festivals. We may also say that, this book is written from his aspects as an astronomer, astrologer, and geographer, and not especially as a religionist. So he didn’t discuss elaborately the significant types of each religious traditions and theological doctrines in his Kitab al-Athar.

In this book he points out that, the beginning of the Muslim era al-Hijrah corresponded with the first of Ramadan according to the pre-Islamic calendar. He calculates that exactly 3472 days had elapsed between al-Hijrah and Yezdgerd. He informs us that the ancient Arabs had learnt the system of inter-collation from the Jews of Yathrib 200 years before the Prophet’s migration to Medina. They fixed seasons for the pilgrimage of Mecca as well as the marketing days and festivals. In the year of the Prophet’s migration, the pilgrimage fell in Sha’ban, and so the Prophet did not like to perform it and restored it to its ancient position after the conquest of Mecca. It is also notable that according to al-Biruni, the Prophet died on the 8th of Rabi’ul Awwal, and not on the 12th as it is generally believed now. He calculated that nine years, eleven months and twenty days had elapsed since the date of his migration. He also points out that the Jews and Christians are very much differed in calculation the date of Adam’s birth. He wrote that it was not possible to assign any exact date for the remote events for which no reliable reports were available. On the other hand like our modern Geologists, he believed that very long periods of time were needed to account for the past history of the Earth. (Sachau\textsuperscript{15}, 1879: p 20)

His brief scrutiny in his Kitab al-Athar about the Indians’ lunar system (sami’tu anna al-hind, yasta’mil ‘na ru’yat alahillah fi shuh’rihim) indicates that he was well informed with aspects of Indian civilization. (Sachau\textsuperscript{13}, 1879: p 15) His duties at that time were to explore Hind’s sciences and geography, observe the people’s customs and religious traditions, and discover their literature and philosophical thought. He analyzed Hind’s religious traditions closely and conducted field observation in certain Indian regions. He referred to Zurqan and Iranshahri, both of whom provided a lot of data about Buddhist cosmology. He discussed at least twelve religions and religious communities However, he dealt mainly with Hinduism. This is quite strange, considering that he did not give enough space to Buddhism in both Kitab al-Hind and Kitab al- Athar. He did this because Buddhism probably had disappeared from northern India by that time (the end of the eleventh century). (Waardenburg\textsuperscript{19}, 1999: p 33).

On the other hand, Kitab al-Hind (1030 AD) is based on his journey to Hind while Mahmud (998-1030) was setting up his political institutions in northern India. (Nizami\textsuperscript{2}, 1961: p 75-76) Although al-Biruni was a part of Mahmud’s mission, but as a scientist he had his own view of Hind. For Mahmud, as Sachau notes, “the Hindus were
infidels, to be dispatched to hell as soon as they refused to be plundered,” while for al-Biruni, “the Hindus were excellent philosophers, good mathematicians and astronomers.”(Sachau12, 1958: p 7). Thus, Kitab al-Hind presents wide descriptions of Indian culture, including its scholars’ scientific knowledge of cosmology and astronomy. Both Kitab al-Hind and Kitab al-Athar have different aspects. As Kitab al-Hind offers a precise analysis of Hindu’s religious traditions. On the other hand Kitab al-Athar includes material on other religious communities, primarily the Jews, Christians, and Zoroastrians. In addition, both books deal with different subjects, which are used as complementary. (Saliba15, 2004: p 341-363)

**Biruni’s Method Of Studying Other Religions:** In contrast, al-Biruni offers a more detailed explanation about his methodological approach. He suggests five important elements to understand Hindu’s people’s religious life. These are: the main Indian language (Sanskrit), major religious treatises, religious attitudes, their customs, and the Hindu’s attitudes toward others. Moreover, in Kitab al-Hind al-Biruni announce himself as a dispassionate scholar who seeks to study other religions as they are. In his introductory comments, he says:

“This book is not a polemical one (laysa al-kitab, kitab hujjaj wa jidal) … My book is nothing but a simple historic record of fact (wa innama huwa kitab hikayat).” (Sachau14, 2002: p7)

This dispassionate attitude is a major reason to consider him as a distinguished scholar and religious historian of his time. For example as a Muslim believer, he remarks about Hindu belief system:

*I have done and written this book on the doctrines of the Hindus, never making any unfounded imputations against those, our religious antagonists, and at the same time not considering it inconsistent with my duties as a Muslim to quote their own word at full length when I thought they would contribute to elucidate a subject. If the contents of these quotations happen to be utterly heathenish, and the followers of the truth, i.e. the Muslims, find them objectionable, we can only say that such is the belief of the Hindus, and that they themselves are the best qualified to defend it.* (Sachau14, 2002: p7)

Al-Biruni used a comparative method in Kitab al-Hind and Kitab al-Athar. He investigated of Hind’s religious tradition and compared its theological and philosophical thought with the classical Greek religions, Christianity, Judaism. He also gave a conclusion of comparative method by applying critical insight, a careful outlook, and an accurate stance in looking at one or more religious traditions. About al-Biruni’s comparative method when studying Hind, Jeffery notes:

>[H]e will place before the reader the theories of the Hindus exactly as they are, and where there are similar theories among the Greeks, or in the teaching of the Christian sects, or the Sufis, as for example in the matter of transmigration of souls, or pantheistic doctrines of the unity of God with his creatures, he will accurately report their theories also for comparison. (Jeffery5, 1951: p 128)

A dialogical method also found in Kitab al-Hind. Al-Biruni wrote Kitab al-Hind to helping those who wished to enter into dialogue with Hindus. According to Al-Biruni, dialogue with Hindus was necessary since there were many intricate and obscure subjects, which would be perfectly clear if there were more connection between Muslims and Hindus. (Sachau14, 2002: p17)

Since Abu Sahl shared Al-Biruni’s judgment on this matter, as stated in the preface of Kitab al-Hind: “He asked Al-Biruni to write what he knew about the Hindus “as a help to those who wanted to discuss religious questions with them (Hindus), and as a repertory of information to those who want to associate with them”. (Sachau12, 1958: p 547) ” This can be explain as that there were people in Muslim society who tried to discussion

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1 Abu Sahl must have been one of Al-Biruni’s teachers. Al-Biruni tells us that he (Abu Sahl) too studied the current literature on Hinduism and found that the scholars were biased when it came to describing the religion of the Hindus. He then asked Al-Biruni to write what he knew about the Hindu culture, religion, and science as he was the best qualified to do so.
with Hindus in matters of religion, science, philosophy, and so on. In *Kitab al-Hind* he makes a discourse between Jews, Persians, Christians, pre-Islamic Arabs, Sabians.

Al-Biruni used a phenomenological method in his *Kitab al-Hind*. The phenomenology of religion concerns the experiential aspect of religion, describing religious phenomena in terms consistent with the orientation of the worshippers. It views religion as being made up of different components, and studies these components across religious traditions so that an understanding of them can be gained. It focuses on research question, such as what it is like to experience a particular situation. There is a distinction to be made between phenomenology (which is a philosophical school) and phenomenological methods (which is an approach to research). Phenomenology has roots in both philosophy and psychology. The scholar who has been most influential in the philosophy of phenomenology is Edmund Husserl (1859–1938). Husserl emphasized the centrality of the human context in understanding life; that is, researchers and readers of research can understand human experience because they are participants in the human condition. Thus the task of understanding is to retain continuity with what is already experientially evident and familiar to us as humans. Husserl developed the concept of the life world (Lebenswelt) which refers to the everyday experiences that we live.

This position is stated in the very beginning of Al-Biruni’s book, *Kitab al-Hind*, where he states clearly that his book was not polemical, and that he was interested to explain Hindu religion as they presented it by them. Al-Biruni says:

*I shall not produce the arguments of our antagonists in order to refute such of them, as I believe to be in the wrong. My book is nothing but a simple historic record of facts. I shall place before the reader the theories of the Hindus exactly as they are, and I shall mention in connection with them similar theories of the Greeks in order to show the relationship existing between them.* (Sachau14, 2002: p7)

In other words, Al-Biruni attempts to understand the Hindu culture in its own terms, letting the subject matter (Sache) speak for itself. The concern to record facts as they are, without any prejudgments. This is one of the most significant aspects of Al-Biruni’s methodology. (Sachau14, 2002: p7)

Al-Biruni too concerns himself with the phenomena, but he is also interested to finding out what lies behind appearances by paying special attention to the historical-cultural context. He explains religions objectively and tried hard to understand them on their own terms. Al-Biruni’s approach to the study of religious traditions presupposes, first of all, a genuine willingness to see truth and value in other cultures, without being forced to insist that there are universal truths in all religious traditions or, like a radical pluralist, that all cultures are equally valid in their religious and social expressions. Rather, what Al-Biruni seems to be arguing is that there is a common human element in every culture that makes all cultures distant relatives, however foreign they might seem one to another? (Rosenthal11, 1976:p10) Hence, Bruce Lawrence comments that Al-Biruni must have "postulated a pattern of human conduct, belief and relationship to the natural environment that was the same among Indians as among other civilized peoples."(Lawrence2, 1976: p 31) This is the main argument that underlies Al-Biruni’s whole project. This theme is discernible in the passages on *India* where Al-Biruni compares and contrasts the views and customs of different cultures.

**Monotheistic and polytheistic view of different religion:** From investigations, we see that each religion has a philosophical dimension and a popular manifestation. For the elites, the religious tradition is monotheistic, is monotheistic as like other religious communities, especially to defining the concept of the Highest Being (God). But at the popular level, the iconographic representation and figurative symbols (e.g., idols or statues) is also expressed in other religious traditions. In his opinion:

‘The particularity of religious traditions can be observed in how the religious communities connect the Highest Reality to the figurative symbols they have created to represent the highest (monotheistic) Reality. States al-Biruni, “and worshipped them under the names of the stars and the highest substances. Furthermore, he explicates: “The Hindus honor their idols on account of those who erected them, not account of the material of which they are made.’ (Sachau14, 2002: p7).
In those books, Al-Biruni investigated elaborately about Hindus’ monotheistic or polytheistic tendencies and compared it with Sabina’s theological concept. Before analyzing Hind’s religious tradition, he discussed other religions. Biruni wrote Kitab al-Hind after Kitab al-Athar; there he focuses on the history of religion and religious rituals/festivals. This also can be seen in his discussion of Sabianism. Al Biruni presents data about several ancient religious communities that Muslim scholars have considered to be Sabian. Biruni does not connect the Hindus directly with the Serbians, as a religious community that allegedly had a monotheistic inclination. He sees that Hinduism is monotheistic in nature. Some Hindu texts contain opinions indicating that God is the One, the highest reality, eternal, unique, and beyond all likeness and unlikeness. Therefore, he sees polytheism as a common accidental deviation from the monotheistic outlook. That is caused mainly by the people’s inability to understand “non-symbolic” philosophical and theological matters. Thus, in this case polytheism is simply a matter of the “symbolic shapes” of religiosity that typically exist when people need a concrete manifestation or representation of the Higher Beings. (Rosenthal11, 1973: p 546)

As a believing Muslim, he simply welcomed certain differences among different peoples. In other words, he believed that "God has created the world as containing many differences in itself," (Morgenstern8, 1973: p 6) and these differences should be welcomed. For prove his argument, he attempted to explore some of the most disputed issues, such as God, polytheism, creation, caste system and so on, in different cultures.

Al-Biruni begins his treatment of Hindu religion and philosophy by a definition of their concept of God as understood by the educated people.

The Hindus believe with regard to God that he is one, eternal, without beginning and end, acting by free-will, all-wise, almighty, living, giving life, ruling, preserving; one who in his sovereignty is unique, beyond all likeness and unlikeness, and that he does not resemble anything nor does anything resemble him… (Jeffery5,1951:p 129)

According to Al-Biruni what the educated Hindus believe about God.iii As for the uneducated class, Al-Biruni finds most of their views on the concept of God are simply worthless. But he argues that, similar errors also occur in other religious traditions. He specifically refers to Islam, criticizing what he calls the anthropomorphic doctrines and teachings of the Jabriyya sect, for instance. (Sachau14, 2002: p 31-32)

The discussion of the concept of God is closely related to the much-discussed issue of the Indian idol worshipping (Shirk). It is well known, idol worshiping is considered to be the greatest sin in Islamiv and Muslims had regarded Hindus as idol worshippers, at least in the theological language. Although there was no clear reference to the Hindu religion in the Qur’an, Al-Biruni attached Quranic term “’the mushrikun’” to Hindus.

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1 The Sabians (مصليه, مصادع) of Middle eastern tradition are a variety of monotheistic: Gnostic (Mandeans), Harranian as well as Abrahamic religions mentioned three times in the Quran with the people of the Book, “the Jews, the Sabians, and the Christians”.[1] In the hadith, they are described merely as converts to Islam,[2] but interest in the identity and history of the group increased over time, and discussions and investigations about the Sabians begin to appear in later Islamic literature.

ii Polytheism is a religious construct and a type of theism. Within theism, it contrasts with monotheism, the belief in a singular God. Polytheists do not always worship all the gods equally, but can be henotheists, specializing in the worship of one particular deity.

iii Instead of commenting on the possible differences between the Islamic concept of God and the Supreme Being of the Hindus, Al-Biruni quotes extensively from the Hindu literature, notably from Patanjali, Gita and Samkhya to give a correct definition of the Hindu concept of God as it is described in their own literature. However, even a superficial analysis will reveal the fact that Al-Biruni seems to avoid deliberately the subtler theological discussions about the nature of personal versus impersonal God in Hindu and Islamic theologies. See India, 27-30; Tahqiq, 20-22.

iv The Qur’an reads explicitly that shirk is the one sin that God will not forgive (Qur’an, 4:48, 116); paradise will be absolutely denied to a person who is guilty of this sin (Qur’an, 5:72).
He is aware about that idol worshipping is abominable. He argues that, all the Hindus are not idol-worshippers. With this argument Al-Biruni has the educated class in mind. About this classification he writes:

"Those who march on the path to liberation or those who study philosophy and theology and who desire abstract truth, which they callsara, are entirely free from worshipping anything but God alone and never would dream of worshipping an image to represent him." (Sachau14, Edward, 2002: p113)

For uneducated class, Al-Biruni admits that:

The majority of the Hindu people, who are uneducated, may be regarded as idol-worshippers although he is hesitant to label them with that derogatory term. However, he attempts to justify the beliefs and actions of uneducated people, who have an "aversion to the world of abstract thought which is only understood by the highly educated." (Sachau12, 1958: p 84)

About creating idol Al-Biruni argues that:

certain cultures create idols initially not to worship them, but to honor certain venerated persons or places to keep their memory alive when they are absent or dead, or, more importantly, to meditate on an invisible, imperceptible God. With the passage of time, however, the origin of, and the reason for, setting up these idols are forgotten, becoming a matter of custom, and the veneration of the idols becomes a rule for general practice. This disposition is deeply rooted, according to Al-Biruni, not only in the nature of the common people of India, but also in the nature of all uneducated human beings in every culture including Islam. (Sachau12, 2002: p112)

As al-Biruni explains, idolatry is a major tradition within Hind’s religious traditions. Especially among those Hindus who need symbolic and iconographic representations of the Highest Being, various deities, and angels. This tradition absolutely contravenes Islam, which is totally against idolatry and all other iconographic symbols. Even so, al-Biruni highlights another viewpoint of Hinduism At its philosophical core. In his argument, Hinduism indicates a monotheistic tendency. Monotheism is not the only theological desire among Hindu philosophers, since there is also a pantheistic' mystical view.

To represent his argument, Al-Biruni gave an example that, if a picture of the Prophet of Islam or of the Ka’ba were made and were shown to an uneducated man or woman, he or she would kiss the picture, throw him or herself before it. He or she were not seeing the picture but seeing what the picture represented. In other words, although the actions and attitudes of these imaginary actors may apparently look like idol worshiping, in reality these people would never dream of worshipping any but God alone. The same can be said, Al-Biruni seems to suggest, for the practices of the uneducated people in Hindu society. (Sachau14, 2002: p111)

In this context, Al-Biruni compares the custom of idol worshiping among Hindus to the old Hellenistic belief that the images or representations of divine beings have no magical power. Since, the ancient Greeks, "considered the idols as mediators between themselves and the First Cause, and worshipped them under the names of different stars and the highest substances." (Sachau14, 2002: p123). In other words, people do not worship these images as deities; they rather function only as reminders for the non-philosophical pious man and woman of existence of the divine. In this context Al-Biruni gave the example of "heathen Arabs” and argued, they worshipping idols hoping that they (idols) would mediate for them with God.

Moreover, from this categorization of educated and uneducated Hindu, we may draw some theoretical notes as that, why and how, according to al-Biruni, a monotheistic view can diverge from a society. First, people may “deviate” due to their limited ability. Different people with different educational backgrounds might produce different views about philosophical and abstract concepts. (Shlomo16, Gelblum, 1989: p52) His conclusion that the

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1 Pantheism is the belief that the universe (or nature as the totality of everything) is identical with divinity, or that everything composes an all-encompassing, immanent God. Pantheists thus do not believe in a distinct personal or anthropomorphic god. Eastern religions are often considered to be pantheistical inclined.
Hindus’ theological concept is monotheistic is unusual and surprising. But his assertion of an intellectual gap between the educated and the uneducated believers is a common phenomenon and can be used to analyze other religious communities. Second, a “natural process” also generate the “deviation.” Human beings have a tendency to decode such figurative objects as “supernatural,” “God,” “angel,” and “demon”.

**Defining tradition and religion:** In another place he discusses the divisions of Hind’s society from a theological point of view and its cultural castes or social classes (al-tabaqat). He also recognizes that castes or colors (Sans. varna; Ar. alwan). “We Muslims,” Al-Biruni states, “stand entirely on the other side of the question, considering all men as equal, except in piety (taqwa).” (Sachau, 2002: p 100)

He also mentions a sort of caste system found in ancient Persia that bears certain similarities to caste system of Hind. For example, Ardhasir ben Babak divided the following social hierarchy: the knights (al-usawirah) and princes (abna’ almal’k); the monks or pious men (al-nussak), fire-priests (sadanat al-nayyiran), and lawyers (arhab al din); the physicians (al-atibba’), astronomers (al-munajjimin), and scientists (ashab al-’ul’m); and, finally, the farmers or peasants (al-zarra’i) and artisans (al-sunna’i). Sachau, 2002: p100 The Hindus, as Al Biruni explains, have four major castes, each of which is determined by their texts and associated with Brahman’s primordial existence: brahmana (brahmins [priests and teachers]), kshatria (warriors and rulers), vaisya (farmers, merchants, artisans), and sudra (laborers) and other low-caste people.

This, according to Al-Biruni, was inconsistent with the ethical framework provided by the Scriptures of both Christianity and Islam. He illustrates his argument by referring to the Qur’an and the Bible respectively. The Qur’an reads, “Speak the truth, even if it were against you.” In a similar vein it is stated in the Bible that "Do not mind the fury of kings in speaking the truth before them. They only possess your body, but they have no power over your soul.” It is therefore safe to argue that it was religious and ethical concerns, more than anything else that led Al-Biruni to study other cultures from a comparative perspective.

Thus, towards the end of India, he says, "We ask God to pardon us for every statement of ours which is not true," acknowledging the fact that as human beings we see the world through the lenses provided to us by the society and culture in which we find ourselves.

**Conclusion:** Al-Biruni presents a large number of data about several ancient religious communities, history of religion, religious rituals/festivals in his both book kitab al-athar and kitab al-hind. In presenting the types of Hindu believers, Al-Biruni differentiates between philosophers and ordinary people. This workable categorization is still used by modern scholars of religion, and perhaps, some anthropologists who study religious systems. His conclusion that the Hindus’ theological concept is monotheistic is unusual and surprising, but his assertion of an intellectual gap between the educated and the uneducated believers is a common phenomenon and can be used to analyze. Al-Biruni’s comparative explanation about this, as in the case of Greek, Arab Islam, Hebrew, and among Christians, reveals different probabilities in producing anthropomorphism. Interestingly, as modern scholars point out, theology is also constructed by the structure of a given society’s language As al-Biruni explains, idolatry is a major tradition within Hind’s religious traditions, especially among those Hindus who need symbolic and iconicographic representations of the Highest Being, various deities, and angels. This tradition absolutely contravenes Islam, which is totally against idolatry and all other iconographic symbols. Even so, al-Biruni highlights another viewpoint of Hinduism: At its philosophical core, Hinduism exhibits a monotheistic tendency. Monotheism is not the only theological inclination among Hindu philosophers, since there is also a pantheistic mystical view.

**REFERENCES**


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i Qur’an: 4, 134;

ii Cf. Matt.x.18, 19, 28; Luke xii. 4.

APPLICATION OF OPTIMAL HOMOTOPY ASYMPTOTIC METHOD TO CONVECTIVE RADIATIVE FIN WITH TEMPERATURE DEPENDENT THERMAL CONDUCTIVITY

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ABSTRACT Application of Optimal Homotopy Asymptotic Method (OHAM), a new analytic approximate technique has been applied to convective-radiative fin with temperature dependent thermal conductivity. OHAM has the beauty to control the convergence of approximate solutions when it is compared with other methods such as Homotopy Analysis Method (HAM), Adomian Decomposition Method (ADM) and Homotopy Perturbation Method (HPM).

Keywords: OHAM, Exact, ADM, HPM, HAM, Non-linear differential equations.

1. Introduction The engineering problems arising in convective-radiative fins are nonlinear. Some of analytic methods are available in literature like Adomian Decomposition Method (ADM) \cite{1}, Variational Iteration Method (VIM) \cite{2}, Differential Transform Method (DTM) \cite{3} Homotopy Perturbation Method (HPM) \cite{4,5} and Homotopy Analysis Method (HAM) \cite{6}. These methods needs assume initial solution which is a problem. The Perturbation Methods were studied \cite{7-9} for nonlinear boundary value problems (BVPs). These methods contain a small parameter and are difficult to found. Vasile Marinca et al introduce Optimal Homotopy Asymptotic Method (OHAM) \cite{10-14} for the solution of nonlinear BVPs which is independent of the assumption of small parameter and initial guess solution.

OHAM has been proved to be a powerful technique for solution of nonlinear BVPs \cite{15-22}. The motivation of this article is to use OHAM theory for convective radiative fins BVPs.

The structure of article is as the basic idea of OHAM is discussed in section 2 and in section 3 have been implemented to BVPs.

2. Basic Mathematical Theory of OHAM Consider a general form of nonlinear differential equations

\[ L\left( \chi \left( \xi \right) \right) + s\left( \xi \right) + N\left( \chi \left( \xi \right) \right) = 0, \]  

(2.1)

with
\[
\gamma\left(\chi, \frac{d\chi}{d\zeta}\right) = 0.
\]  

(2.2)

Where \( \mathcal{L} \) is linear, \( \chi(\zeta) \) is unknown function, \( s(\zeta) \) is known function, \( \mathcal{N}(\chi(\zeta)) \) is nonlinear operators.

The homotopy \( \vartheta(\zeta, m) : \Xi \times [0,1] \rightarrow \Theta \) gives

\[
(1-m)\left[\mathcal{L}(\vartheta(\zeta, m)) + s(\zeta)\right] = K(m)\left[\mathcal{L}(\vartheta(\zeta, m)) + s(\zeta) + \mathcal{N}(\vartheta(\zeta, m))\right],
\]

(2.3)

\[
\gamma\left(\vartheta(\zeta, m), \frac{\partial \vartheta(\zeta, m)}{\partial \zeta}\right) = 0.
\]

(2.4)

here \( m \in [0,1] \) is embedding parameter, \( \vartheta(\zeta, m) \) is unknown function, \( K(m) \) is nonzero auxiliary function.

The solution \( \vartheta(\zeta, m) \) varies from \( \chi_0(\zeta) \) to \( \chi(\zeta) \), where \( u_0(t) \) is zeroth order solution for \( p = 0 \):

\[
\mathcal{L}(\chi_0(\zeta)) + s(\zeta) = 0, \quad \gamma\left(\chi_0, \frac{d\chi_0}{dt}\right) = 0.
\]

(2.5)

The auxiliary function is

\[
K(m) = ml_1 + m^2l_2 + m^3l_3 + ...
\]

(2.6)

Where \( l_1, l_2, l_3, ... \) are optimal constants.

Using Taylor’s series to \( \vartheta(\zeta, m) \) about \( m \)

\[
\vartheta(\zeta, m, l_1, l_2, ... l_m) = \chi_0(\zeta) + \sum_{i=1}^{\infty} \chi_i(\zeta, l_1, l_2, ... l_m)m^i, \quad i = 1, 2, ...
\]

(2.7)

Using Eq. (2.7) into Eq. (2.1)-(2.2) and equating the coefficient of like powers of \( m \), we obtain

\[
\mathcal{L}(\chi_1(\zeta)) = l_1\mathcal{N}(\chi_0(\zeta)), \quad \gamma\left(\chi_1, \frac{d\chi_1}{dt}\right) = 0.
\]

(2.8)

\[
\mathcal{L}(\chi_2(\zeta)) - \mathcal{L}(\chi_1(\zeta)) = l_1\mathcal{N}_0(\chi_0(\zeta)) + l_1\left[\mathcal{L}(\chi_1(\zeta)) + \mathcal{N}_1(\chi_0(\zeta), \chi_1(\zeta))\right], \quad \gamma\left(\chi_2, \frac{d\chi_2}{dt}\right) = 0.
\]

(2.9)

\[
\mathcal{L}(\chi_k(\zeta)) - \mathcal{L}(\chi_{k-1}(\zeta)) = l_k\mathcal{N}_0(\chi_0(\zeta)) + \sum_{i=1}^{k-1} l_i\left[\mathcal{L}(\chi_{i-1}(\zeta)) + \mathcal{N}_{i-1}(\chi_0(\zeta), \chi_1(\zeta), ..., \chi_{i-1}(\zeta))\right], \quad \gamma\left(\chi_k, \frac{d\chi_k}{dt}\right) = 0, k = 2, 3, ...
\]

(2.10)
where \( N_k \left( \chi_k (\xi), \chi_k (\xi), \ldots \right) \) is the coefficient of \( m^{k-1} \) in the expansion series
\[
N \left( \hat{\psi} (\xi, m, l) \right) = N_0 (\xi_0 (\xi)) + \sum_{k=1}^{N} N_k (\xi_0, \xi_1, \ldots, \xi_k) m^k, \quad i = 1, 2, 3, \ldots
\] (2.11)

It should be noted that the convergence of Eq. (2.7) depends upon \( l_1, l_2, \ldots \). If Eq. (2.7) converges at \( q = 1 \), we have
\[
\hat{\chi} (\xi, l_1, l_2, \ldots, l) = \chi_0 (\xi) + \sum_{k=1}^{N} \chi_k (\xi, l_1, l_2, \ldots, l).
\] (2.12)

Substituting Eq. (2.12) into Eq. (2.1), so the residual is
\[
R (\xi, l_1, l_2, \ldots, l) = \hat{L} (\hat{\chi} (\xi, l_1, l_2, \ldots, l)) + s (\xi) + N (\hat{\chi} (\xi, l_1, l_2, \ldots, l)).
\] (2.13)

Different methods like Galerkin’s Method, Ritz Method, Least Squares Method and Collocation Method are used for finding auxiliary constants, \( l_i, i = 1, 2, \ldots, m \). Here we apply the Method of Least Squares as
\[
Q (l_1, l_2, \ldots, l_k) = \int_{c}^{d} R^2 (\xi, l_1, l_2, \ldots, l_k) d\xi,
\] (2.14)
where \( c \) and \( d \) are two distinct values.

The auxiliary constants \( l_i, i = 1, 2, \ldots, m \) may be calculated as from Eq. (2.14)
\[
\frac{\partial Q}{\partial l_1} = \frac{\partial Q}{\partial l_2} = \ldots = \frac{\partial Q}{\partial l_k} = 0.
\] (2.15)

These optimal constants can be used to find \( k \) th order approximate solution.

3. Application of OHAM to convective radiative fin with temperature dependent thermal conductivity

The efficiency and effectiveness of OHAM formulation are demonstrated by two models.

Model 3.1
Consider the non-dimensional form of the temperature dependant thermal conductivity through a fin taken from [25].
\[
\frac{d^2 u}{dt^2} - n^2 u - \varepsilon u^4 = 0,
\] (3.1.1)
with boundary conditions
\[
u (1) = 1, \quad \frac{du (0)}{dt} = 0.
\] (3.1.2)

Zeroth Order Problem:
\[
u_0^{\prime} (t) - n^2 u_0 (t) = 0
\] (3.1.3)
\[
u_0 (1) = 1, \quad u_0^{\prime} (0) = 0.
\] (3.1.4)

Its solution is
\[
u_0 (t) = \frac{2eCosh (t)}{1 + e^2}.
\] (3.1.5)
First Order Problem:

\[ u_1''(t) = u_1(t) + (1 + l_1)u_0''(t) - l_1u_0^4(t) - (1 + l_1)u_0(t), \]  
\[ u_1(1) = 0, \quad u_1'(0) = 0. \]  

Whose solution is

\[ u_1(t) = \frac{2}{15(1 + e^2)^3} \left[ (e + 20e^3 - 90e^5 + 20e^7 + e^9)Cosh(t) - e^5(1 + e^2)(45 + 20Cosh(2t) + Cosh(4t)) \right] C_1. \]

Second Order Problem:

\[ u_2''(t) = u_2(t) + (1 + C_1)u_1''(t) - (1 + C_1 + 4C_1u_0^3(t))u_1(t) \]
\[ - C_2 \left( q_0(t) + q_0^4(t) - q_0^9(t) \right), \]  
\[ u_2(1) = 1, \quad u_2'(0) = 0. \]

We obtain the following solution

\[ u_2(t) = \frac{1}{900(1 + e^3)^9} \left[ (1+e^{-7t})(-60e^{2t})(1+e^{2t})^4(e^3 + e^5 - e^{3t} - e^{5t} + 20e^{2+3t} + 20e^{5+2t}) \right. \]
\[ -20e^{2+3t} + 90e^{4+3t} - 20e^{6+3t} - e^{8+3t} - 90e^{3+4t} - 90e^{5+4t} - 20e^{2+5t} \]
\[ +90e^{4+5t} - 20e^{6+5t} - e^{8+5t} + 20e^{3+6t} + 20e^{5+6t} + e^{3+8t} + e^{5+8t} \]  
\[ + \left[ (5e^{6} + 10e^{8} + 5e^{10} + 71e^{6t} + 71e^{8t} - 810e^{10+10t} - 636e^{11+11t} + 3860e^{12+6t} \right. \]
\[ + 71e^{10+8t} + 230e^{10+5t} + 230e^{6+2t} + 460e^{8+2t} - 76e^{3+3t} - 636e^{5+3t} + 520e^{7+3t} \]
\[ + 520e^{9+3t} - 636e^{11+3t} - 76e^{13+3t} - 810e^{6+4t} - 1620e^{8+4t} - 810e^{10+4t} - 1520e^{3+5t} \]
\[ - 12720e^{5+5t} + 10400e^{7+3t} + 10400e^{9+5t} - 12720e^{11+5t} - 1520e^{13+5t} + 1845e^{2+6t} \]
\[ + 3860e^{4+6t} + 1845e^{14+6t} + 71e^{16+6t} + 6840e^{3+7t} + 57240e^{5+7t} - 46800e^{7+7t} \]
\[ + 46800e^{9+7t} + 57240e^{11+7t} + 6840e^{13+7t} + 1845e^{2+8t} + 3860e^{4+8t} + 3860e^{12+8t} \]
\[ + 1845e^{14+8t} - 1520e^{5+9t} - 12720e^{5+9t} + 10400e^{7+9t} + 10400e^{9+9t} - 12720e^{11+9t} \]
\[ - 1520e^{13+9t} - 810e^{6+10t} - 1620e^{8+10t} - 76e^{3+11t} - 636e^{5+11t} + 520e^{7+11t} + 520e^{13+11t} \]
\[ - 76e^{15+11t} + 230e^{6+12t} + 460e^{8+12t} + 230e^{10+12t} + 5e^{6+14t} + 10e^{8+14t} + 5e^{10+14t} \]
\[ + 10e^{6+14t} (-9179 + 2268t) + 10e^{8+6t} (-4643 + 2268t) - 10e^{10+8t} (4643 + 2268t) \]
\[ - 10e^{12+8t} (9179 + 2268t) - 8e^{8+7t} (-14969 + 5670t) + 8e^{8+6t} (14969 + 5670t) \]
\[ + 60e^{3} (1+e^{5t}) (e^{3} + e^{5} - e^{3t} - e^{5t} + 20e^{3+2t} + 20e^{5+2t} - 20e^{2+3t} + 90e^{4+3t} - 20e^{6+3t} \]
\[ - e^{8+3t} - 90e^{3+4t} - 90e^{5+4t} - 20e^{2+5t} + 90e^{4+5t} - 20e^{6+5t} - e^{8+5t} + 20e^{3+6t} + 20e^{5+6t} + e^{3+8t} + e^{5+8t} \]  
\[ \right] C_1. \]

(3.1.11)
Adding Eqs. (3.1.5), (3.1.8) and (3.1.11) for $\varepsilon = \eta$, we have

$$u(t) = \frac{1}{900(1+e^2)^9} \left[ (1+e^{-7t})(-120e^{3t} (1 + e^2)^4 e^3 + e^5 - e^{3r} - e^5 + 20 e^{3r} + 20 e^{3+5r} \right] C_1$$

$$- 20 e^{2+3r} + 90e^{4+3r} - 20e^{6+3r} - e^{8+3r} - 90 e^{3+4r} - 90e^{5+4r} - 20e^{2+5r}$$

$$+ 90e^{4+5r} - 20e^{6+5r} - e^{8+5r} + 20e^{3+6r} + 20e^{5+6r} + e^{3+8r} + e^{5+8r}$$

$$\begin{bmatrix}
(5e^6 + 10e^8 + 5e^{10}) + 71e^{8r} - 810e^{10+10r} - 636e^{11+11r} + 3860e^{12+6r} \\
+ 71e^{16+8r} + 230e^{10+5r} + 230e^{6+2r} + 460e^{8+2r} - 76e^{3+3r} - 636e^{5+3r} + 520e^{7+3r} \\
+ 520e^{9+3r} - 636e^{11+3r} - 76e^{13+3r} - 810e^{6+4r} - 1620e^{8+4r} - 810e^{10+4r} - 1520e^{5+5r} \\
- 12720e^{5+5r} + 10400e^{7+3r} + 10400e^{9+5r} - 12720e^{11+5r} - 1520e^{13+5r} + 1845e^{2+6r} \\
+ 3860e^{4+6r} + 1845e^{14+6r} + 71e^{16+6r} + 6840e^{3+7r} + 57240e^{5+7r} - 46800e^{7+7r} \\
+ - 46800e^{9+7r} + 57240e^{11+7r} + 6840e^{13+7r} + 1845e^{2+8r} + 3860e^{4+8r} + 3860e^{12+8r} \\
+ 1845e^{14+8r} - 1520e^{3+9r} - 12720e^{5+9r} + 10400e^{7+9r} + 10400e^{9+9r} - 12720e^{11+9r} \\
- 1520e^{13+9r} - 810e^{6+10r} - 1620e^{8+10r} - 76e^{3+11r} - 636e^{5+11r} + 520e^{7+11r} + 520e^{9+11r} \\
- 76e^{13+11r} + 230e^{6+12r} + 460e^{8+12r} + 230e^{10+12r} + 5e^{6+14r} + 10e^{8+14r} + 5e^{10+14r} \\
+ 10e^{6+6r}(-9179+2268t) + 10e^{8+6r}(-4643+2268t) - 10e^{10+8t}(4643+2268t) \\
- 10e^{6+8t}(9179+2268t) - 8e^{8+8t}(-14969+5670 t) + 8 e^{8+6t}(14969+5670 t) \\
+ 60e^{3r}(1+e^{2})^4 (1+e^{2})^4 (1+e^{2})^4 (-e^{3} - e^{5} + e^{3r} + e^{5r}) - (20e^{3+2r} \\
- 20e^{4+2r} + 20e^{2+3r} - 90e^{4+3r} + 20e^{6+3r} - e^{8+3r} + 90e^{3+4r} + 90e^{5+4r} + 20e^{2+5r} \\
- 90e^{4+5r} + 20e^{6+5r} - e^{8+5r} - 20e^{3+6r} - 20e^{5+6r} - e^{3+8r} - e^{5+8r}) \\
\end{bmatrix} C_2$$

Using Eq. (3.1.12) in (3.1.1) and applying procedure in Eqs. (2.13)-(2.15), we have

$$C_1 = -0.767024893148472 \text{ and } C_2 = -0.03274310523383026.$$

Substituting these in Eq. (3.1.12), we obtain

$$u(t) = -0.0515508 + 0.0229114 \cosh(2t) - 0.000397156 \cosh(3t)$$

$$+ 0.00114557 \cosh(4t) + 0.000112773 \cosh(5t) + 2.45158 \times 10^{-6} \cosh(7t)$$

$$+ 0.610094 \cosh(t) - 0.0111204 t \sinh(t) - 1.0842 \times 10^{-10} \sinh(4t). \quad (3.1.13)$$
Fig. 1. Comparison of OHAM and exact result for $\varepsilon = 0.2$, $n = 1$.

Fig. 2. OHAM result $u(t)$ for different values of $n$ and $\varepsilon = 0.2$. 
Model 3.2 [25]

Assuming the thermal conductivity of the form

\[ k = k_0 (1 + \beta T) , \]  

where the constant \( \beta \) is a measure of the thermal conductivity. Using

\[ \frac{k}{k_0} = 1 + \epsilon u , \]  

where \( \epsilon = \beta T_b \). The differential equations now become

\[ \frac{d}{dt} \left[ \left( 1 + \epsilon u(t) \frac{du(t)}{dt} \right) \right] - n^2 u(t) - \epsilon u^4(t) = 0 , \]

with boundary conditions
\[ u(1) = 1, \quad \frac{du}{dt}(0) = 0. \]  

(3.2.4)

According to Eq. (2.1), we define the operators

\[ \mathcal{L}(u(t)) = u''(t) - n^2 u(t), \quad g(t) = 0, \quad \mathcal{N}(u(t)) = \varepsilon \left( u(t) u''(t) + u''(t) - u''(t) \right), \]  

(3.2.5)

where \( u'(t) \) and \( u''(t) \) represent the first and second derivatives of \( u(t) \) with respect to \( t \).

**Zeroth Order Problem:**

\[ u_0''(t) - n^2 u_0(t) = 0, \]  

(3.2.6)

\[ u_0(1) = 1, \quad u_0'(0) = 0. \]  

(3.2.7)

Its solution is

\[ u_0(t) = \frac{2e \Cosh(t)}{1 + e^2}. \]  

(3.2.8)

**First Order Problem:**

\[ u_1''(t) = u_0''(t) + u_1(t) + C_1 \left( u_0''(t) + \left( u_0' \right)^2(t) \right) \]

\[ - u_0(t) \left[ 1 + C_1 \left( 1 - u_0''(t) + u_0'(t) \right) \right], \]  

(3.2.9)

\[ u_1(1) = 0, \quad u_1'(0) = 0. \]  

(3.2.10)

Whose solution is

\[ u_1(t) = \frac{1}{15 \left( 1 + e^2 \right)^3} \left[ - 2e (9 + 110e^4 + 9e^8) \Cosh(t) + 10e(1 + e^2)(1 + e^4) \Cosh(2t) \right]. \]  

(3.2.11)

**Second Order Problem:**

\[ u_2''(t) = u_2(t) + 2C_1 u_0'(t) u_1'(t) + \left[ 1 + C_1 \left( 1 + u_0(t) \right) u_1''(t) \right] \]

\[ - u_1(t) \left[ 1 + C_1 \left( 1 + 4u_0^2(t) \right) - u_0''(t) \right] \]

\[ - C_2 \left[ u_0(t) + u_0^4(t) - \left( u_0' \right)^2(t) - \left( 1 + u_0(t) u_0''(t) \right) \right], \]  

(3.2.12)

\[ u_2(1) = 0, \quad u_2'(0) = 0. \]  

(3.2.13)

We obtain the following solution

\[ u_2(t) = -\frac{e^{1-t}}{1800 \left( 1 + e^2 \right)^9} \left[ \begin{array}{c} (120e^3)(1 + e^2)^4(e^3 + e^5 + 9e^3 + 9e^5 + 10e^{(1+2)} - 10e^{(3+2)}) \\ -10e^{(5+2)} - 10e^{(7+2)} + 110e^{(4+3)} + 9e^{(8+3)} - 90e^{(3+4)} \\ -90e^{(5+4)} + 110e^{(4+5)} + 9e^{(8+5)} - 10e^{(1+6)} - 10e^{(3+6)} \end{array} \right] \]  

(3.2.14)
\[
\begin{align*}
- (10e^6 + 20e^8 + 10e^{10} - 963e^{6r} - 963e^{8r} + 90e^{10+12r} - 312e^{11+12r} - 325e^{12+12r} - 963e^{14+12r} + 3465e^{12+3r} - 240e^{15+3r} - 840e^{10+2r} - 325e^{12+2r} - 325e^{8+2r} - 840e^{6+2r} \\
- 1030e^{8+2r} + 168e^{3+3r} - 312e^{5+3r} + 2320e^{7+3r} + 2320e^{9+3r} - 312e^{11+3r} + 168e^{13+3r} + 1350e^{2+4r} + 3465e^{4+4r} + 90e^{6+4r} - 4050e^{8+4r} + 90e^{10+4r} \\
+ 1350e^{11+4r} - 240e^{1+5r} + 7440e^{3+5r} - 2960e^{5+5r} + 34160e^{7+5r} + 34160e^{9+5r} - 2960e^{11+5r} + 7440e^{13+5r} - 963e^{6+6r} - 15120e^{3+7r} + 28080e^{5+7r} - 208800e^{7+7r} \\
- 208800e^{9+7r} + 28080e^{11+7r} - 15120e^{13+7r} - 240e^{1+9r} + 7440e^{3+9r} - 2960e^{5+9r} + 34160e^{7+9r} - 2960e^{9+9r} + 7440e^{11+9r} + 240e^{13+9r} \\
- 1350e^{2+10r} + 3465e^{4+10r} + 90e^{6+10r} - 4050e^{8+10r} + 3465e^{12+10r} + 1350e^{14+10r} + 168e^{3+11r} - 312e^{5+11r} + 2320e^{7+11r} + 2320e^{9+11r} + 168e^{11+11r} - 325e^{4+12r} \\
- 840e^{6+12r} - 1030e^{8+12r} - 840e^{10+12r} + 10e^{6+14r} + 20e^{8+14r} + 10e^{10+14r} \\
+ e^{8+14r} (268714 - 111120t) - 60e^{12+8r} (-479 + 30t) - 60e^{4+8r} (-379 + 30t) \\
+ 60e^{4+6r} (379 + 30t) + 60e^{12+6r} (479 + 30t) + 10e^{14+8r} (-941 + 60t) \\
+ 10e^{2+8r} (-821 + 60t) - 10e^{5+6r} (821 + 60t) - 10e^{14+6r} (941 + 60t) \\
+ 360e^{10+6r} (-114 + 161t) - 360e^{10+8r} (114 + 161t) + 120e^{6+6r} (-1228 + 483t) \\
- 120e^{6+8r} (1228 + 483t) + 2e^{8+6r} (134357 + 55560t)
\end{align*}
\]

\[
C_1^2 = C_1^2
\]

From Eqs. (3.3.8), (3.3.11) and (3.3.14) by adding, we obtain:

\[
u(t) = \frac{1}{15(1 + e^2)^2} \left[ (30e(1 + e^2)^4 \text{Cosh}(t) - 2e(9 + 110e^4 + 9e^4) \text{Cosh}(t) \right. \\
\left. + 10(e + e^3) (1 + e^2) \text{Cosh}(2t) - e^3(45 - \text{Cosh}(2t) \right) \\
\left. - e^{1-7t} - \frac{e^{1-7t}}{1800(1 + e^2)^3} \right] \]
\[ - (10e^0 + 20e^8 + 10e^{10} - 963e^{6r} - 963e^{8r} + 90e^{10+10r} - 312e^{11+11r} - 325e^{12+12r} - 963e^{16+8r} + 3465e^{12+3r} - 240e^{15+3r} - 840e^{10+2r} - 325e^{12+2r} - 325e^{8+2r} - 840e^{6+2r} - 1030e^{8+2r} + 168e^{3+3r} - 312 e^{5+3r} + 2320 e^{7+3r} + 2320 e^{9+3r} - 312 e^{11+3r} + 168 e^{13+3r} + 1350 e^{2+4r} + 3465 e^{4+4r} + 90 e^{6+4r} - 4050 e^{8+4r} + 90 e^{10+4r} + 1350 e^{1+4+4r} - 240 e^{1+5r} + 7440 e^{3+5r} - 2960 e^{5+5r} + 34160 e^{7+5r} + 34160 e^{9+5r} - 2960e^{11+5r} + 7440e^{13+5r} - 963e^{16+6r} - 5120 e^{3+7r} + 28080e^{5+7r} - 08800e^{7+7r} - 208800 e^{9+7r} + 28080 e^{11+7r} - 15120 e^{13+7r} - 240 e^{1+9r} + 7440 e^{3+9r} - 2960 e^{5+9r} + 34160 e^{7+9r} + 34160 e^{9+9r} - 2960 e^{11+9r} + 7440 e^{13+9r} - 240 e^{1+11r} - 1350 e^{3+11r} + 3465e^{4+10r} + 90e^{6+10r} - 4050e^{8+10r} + 3465e^{12+10r} + 1350 e^{14+10r} + 168 e^{3+11r} - 312e^{5+11r} + 2320e^{7+11r} + 2320 e^{9+11r} + 168 e^{11+11r} - 325 e^{4+12r} - 840 e^{6+12r} - 1030 e^{8+12r} - 840 e^{10+12r} + 10 e^{6+14r} + 20 e^{8+14r} + 10 e^{10+14r} + e^{8+8r} (268714 - 111120 t) - 60 e^{12+8r} (-479 + 30 t) - 60 e^{4+8r} (-379 + 30 t) + 60 e^{4+6r} (379 + 30 t) + 60 e^{12+6r} (479 + 30 t) + 10 e^{14+8r} (-941 + 60 t) + 10 e^{2+8r} (-821 + 60 t) - 10 e^{2+6r} (821 + 60 t) - 10 e^{14+6r} (941 + 60 t) + 360 e^{10+6r} (-114+161t) - 360 e^{10+8r} (114+161 t) + 120 e^{6+6r} (-1228 + 483 t) - 120 e^{6+8r} (1228 + 483 t) + 2 e^{8+6r} (134357 + 55560 t) \]

\[
\begin{align*}
&\left(120e^{3r}(1+e^2)^4(e^3 + e^5 + 9e^7 + 9e^9 - 10e^{(1+2)r} - 10e^{(3+2)r} -10e^{(5+2)r} -10e^{(7+2)r} + 110e^{(4+3)r} + 9e^{(6+3)r} - 90e^{(3+4)r} - 90e^{(5+4)r} + 110e^{(4+5)r} + 9e^{(8+5)r} - 10e^{(1+6)r} - 10e^{(3+6)r} - 10e^{(5+6)r} - 10e^{(7+6)r} + e^{(3+8)r} + e^{(5+8)r}) \right) \]

\[ C_2 \cdot (3.2.15) \]

Using the technique as discussed in Eqs. (2.13)-(2.15), we obtain

\[ C_1 = -0.48731589994908137, \quad C_2 = 0.009192225410854144. \]

Eq. (3.2.15) becomes

\[ u(t) = -0.0759244 - 0.0975583 \cosh(2t) + 0.00758987 \cosh(3t) + 0.00168721 \cosh(4t) - 0.000260795 \cosh(5t) + 9.89574 \times 10^{-7} \cosh(7t) + \cosh(t)(0.87112 - 4.33681 \times 10^{-9} t) + (0.00419216 t) \sinh(t). \]
Fig. 5 Comparison of OHAM to Exact for $n = 1, \varepsilon = 0.2$.

Fig. 6 Plot of $u(t)$ with respect to $t$ for $n = 0.5$. 
4. **Results and Discussions** The OHAM theory gives well correct solution of the problems given in 3. For computational purpose we used Mathematics 7. Figs. 1 and 5 give the comparisons of OHAM and Exact solutions for Model 3.1 and 3.2 respectively. While Figs. 2-4 gives the variation of \( u(t) \) against \( t \) for different values \( n \) at \( \varepsilon = 0.2, 0.4, 0.6 \) respectively for model 3.1. The behavior of solution of the problem in model 3.2 can be seen in Figs. 5-8 for different values of \( \varepsilon \) at \( n = 0.5, 1.0, 1.5 \) respectively. To verify the accuracy of this method, OHAM results are compared with exact solution in Figs. 1 and 5 proving its effectiveness and efficiency.

5. **Conclusion** In this article, OHAM has been proved a powerful tool to solve the boundary value problem arising from convective-radiative fin with temperature dependent thermal conductivity. We have operated the mathematical theory of OHAM to model 3.1 and 3.2, found it simpler, easy to convergence and contain less computational work. Hence OHAM shows its potential for solving strongly nonlinear BVPs.

**REFERENCES**


ABSTRACT In the current study we examined 1 to 10 vanadium complexes for their mechanisms of inhibition with the nickel containing active sites of Canavalia ensiformis (Jack bean) and Bacillus pasteurii ureases. Ligands 1-10 inhibited both urease enzymes in a concentration-dependent fashion. Lineweaver-Burk as well as Dixon plots and their secondary replots indicated that the mechanism of inhibition exhibited by these 1-10 vanadium complexes are very diverse. The Ki values ranging from 15.1-79.3 µM for Jack bean urease while for Bacillus pasteurii urease 15.6 – 91.0 µM. Molecular docking studies are also fully consistent with enzyme kinetics. The model presented here is evidenced by both biochemical enzyme kinetics data and computational docking results. These studies are an attempt to gain better insight into the pharmacophore requirements of urease. The high affinity of these vanadium complexes along with their safe profile against plants could make them promising lead candidates and provides fertile ground for future research.

Key words: vanadium complexes; Bacillus pasteurii urease inhibition; Jack bean urease inhibition; Molecular docking; Enzyme kinetics; Phytotoxicity.

Introduction Urease (urea amidohydrolase, EC: 3.5.1.5) occurs throughout the animal and plant kingdom, many microorganisms use this reaction to provide a source of nitrogen for growth, and the enzyme plays an important role in plant nitrogen metabolism during the germination process [1, 2]. The presence of urease activity in soils is exploited in the widespread agricultural practice of urea-based fertilizer application for enhancing crop yields. Unfortunately, excessive levels of soil urease can degrade fertilizer urea too rapidly and result in phytopathic effects and loss of volatilized ammonia [3]. Of medical and veterinary interest, urease is a virulence factor in certain human and animal pathogens; it participates in the development of kidney stones, pylonephritis, peptic ulcers, and other disease states [4]. The obvious remedy for treating bacterial infection with antimicrobials, however, has often proven futile [5], and only a few combination regimens has reached clinical practice. Thus the need for alternative or novel treatment is evident. The discovery of potent and safe urease inhibitors have been a very important area of pharmaceutical research due to the involvement of ureases in different pathological conditions. We previously have reported a number of novel synthetic and natural inhibitors of urease and their inhibition kinetics, structure-activity relationship studies [6, 7, 8, and 9]. In continuation of our efforts to discover new and potent inhibitors of medicinally important enzymes through high-throughput screening assays, we identified these vanadium complexes, having appreciable efficacy against ureases. The objectives of the current investigation are to find effective inhibitors of ureases to explore the possible binding interactions of these compounds in the target protein. These structural studies may guide future drug design to improve selectivity and efficacy. In this article, we have endeavored to present new exciting findings concerned with ligand receptor binding events.
**Experimental**

**Urease Assay and Inhibition.** Reaction mixtures comprising 25 µl of enzyme (Jack bean and Bacillus pasteurii urease) solution and 55 µl of buffers containing urea (2-24 mM for jack bean and bacillus pasteurii urease) were incubated with 5 µl of test compounds at 30°C for 15 min in 96-well plates. The increasing absorbance at 560 nm was measured after 10 min, using a microplate reader (Molecular Device, USA). All reactions were performed in triplicate in a final volume of 200 µl. The results (change in absorbance per min.) were processed by using SoftMax Pro software (Molecular Device, USA). All the assays were performed at pH 6.8 (3 mM sodium phosphate buffer) and 7 µg of phenol red per ml as indicator. Percentage inhibitions were calculated from the formula 100-(OD_{testwell}/OD_{control}) x 100. Thiourea was used as the standard inhibitor of urease.

**Determination of kinetic parameters**

The concentration of test-compounds that inhibited the hydrolysis of substrates (Jack bean urease and Bacillus pasteurii urease) by 50% (IC_{50}) was determined by monitoring the effect of various concentrations of the compound in the assays on the inhibition values. The IC_{50} (inhibitor conc. that inhibits 50% activity of both enzymes) values were then calculated using the EZ-Fit Enzyme Kinetics program (Perrella Scientific Inc., Amherst, USA).

The interaction of 1-10 with Jack bean (J.B) urease and Bacillus pasteurii Bacillus urease (B.P) can be described by the following schemes:

**Scheme 1 for competitive Inhibition**

\[
\begin{align*}
E + S & \quad K_S \, \quad \text{ES} \quad \text{ES} \quad k_p \quad E + P \\
+ & \quad + & \quad + & \quad + \\
I & \quad I & \quad I & \quad I \\
\uparrow & \quad \uparrow & \quad \uparrow & \quad \uparrow \\
K_I & \quad K_I & \quad K_I & \quad K_I \\
E \text{I} & \quad E \text{I} & \quad E \text{I} & \quad E \text{I} \\
\end{align*}
\]

\[
K_I = \frac{[E][I]}{[EI]} \quad K_S = \frac{[E][S]}{[ES]}
\]

**Scheme 2 for Non-competitive Inhibition**

\[
\begin{align*}
E + S & \quad \text{ES} \quad k_{\text{cat}} \quad E + P \\
+ & \quad + & \quad + \\
I & \quad I & \quad I \\
\uparrow & \quad \uparrow & \quad \uparrow & \quad \uparrow \\
K_I & \quad K_I & \quad K_I & \quad K_I \\
E \text{I} + S & \quad E \text{I} \text{S} & \quad E \text{I} \text{S} \\
\end{align*}
\]
Scheme 3 for Un-competitive Inhibition

\[
E + S \xrightleftharpoons[k_s]{K_s} ES \xrightarrow[k_p]{+ I} ES + P
\]

Where ES is the J.B urease-urea or B.P urease-urea complex and P is the product. \(K_1\) and \(\beta K_1\) are the inhibition constants reflecting the interactions of inhibitors with the free J.B urease or B.P urease and the J.B urease-urea or B.P urease-urea complexes, respectively.

Dissociation constant/inhibition constant (\(K_i\)) was determined by the interpretation of Dixon plot [10]. Lineweaver-Burk plot [11] and their secondary replots using initial velocities obtained over a substrate concentration range between 2.0-2.9 mM urea for J.B urease and 4.5-6.3 mM for B.P urease. Non-linear regression equations were used to determine the values of \(K_i\), \(K_m\) and \(V_{max}\) in the Lineweaver-Burk plot and Dixon plots. The \(K_i\) value [dissociation constant / inhibition constant of J.B urease-inhibitor or B.P urease-inhibitor complex into free J.B urease or B.P urease and inhibitor] was determined graphically by Dixon plot and Lineweaver-Burk plots.

**Statistical analysis**

Graphs were plotted using GraFit program [12]. Values of the correlation coefficients, slopes, intercepts and their standard errors were obtained by the linear regression analysis using the same program. The correlation for all the lines of all graphs was found >0.99. Each point in the constructed graphs represents the mean of three experiments.

**Molecular docking simulations**
The accurate prediction of protein ligand interaction geometries is essential for the success of structure-based drug design. It requires docking tools that are able to generate suitable configurations and conformations of a ligand within a protein binding site and scoring functions that appropriately translate interaction geometries into an energetic measure describing the quality of the interaction. In our present study molecular docking study was conducted by using FlexX. The three dimensional structures of vanadium complexes were constructed using the SYBYL program [13]. The docking studies were carried out using FlexX [14] docking software. For FlexX energy minimization was performed using the tripos force field with a distance gradient algorithm with convergence criterion of 0.05 kCal/(mol Å) and maximum 1000 interactions, respectively. FlexX software is a fast and flexible algorithm for docking small ligands in binding sites of the enzymes, using an incremental construction algorithm that actually builds the ligands in the binding site [13]. The software incorporates protein-ligand interactions, placement of the ligand core and rebuilding the complete ligand. As docking algorithm a Monte Carlo simulated annealing search process was used starting at a temperature corresponding to RT= 1200 cal/mol, which was reduced by a factor of 0.90 after each cycle. A cycle consisted of a maximum of 30,000 accepted or rejected steps, where a step corresponds to a random changes in translational, rotational, and torsional degrees of freedom of the ligand. One hundred cycles were performed per docking experiment, and for each ligand 100 independent dockings were carried out. The charges of the ligands were obtained using the standard RESP procedure [15]. The necessary ab initio calculations were performed with GAUSSIAN98 [16]. Docking results were analyzed by VMD [17] and LIGPLOT [18].

**Phytotoxic Assay**
The assay was performed according to the modified protocol of McLaughlin et al [19]. The test compounds were incorporated with sterilized E-medium at different concentrations i.e. 5, 50, 500 µg/ml in methanol. Sterilized conical flasks were inoculated with compounds with desired concentrations prepared from the stock solution and allowed to evaporate overnight. Each flask was inoculated with 20 ml of sterilized E-medium and ten *Lemna aequinocitalis* Welv each containing a rosette of three fronds. Other flasks were
supplemented with methanol serving as negative control and reference inhibitor i.e. paraquat serving as positive control. The treatments were replicated three times and the flasks incubated at 30°C Fisons Fi-Totron 600 H Growth cabinet for seven days, 9000 lux light intensity, 56 ± 10 rh (relative humidity), and 12 h day length. Growth of *Lemma aequinoctialis* in compound containing flask was determined by counting the number of fronds per dose and growth inhibition calculated with reference to negative control.

**Results and Discussion** Urease is a large heteropolymeric enzyme that catalyzes the hydrolysis of urea using a bimetallic nickel center. Many pathologies are associated with the activity of ureolytic bacteria, while the efficiency of soil nitrogen fertilization with urea is severely decreased by urease activity. Therefore the development of urease inhibitors would lead to reduction of environmental pollution, to enhanced efficiency of urea nitrogen uptake by plant and to improved therapeutic strategies for treatment of infections due to ureolytic bacteria. Structure-based design of urease inhibitors require knowledge of the enzyme mechanism at the molecular level [19]. High quality data sets for native *Bacillus pasteurii* urease (2.0 Å) [20], as well urease inhibited with phenylphosphorodiamidate (PPD) (2.0 Å) [3], b-mercaptoethanol (b-ME) (1.65 Å) [20,22], acetohydroxamic acid (AHA) (1 Å), and b-mercaptoethylamine (b-MEA) (1.84 Å) provides very useful information for the structure based drug design. The structure of both native and inhibited urease reveal the fine details of the active site and provide information on the role of the metal ions and the protein environment in catalysis. In the native enzyme, the electron density clearly reveals that the coordination sphere of each of the two Ni ions completed by a water molecule and a bridging hydroxide [21]. A fourth water completes a tetrahedral cluster of solvent molecules. The enzyme crystallized in the presence of PPD contains diamidophosphoric acid (DAP), obtained by enzymatic hydrolysis of PPD, bound to the two Ni ions an unprecedented mode [23]. DAP is a tetrahedral transition state analogue, and its mode of binding to the Ni ions, together with a compare between the native and DAP-inhibited urease structures, indicate a novel mechanism for enzymatic urea hydrolysis, which reconcile the available structural and biochemical data [20,21]. This mechanism involves a direct role of both Ni ions in binding and activating the substrate, and of the bridging hydroxide as the nucleophile in the process of urea hydrolysis. Comparison of the native and DAP-inhibited structures also reveals that distinct conformations of the flap lining the active site cavity, and indicates a role of this motif in determining the active site properties that stability that catalytic transition state and accelerate the reaction [21]. By using high throughput screening method we are able to identify compounds 1-10 which strongly inhibit J.B and B.P ureases. Preliminary investigation of the kinetics of inhibition of the plant (jackbean) and microbial *Bacillus pasteurii* ureases by the 1-10) Vanadium complexes studied showed that the onset inhibition of ureases by 1-10 Venadium complexes. The inhibition by these compounds 1-10 were not time dependent, indicating that the kinetic data obtained from these experiments perfectly fitted to Michaelis-Menten kinetics. These experiments showed that vanadium complexes 1-10 studied were extremely potent inhibitors of both ureases.

Measurement of the dissociation constants (Ki*) of the enzyme-inhibitor complexes (E, 1*) formed by interaction of the ureases and vanadium complexes inhibitors 1-10 studied showed that these inhibitors had a much higher affinity (i.e., a lower Ki*) for plant urease is some cases while in some cases have higher affinity for microbial urease as shown in Table-1. All ligands inhibited urease in a concentration-dependent manner with Ki values ranging from 15.1 - 79.3 µM for *Jack bean* urease and 25.2 – 123.7 µM for *Bacillus pasteurii* urease. Interaction of inhibitor with the enzyme and is due to isomerization of an E. I complex. The initial interaction of compounds 1-10 with the both ureases suggests that there are no significant barriers encountered for the correct alignment of compounds 1-10 at the active site of the both ureases. Ki values were calculated in three different ways: first, the slopes of each line in the Lineweaver-Burk plot were plotted against different concentrations of inhibitors, secondly the 1/Vmaxapp was calculated by plotting different fixed concentrations of urease versus 1/V in presence of different fixed concentrations of inhibitors in the respective assays of urease. Then Ki was calculated by plotting different concentrations of inhibitor versus 1/Vmaxapp. Ki was the intercept on the x-axis. In third method, Ki was directly measured from Dixon plot as an intercept on x-axis. Determination of the inhibition type is critical for the identification of mechanism of inhibition and the sites of inhibitor binding. Lineweaver-Burk, Dixon plots and their replots indicated that these 1-10 compounds exhibit competitive, non-competitive, un-competitive type of inhibition against J.B urease and B.P urease. Indeed, inhibition by these ligands, it is due to interactions with amino-acid residues located within the active site in some cases while some are interacted little bit away from active site of the enzyme. In case of competitive type of inhibition at low concentrations of the substrate, all ligands competes with urea in the urea-binding site and induces a decrease in substrate hydrolysis, while in excess of urea, inhibition is overcome. Under these different experimental conditions,
the $V_{\text{max}}$ is not modified, as expected for a competitive inhibitor, in case of non-competitive inhibition $V_{\text{max}}$ is decreased while $K_{\text{m}}$ is not effected, while in un-competitive type of inhibition both $V_{\text{max}}$ and $K_{\text{m}}$ are decreased. It has been established that, whereas *jack bean urease* has maximum activity in buffers with near neutral pH urease from the alkaliphilic bacterium *Bacillus pasteurii* has maximum activity in alkaline buffers. In order to achieve a better knowledge of the urease inhibition mechanism we performed molecular docking simulation algorithms of 1-10 (B.P urease PDB Code # 4UBP). Molecular docking is used to predict the structure of the intermolecular complex formed between two or more molecules. The most interesting case is the protein ligand interaction, because of its applications in medicine. Ligand is a small molecule, which interacts with protein's binding sites. Binding sites are areas of protein known to be active in forming of compounds. There are several possible mutual conformations in which binding may occur. These are commonly called binding modes.

Docking is one of the leading techniques in the pipeline of drug discovery and accelerating of finding the new lead compounds and their structure optimization for the pharmacological evaluation. Docking position with the lowest energy was found most often during the docking procedure. This indicates that the phase space is sufficiently sampled, also we repeated the docking protocol for each compound many times and found that best docking positions and their respective minimum energies are consistently reproduced. The size and shape of our compounds supports an active site spanning mode. Therefore urease co-crystallized with acetohydroxymic acid, was taken for the comparison in order to control the performance of our docking approach. The urease co-crystallized with acetohydroxymic acid, was taken for the comparison in order to control the performance of our docking approach. The complex of Ligand-2, 3, 8, 9 with urease is not stabilized through chelation of nickel in the active site as happened in conventional competitive inhibitors of urease but interacted with other important residue like Ala-366 and Arg-339 through strong hydrogen bonding in case of compound-2 as shown in Fig-3 similarly compound-3, 8, 9 interacted through same fashion, and hindered the entry of substrate, these docking results are consistent with our enzyme kinetics results. These dual hydrogen bondings are responsible for potent competitive type of inhibition of these ligands.

**Compound-4** urease complex is stabilized only through hydrogen bonding contacts with the residue (Arg339 at distance 1.17 and 1.84Å. In case of compound-4 there is no contact with the nickel metal centre and that is the reason showing pure classical un-competitive type of inhibition. Compound-4 is unable to hinder the entry of substrate urea to enter the bi nickel centre of urease as shown in Fig-4. Similar happened with compound-5, 6, 7, and 10.

**Compound-1** urease complex is stabilized only through hydrogen bonding contacts with the residues (Gly280 and Ala 366 at distance 2.05 and 2.33Å. In case of compound-1 also there is no contact with the nickel metal centre and that is the reason showing pure classical un-competitive type of inhibition. Compound-4 is unable to hinder the entry of substrate urea to enter the bi nickel centre of urease as shown in Fig-5. Similar happened with compound-1.

In this paper, we present a high throughput screening approach to develop novel inhibitors against urease. We demonstrate that the selected vanadium complexes (of different ligands) are able to bind to and inhibit the activity of the both urease enzymes. The relatively high $K_i$ value of some of these vanadium complexes indicates their medium affinity for urease. This affinity could be improved, either by modifying the ligands of the vanadium complexes. Improvement of the affinity of selected vanadium complexes is of great importance because high-affinity vanadium complexes could be used as enzyme inhibitors in the clinic. The identification of inhibitory vanadium complexes of urease may open new approach for the development of therapeutic drugs, using vanadium complexes as scaffolds for the rational design of new chemical inhibitory molecules.

**Acknowledgement** The authors express their gratitude to the Husein Ebrahim Jamal foundation for providing the financial support to Mr. Muhammad Arif Lodhi during this study.

**REFERENCES**


Table: 1

\[ K_i \] (dissociation constant or inhibition constant) was determined from nonlinear regression analysis by Dixon plot and secondary Lineweaver- Burk plot at various concentrations of 1-10, \[ K_m \] (Michaelis-Menten constant) is equal to the reciprocal of x-axis intersection, \[ V_{max} \] (maximal velocity) is equal to
the reciprocal of y-axis intersection of each line for each concentration of 1-10 in the Lineweaver-Burk plot. The $V_{max_{app}}$ is equal to the reciprocal of y-axis intersection of each line for each concentration of 1-10 in Dixon plot (Each point in Lineweaver-Burk and represents the mean of three determinations). Urease (BP) (*Bacillus pasteurii* ureases) and urease (JB) (*Jack bean* urease).

**Chart-1:** Chemical Structures of Vanadium complexes 1-10.
Compound-7

Compound-8

Compound-9
Figure 3. Compound-1 (white) in the active site of urease shows that ligand (1) is unable to research the nickel metal (pink) centre. The enzyme conformation of the *Bacillus pasteurii* Urease-Ligand complex (PDB code: 4UBP) was used for docking.
Figure 4. Molecular Docking simulations obtained at lowest energy conformation, highlighting potential hydrogen contacts of the compound-1, mainly with the binding site residues Gly280, Ala366 have been shown.

Figure 5. Compound-4 in the active site of urease shows that ligand (4) is unable to research the nickel metal (white) centre but reach the active site.
Figure 6. Molecular Docking simulations obtained at lowest energy conformation, highlighting only hydrogen contacts with residue Arg339 closely interacted with ligand has been shown.

Figure 7. Compound-2 in the active site of urease shows that ligand (2) is stabilized by triple hydrogen bonding with Arg339 and Ala366 in urease. The enzyme conformation of the (Bacillus pasteurii) Urease-Ligand complex (PDB code: 4UBP) was used for docking.
IMPACT OF SCHOOL ENVIRONMENT ON CONFLICT RESOLUTION SKILLS DEVELOPMENT OF STUDENTS

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ABSTRACT: The study concentrated on the relationship between school and social skills development of the students. Objectives of the study were to investigate the relationship between school and social skills development of students at secondary level, to investigate the effect of school on students’ basic social skills, to analyze the effects of school on peace promoting skills and to ascertain the effect of school on students’ conflict skills. None directional hypotheses were formulated to direct the study. All the students of class 10th and SSTs of secondary schools of district Mardan were the population of the study. Through random sampling techniques fifty two SSTs and one hundred and fifty six 10th class students constituted the sample of the study. Data were collected through two questionnaires, one for the teachers and the other for students. Both the research instruments were pilot tested on a sample of 15 students and 4 SSTs. Data were collected and were analyzed with the help of SPSS version 16. Mean, STD deviation, Pearson Co-relation and linear regression were applied to analyze and interpret the data. Findings of the study illustrated that school has significant effect on the social skills of students; a very insignificant effect was calculated on the problem solving, tolerance and appreciative skills of students. It was recommended that teachers and other responsible personnel should use all the means to ensure the development of students’ social skills.

Keywords: school environment, teachers, social skills, development, students

1. Introduction: School is a place where children are brought together every day for a greater part of their lives. They might have the same ages, same abilities, same attainments and same outlook. These similarities heighten the consciousness of mind and develop the fellowship bonds among children. But the real basic factors at work are the inner forces and the tendencies of social characters. These are called social skills that move the students powerfully and compel them for companionship and co-operation of fellows. School produces social characteristics like unity, continuity, docility, submissiveness, progress, development, changes- physical, emotional and mental and social adjustment. This adjustment is effected smoothly consciously or unconsciously in numerous cases, as child is by nature flexible, susceptible, easily persuaded, easily molded, and ready to receive impression (Mohiyuddin, 2010).

Social skills are those which are learnt and adopted in the company of others. The best source for the development of social skills is interaction with others. Some of them are very simple and fundamental like greeting, smiling, making acquaintance and establishing social contacts. But some are complicated like negotiation in conflicts. The achievement and development of these skills are easy for some people while difficult for others. Popularity is gained through good social skills. Participation in social gathering to remove shyness, making friendship, being co-operative, showing sympathy in distress, good conversation with others.

The definition of social skills in social and emotional learning environment is appealing one. One can manage and recognize one’s emotions. He also becomes very caring for others. He has concerns for others. He makes sound relationship with others. He becomes responsible for making good decisions. He gains good experience through
them. He becomes able to properly handle the threatening and difficult situations positively, beneficially, decently and morally (Murphy, 2005)).

According to Rao and Murray (2008), Social skills in childhood connected to positive outcomes. Those who do not have gregarious abilities, they have no developed attitudes and they cannot bring association with others culturally and traditionally and then different types development are severely affected. Kids can observe the social challenges of their peers who have social learning disabilities. Some of our students can have a strong awareness of their own social skills shortcomings. Challenges are not outgrown by our students, but they have these social skills throughout adulthood. Most social skill programs are planned for a broader application to diverse types of students; few are specially planned for students with Autism Spectrum Disorders. Now that more learners who come to school formally, they learn the techniques how to deal in social environment as school is one of the best social setting for the promotion of gregarious tendencies as compared to others in cognitive and language development. Thus, in spite of the small literature base on this topic, a thoughtful examination of the effectiveness of social skills trainings is necessary at this stage, mainly for this higher functioning people. Studies do not control for poor motivation. Social skills are defined differently by different authors. It is the combination of diverse skills. Curriculum (salutation, commencement of dialogue) etc. seem unusual and often signify complex patterns of behavior like how to resolve the issue, how to control oneself and how to regulate oneself. The scarcity of experts on bunch of behaviors, measured in the circle of instructional system for social abilities creates competition for the systematic behavior. Few groups use plan to control for development in maturity over time. Most behavioral data do not show strong ability for our students to take a broad view what they are learning. Most social skills studies do not look at evaluation to see stability of skills learned over time, if they do explore generalization. The only way to study this is through exploring treatment efficacy through single subject design.

Some social skills have intricacies. They can be developed by different techniques. Some of them are much hidden and much care is required in teaching them. In my point of view the empathy, sympathy, helping others in difficulties, tolerance and endurance, silence before elders, respect for others, speaking gently with others, mercy on younger, sense of humor, decent talking, nice smiling, listening to others attentively, using good names, wait for turn, helping the old and widows, participating in activities, sharing of ideas with others in a peaceful manner, obedience to rules, adopting honesty, loving human beings and even animals, friendship formation, seeking cooperation in making good decisions, management during conflicting situations, adaptation of reconciliation attitude, avoidance of telling lies, speaking truth, respect for other religions, avoidance of sectarianism, fanaticism and extremism, avoidance of jealousy and narrow-mindedness, fighting in defense of truth and right, avoidance of dissembling and disputing, helping women and orphans, avoidance of hypocrisy, avoidance of excess, rash vows, drinking, gambling and superstition, adopting meekness and working in disciplined ranks to repel evil. Really speaking social skills bring unity of design, benevolence of purpose, glorious light to life, peace of mind, beauty in actions and heighten human glory (Reichow & Volkmar, 2010)

To sum up the above views of different researchers, it is said that school has close relationship with the development of social skills of the students. It has powerful effects on the development of basic, conflict and peace building skills of students. It develops the capacity of students for readjustment to changing conditions. It has free scope for the development of individuality as well as the development of the whole personality. The social forces generated by school determine the development of physical, emotional, mental, moral, ethical, conflicting, peace promoting skills of students. School brings like-mindedness with the rest of the people. It also gives protective bloom of a neutral respectability. It makes an individual a partner in the associated activity of the group. The adjustment of the student that the school has to bring about is the process that fits the whole man for his grand vocation as a member of society and a citizen of the world- along the lines of the True, the Beautiful and the Good. It is upon the school more than upon any other agency that society relies for the development of all types of social skills and for the preparation of its future members.

1.1. **Statement of the Problem:** Social skills of students are the most important aspect of their lives. It helps them in their social adjustment and acceptance at asociety. Therefore the study targeted to investigate the relationships between school and social skills development of students.

1.2. **Objectives of the study:** Objectives of the study were to;
   1. To investigate the relationships between school and conflict skills of students.
   2. To find out the impact of school on conflict skills of students.
1.3 Significance of the study: The study was significant in explaining the role of school and teachers in the development of students’ social skills. Social skills distinguish an educated man from a layman. If social skills are properly developed, then man can lead towards happy and prosperous life inside and outside the school. The study would motivate uneducated and illiterate people to send their children to school. The study was further significant in providing information to the policy makers regarding school and administration policies and it enables teachers to realize the importance and development of social skills along with academic skills.

1.4 Hypotheses: Hypotheses were formulated for the attainment of objectives of the study:
1. There is a significant correlation between school and conflict resolution skills development of students.
2. There is significant effect of school on the conflict resolution skills of students.

1.5 Delimitation of the study: The study will be conducted in Government schools in Mardan district on account of time and financial issues. The study was further delimited to male schools only

2 Literature Review: The skills how to adjust in environment are those which are adopted in the company of others. The best source for the development of social skills is interaction with others. Some of them are very simple and fundamental like greeting, smiling, making acquaintance and establishing social contacts. But some are complicated like negotiation in conflicts. The achievement and development of these skills are easy for some people while difficult for others (Simpson, 1998). Social skills are significant for the development of social adjustment in society. Those people who have developed their skills for social adjustment are considered better than those who have not developed themselves socially. Those who have got popularity once, they can face the difficult times in very good and peaceful way (Murrell, 2002). Social skills also deal with social and emotional learning. It is recognition and organization of sentiments. It is a care development and unease for others. It is strengthening encouraging contact. It helps in conscientious decisions making process and in tackling demanding situations profitably and decently (Gibson, Aldrich & Prensky, 2007).

School is one of the most influential agencies for the development of social skills. It is a particular atmosphere where a certain quality of practices and activities are provided with the aim of achieving pupil’s social skill development along desirable lines. It creates a direct contact between teacher and student. It makes the learners effective and productive members of society. It develops the student along a desirable path with the help of social skills activities and practices. It is a social place established by society for the development of social skills within the society. It progresses mental power, social values, moral values, religious values, spiritual values, promotes dynamic and adaptable mindedness, transmits social life, promotes social skills and social efficiency, changes student’s behavior, values and moral thought. There are many theories of social change. Among them one is conflict theory. It highlights the forces that produce instability, struggle, and social disorganization. Social conflicts arise in society as well as in school and that are ubiquitous. Opposing interests are the major cause of social conflict. It has permanence in society because it has come into being when human beings became countless and it is also said that school and society or any other gathering of human beings is a story of conflict between the rich and poor, upper and lower class but how to deal positively these conflicts needs a lot of social skills and their proper development which is the responsibility of both parents and teachers as well as society. School is a fit place which enables the learner It is said that school and teacher play a pivotal role in the development of social skills because social change is not possible without the proper agencies of society like school and community etc. school must play its role skillfully and assiduously at peace and war, in peaceful situation and conflicting situation and bring about positive changes in point of views, thinking and standards (Ravi, 2011 & Mohiyuddin, 2010). Conflict skills are those which create hostilities and strong differences among individuals, they are always based on emotions. These are also called satanic activities because these conflicts spoil the whole society. These may be inner and outer (Pelican, 2010).

When human being become larger and their number is increasing with passage of time, quarreling, hostility, jealousy and negative attitudes are created among them. Those who strong intelligence power, emotional stability and control over their anger, they can easily and effectively handle the situation and solve the issues. In this respect training of the workers of an organization is very necessary to develop the skills for handling the bad situation. When a conflict arises, it should be solved through dialogue, looking to the severity of the problem, the demand of each party. It should be born in mind what were the causes for creation of the problem, what sentimentalism is present there? Different techniques should be used. Different mediation skills should be adopted for the just solution of the issue. Think over the alternatives. Look at to the shared interests. Decision should be taken with full justice and do not try to favor any side. These rules can also be applied when there is a problem
among children, same age people or among diverse age strata of society. Aggression should be ended first. Then try for truce between the groups according to established rules of society (Adejobi & Adesina, 2009). The study of Chan and Chen (2010) recognized the major causes of creation of conflicts in groups. These were weak communiqué, pitiably task management, inequitabe work place, imbalanced behavior, inconsiderate attitude, diverse principles and irresponsibility. Sodian & Frith (2008) identified how to smooth the progress of joint effort, how instructors did teach learners about cluster progress, phases of cluster progress, and what steps should be adopted in confronting a problem in organization and then how to make a just and peaceful decision which is acceptable to all.

Adejobi & Adesina (2009) identified how to smooth the progress of joint effort, how instructors did teach learners about cluster progress, phases of cluster progress and what steps should be adopted in confronting a problem in organization and then how to make a just and peaceful decision which is acceptable to all.

Adelowo (2006) have designed a framework of pedagogy in business education and showed that the learners should themselves assess contacts of groups and other aspects like management control, management direction and management of guidance, management of issues and suitable resolution of the problems. Oakley et al. (2004) is of the view that the benefits of grouping are large but conflicts also arise in them. They should try to work in a peaceful environment and do not give way for the creation of problems. If conflicts create, they should be handled properly. Oakley et al. (2004) and Felder and Brent (2001) suggested sound beginning in the organization is very fruitful and rules should be formulated in time for the creation of avoidance of conflicts. When students face problems, the teachers should clean the minds of students from irrelevant thinking (Felder & Brent, 2007).

Davis (1993) and Oakley et al. (2004) illustrated that in case of conflicts among the members of a team, strict rules should be followed. He should be rusticated from the team or give permission to join the other team. Sometimes exclusion of the person from group is beneficial for the team work. Felder & Brent, (2001) illustrated that during conflicts active listening to the problem is very necessary. Interruption should be disregarded. Satisfaction should be provided to every party. Opportunity should be given to everyone to defend himself/herself in a proper way and the solution should be accepted. Self awareness is very essential for the solution of organizational problems. We can make strong our professional connections and can easily manage our problems through this technique. Discussion and dialogue are very imperative for the settlement of issues (Adejobi & Adesina, 2009).

The skills how to settle issues and bring contentment, sound understanding, best coordination, and strong communication among the members of the organization are very necessary for the betterment of people in organizational environment? In a peaceful environment we can do better while in conflicting situation our performance becomes weak (Reichow & Volkmar, 2010). Children must have strong speaking skills if they want to develop their skills of social abilities they must be constructive and cooperative. They should propagate peace through their good conduct. The teacher should play their positive role in the development of social abilities of their students. They teach their students to overcome their emotions in time of quarrelling (Quill, 2000). To put suitable questions, to give convenient reasons, to analyze the different responses, to evaluate those responses and to present remarks critically about the matter and make the most acceptable decision for the solution of problems is critical thinking and problem solving skills. It is the capability of analysis, interpretation, evaluation and synthesis of knowledge (Trilling & Fadel 2009).

The child comes to school from the comparatively narrow life of the home and meets in the school other persons, big or small. He becomes a member of new groups of students and teachers, and enters into new relations. His interests are multiplies and widened. Mutual respect, sympathy, empathy and toleration take the place of narrow prejudices. Feeling in place of others and friendship, often of life-long duration, are formed and opportunities are afforded for the practice of the altruistic tendencies of self-sacrifice, charity and the like (Robert A.B, 2012) Schwebel, (2006) is of the opinion that sympathy is the name of understanding the minds of the antagonists and rivals. Empathy has two main parts; one is effective and cognitive (Thompson & Gullone, 2003). Oswald (1996) is of the view that good responses to others and understanding of the conflicts are the essential parameters of empathy. Students were offered help in developing the skills necessary for constructive, peaceful and remedial conflict resolution of interpersonal conflicts. The training program included: active listening, I-messages, empathy, and self-expression, welcoming criticism, and respecting differences.

Anger Management Skills: Emotions are always present in interpersonal conflicts and disagreements. The most common emotion present in interpersonal conflicts and disagreements. The effects of conflict resolution and peer mediation education on students’ empathy skills is anger, and Students were offered help in developing skills necessary to effectively manage the destructive emotions they have during the conflict process. Thus, students were expected to develop skills necessary to express their anger in a more constructive and peaceful way, and at the same time, manage the other person’s feeling of anger. These skills include; recognizing one’s emotions, expressing one’s
emotions, understanding the other person’s emotions, self-control, anger management, nature of anger, the kind of behavior that triggers interpersonal relationships, reactions to anger, how to manage our anger, and how to manage another person’s anger (Quill, 2000).

3 Methodology: The study was descriptive in nature. A survey was conducted by the researcher to investigate the research Problem

3.3 Population: To investigate the research problem the researcher selected secondary schools as the population of this research work. Further detail of the population is as follow;

1. 69 Male Secondary Schools of District Mardan.
2. 10th class students of these schools.
3. 765 Secondary School Teachers (SSTs) of these schools.

3.4 Sample of the Study: The researcher used convenient and random sampling techniques for the selection of schools and students and teachers respectively as per the following details;

1. 26 Boys Government Secondary Schools of District Mardan (38% of the population), both urban and rural.
2. 156 10th class students of the related schools.
3. 52 Secondary School Teachers (SSTs) of these schools.

3.5 Data Collection Tool: Data were collected through two self-developed questionnaires. One was for Secondary School Teachers and other for students of 10th class. The questionnaires were conducted of the items related to basic social skills, conflict social skills and peace promoting social skills.

2.4 Data Analysis Instrument: The data were collected personally by the researcher. Both the instruments of data collection were given to the participants of this research work. The gathered data were fed in SPSS 16. Mean, standard deviation and Pearson co-relation were applied on the collected data. The data were collected through two self-developed questionnaires, one for teachers and one for students. The collected data were fed into SPSS 16 and were analyzed through Mean, Standard deviation and Pearson correlation.

Important term used in this chapter and their explanation are as follows;

- Std = standard deviation
- r = Pearson correlation
- sig = significant level

Table No. 3.1; Greetings in conflicting Social Skills

<table>
<thead>
<tr>
<th>Respondents</th>
<th>Mean Score</th>
<th>Std</th>
<th>R</th>
<th>r²</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher</td>
<td>4.32</td>
<td>1.266</td>
<td>.414</td>
<td>.171</td>
<td>.000</td>
</tr>
<tr>
<td>Students</td>
<td>4.50</td>
<td>.752</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The above table illustrates the mean score of teacher 4.32 with std deviation 1.266 and students mean score of 4.50 with std deviation of .752 which showed that majority of respondents were agreed school environment contribute to the students greeting in basic social skills.

The r value .414 showed significant co-relation between the school and greeting in the basic social skills of students. The r² value .171 explains that up to 17% school contributes in the promotion of greeting skills of students.
### Table No. 3.2; Communication in conflicting Social Skills

<table>
<thead>
<tr>
<th>Respondents</th>
<th>Mean Score</th>
<th>Std</th>
<th>R</th>
<th>$r^2$</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher</td>
<td>4.05</td>
<td>1.015</td>
<td>.393</td>
<td>.129</td>
<td>.002</td>
</tr>
<tr>
<td>Students</td>
<td>4.42</td>
<td>.770</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The above table illustrates the mean score of teacher 4.05 with std deviation 1.015 and students mean score of 4.42 with std deviation of .770 which showed that majority of respondents were agreed school environment contribute in the communicative skills of students.

The $r$ value .393 showed significant co-relation between the school and communicative skills of students. The $r^2$ value .129 explains that up to 13% school contributes in the development students’ of communicative skills.

### Table No. 3.3; Co-operative Skills of Students

<table>
<thead>
<tr>
<th>Respondents</th>
<th>Mean Score</th>
<th>Std</th>
<th>R</th>
<th>$r^2$</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher</td>
<td>4.50</td>
<td>.752</td>
<td>.403</td>
<td>.162</td>
<td>.000</td>
</tr>
<tr>
<td>Students</td>
<td>3.83</td>
<td>1.703</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The above table illustrates the mean score of teacher 4.50 with std deviation .752 and students mean score of 3.83 with std deviation of .1.703 which showed that majority of respondents were agreed school environment contribute in the development of co-operative skills of students.

The $r$ value .403 showed significant co-relation between the school and co-operative skills of students. The $r^2$ value .162 explains that up to 16% school contributes in the development of co-operative skills of students.

### Table No. 3.4; Conflict Management Skills

<table>
<thead>
<tr>
<th>Respondents</th>
<th>Mean Score</th>
<th>Std</th>
<th>R</th>
<th>$r^2$</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher</td>
<td>3.95</td>
<td>1.999</td>
<td>.285</td>
<td>.081</td>
<td>.001</td>
</tr>
<tr>
<td>Students</td>
<td>4.16</td>
<td>1.011</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The above table illustrates the mean score of teacher 3.95 with std deviation 1.999 and students mean score of 4.16 with std deviation of 1.011 which showed that majority of respondents were agreed school environment contribute in the development of the conflict management skills in students.

The $r$ value .285 showed significant co-relation between the school conflict management skills of students. The $r^2$ value .081 explains that up to 8% school contributes in the development of the conflict management skills in students.
Table No. 3.5; Problem Solving Skills

<table>
<thead>
<tr>
<th>Respondents</th>
<th>Mean Score</th>
<th>Std</th>
<th>R</th>
<th>r^2</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher</td>
<td>3.95</td>
<td>1.999</td>
<td>.195</td>
<td>.038</td>
<td>.002</td>
</tr>
<tr>
<td>Students</td>
<td>3.60</td>
<td>1.011</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The above table illustrates the mean score of teacher 3.95 with std deviation 1.999 and students mean score of 3.60 with std deviation of 1.011 which showed that majority of respondents were undecided about the role of school environment, contributing in the development problem solving skills in students.

The r value .195 showed significant co relation between the school and tolerance and appreciation in students. The r^2 value .038 explains only 4% school contribution in the development problem solving skills in students.

Table No. 3.6; Positive Competition among Students

<table>
<thead>
<tr>
<th>Respondents</th>
<th>Mean Score</th>
<th>Std</th>
<th>R</th>
<th>r^2</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher</td>
<td>3.95</td>
<td>1.234</td>
<td>.241</td>
<td>.058</td>
<td>.001</td>
</tr>
<tr>
<td>Students</td>
<td>4.03</td>
<td>.946</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The above table illustrates the mean score of teacher 3.95 with std deviation 1.999 and students mean score of 4.03 with std deviation of .946 which showed that majority of respondents were agreed that school environment boost positive competition in students.

The r value .241 showed significant co relation between the school and positive competition in students. The r^2 value .058 explains only 6% school contribution in the development of positive competition in students.

4 Results And Interpretations: Social skills of students are influenced by many factors. Schools and other social institutions contribute in the holistic development of students. The present research study concentrated on the effects of school on the social skills development of students at secondary level. The objectives of the study were to investigate the relationships between school and social skills of students, to find out the effects of school on basic social skills of students, to analyze the effects of school on conflict skills of students and to ascertain the effects of school on peace promoting skills of students.

5 All the 10th class students and Secondary School Teachers (SSTs) of male secondary schools of district Mardan were the population of the study. Through random sampling techniques 156 students and 52 SSTs were selected as the sample of the study.

6 The study was descriptive in nature. To probe the research problem the researcher developed two separate questionnaires, one for students of 10th class and the other for SSTs. The questionnaires concentrated on the investigation of the basic, peace promoting and conflict skills of teachers and students.

7 The collected data were fed to SPSS and were analyzed through Mean, Std deviation, Pearson r and linear regression. The results of the study illustrate the school (teachers) have significant effect on the social skills of the students. Students’ basic skills including greetings, communication and emotional identification have high co relation and significantly affected by the school environment. School environment also significantly contribute to peace promoting skills of the secondary school students including contacts with people/friends, cooperation and tolerance. School has also influenced students’ conflict management skills including problem solving and positive competition.
The study recommended that school should make their contribution honestly in the development of students’ social skills along with other educational goals using all possible means.

4. Findings: Findings of the study were as follow:

1. The r value .414 showed significant co-relation between the school and greeting in the basic social skills of students. The r² value .171 explains that up to 17% school contributes in the promotion of greeting skills of students.
2. The r value .393 showed significant co-relation between the school and communicative skills of students. The r² value .129 explains that up to 13% school contributes in the development students’ of communicative skills.
3. The r value .403 showed significant co-relation between the school and co-operative skills of students. The r² value .162 explains that up to 16% school contributes in the development of co-operative skills of students.
4. The r value .285 showed significant co-relation between the school conflict management skills of students. The r² value .081 explains that up to 8% school contributes in the development of the conflict management skills in students.
5. The r value .195 showed significant co-relation between the school and tolerance and appreciation in students. The r² value .038 explains only 4% school contribution in the development problem solving skills in students.
6. The r value .241 showed significant co-relation between the school and positive competition in students. The r² value .058 explains only 6% school contribution in the development of positive competition in students.

4.2. Discussions: School as a social institution has a momentous role in the promotion and development of social norms, culture and traditions. Society makes school responsible for the inculcation of the social skills in the future generation. The findings of the study have consistency with the studies of Ravi, 2011 and Mohiyuddin, 2010, who concluded that school have strong and positive effects on the social skills development of students. Students’ basic skills are the core target of schools to distinct students from uneducated people. It concentrates on the development of greetings, emotional identification and social way of communication to others. The findings of (Sodian & Frith, 2008) and present study has also in same alignment.

Peace is the core concept of every education system. It is the basic and fundamental need of every society. In the present scenario there is continuous pressure on school to contribute in the peace promotion skills of the students. Findings of the current study are in conformity with (Elizabeth, Burns, Coleman and Kevin White, 2011). Co-operation, appreciation and tolerance are the key areas of peace promoting skills. These are the areas where school need to contribute more and carefully. The study showed that students were not good in the area of appreciating other on their good performances and tolerance at numerous important situations. It is to be concluded that the students’ skills in conflict management were significantly affected by the school. School provides a plate forum for students where rapid interactions enhance the conflict management skills of the students. Oakley et al. (2004) and Felder and Brent (2001) sensitized the role of school in concentrating on the conflict management skills in students. Students were found weak in the area of problem solving and positive competition at school which reflects the inability of the school efforts. Positive competition is the core motive for students learning, and need to be properly addressed. Respect is the core social value of the Pakhtoon society. It is expected from the school and other social institution like Hujra, Masjid and playground to make efforts for the promotion and development of this important social value. The school role was found admirable in this regard.

4.3. Recommendations: On the basis of the findings of the study following recommendations are presented here:

1. School is responsible on behalf of the society to prepare the future generation for their critical and important social, economical, political and education role. It is therefore important to place proper attention on the social development of students along with the intellectual, social and religious aspect.
2. Although curricular activities also concentrate on the inculcation of basic social skills such as; greetings, way of behaving and soft communication but there is intense need to be sensitized on behalf of teachers to focus on the development of student’s basic social skills.
3. The present worse law and order situation reflects the inability of the schools and other social institutions of the country. Schools are candle homes and therefore responsible for development, promotion and
dissemination of the light into the minds of the individuals of the society. Along with other numerous responsibilities of school, it should also have to concentrate on the promotion of peace through education, emotional, religious and cognitive satisfaction of students.

4. Co-operation, appreciation and tolerance are the key attributes of the 21st century students. Single students cannot do anything but with the co-operation of other peers and collaborative approach they can meet the challenges of the present and future. It is therefore strongly recommended that teachers’ should contribute in the inculcation of these attributes in the students.

5. School as a miniatrue society, is the training center for the students. It provides opportunity for them to prepare themselves for their future social adult life. It is therefore important to promote conflict management skills in students through different co-curricular activities to live a harmonize life.

6. Problem solving is a research approach towards the crucial situation. It focuses on the analysis and suitable comeback to handle the situation in an appropriate way. Students lacking these skills often indulge in quarrels, and maladjustment at school and adult life. It is therefore strongly recommended to give attention to the development of problem solving skills of students through assigning leadership roles, responsibilities regarding managing different programs at school, interceding in friends’ conflicts and through appreciating on good performances.

7. Respecting others guarantees your respect. It is the core social value to respect elders and show kindness on youngsters. It is therefore essential for schools to transmit the social values of the society to the future generation through, role play, narration of the historical events accordingly and other means which could enhance social skills of the learners.

REFERENCES


ANALYZING THE EFFECTIVENESS OF EXTRINSIC MOTIVATION IN THE TEACHING OF ENGLISH LANGUAGE AT BS LEVEL

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²Provincial Education Department, KP, Pakistan
³University of Peshawar, KP, Pakistan

ABSTRACT: The study looked into experimental research to analyse the Effectiveness of Extrinsic Motivation in the Teaching of English Language at BS Level. It has defined the aptitude of English language of the learners, inspiration for learning, motivation level and learners' achievements. The main objectives of the study were to recognize the wants apropos of the aptitude of English language of the learners at BS level, inspiration for learning, motivational techniques and to verify the learners' motivation. The results were drawn by the researcher in the light of the analysis of the data. The achievement level of Control Group, taught by traditional method, improved but the average performance of the Experimental Group, taught by modern methods, was better. The achievement level of Experimental Group, taught with motivational techniques, as shown in Post-test was better than that of Pre-test and the values of Post-test were close to the critical boundary. The learners of Experimental Group, taught with the aid of motivational techniques, performed better than those of Control Group, taught by traditional method, but the result was insignificant due to high level of the respondents.

Keywords: Extrinsic Motivation, English Language, BS Level, inspiration for learning and achievement level of the learner.

Introduction: Education is recognized as an on-going process to endeavour to civilize and purify human minds. In this modern world of advanced technology, a variety of advancements have been made in the field of education. These developments will save individuals from the baser, corrupting influences in life provided they are being utilized for the enhancement of its objectives, contents, techniques and the roles it plays in the development of the nation. A nation can attain its required aims if its education system is well developed and compatible with demands of the future. Accordingly, it is required to improve education system by initiating ground-breaking technologies and methodologies. So far various developments have been initiated in the field of education. Various societal alterations, impact of latest technology, scientific approach, vibrant population, socio-economic proviso and the exploitation of media in schooling augmented the current tendencies which as a corollary have altered and developed content, curriculum and evaluation system of education.

This is the age of educational reforms; learning and teaching with a vigorous and encouraging change in the manners of human beings. It enables them to discern what is good and what is bad and to live a contented and decent life; to be in harmony with the immense realm of the society. Hans P. Guth (1973) says: English deals with the student's understanding and use of language. Good English teachers keep alive the students’ curiosity in language and build up their control over its resources. They will be encouraged to learn the language used both in class as well as used for practical purposes, with language as self-expression, with language as creative experience. They deal with how language serves business and leisure, individual and society.
To teach English with self-assurance and a sense of direction, we need a coherent view of what English language teaching and learning process is. People who teach and learn English diverge significantly in background, concerns, and viewpoint. But they converge on an essential pledge; they have common responsibilities; such as, new or updated subject matter which provides the content of English. English teachers and learners need to be acquainted with the mechanism of the language; the course of communication and the dynamics of literature; teacher who can make new agenda and new resources effective, the instructor who can develop a positive, modern approach that stresses the resources of language, the rewards for the effective speaker and writer; the role of the student in today’s English classroom; the emphasis on the student’s potential; playing a large role in how he defines his identity; the role of English in the larger context of the students’ lives and society. In our society where round about 60 languages are spoken, the role of motivation in learning these languages can never be underestimated. English language enjoys a prestigious role not only in Pakistan but also throughout the world and non-native English speakers almost exceed native English speakers and English has become a Langue Franca in multi-lingual country like Pakistan. English is the language of standing and esteem; a social indicator and that is why almost all managerial, intellectual and executive correspondences, in our county, are in English. Teachers at the BS level do not provide enough motivation to make the teaching and learning environment. But they must be aware of the fact that motivation plays important role to enhance the learning, interest and individual’s attitude and to utilize their creative skills. They always show readiness to achieve their goals. Motivation is studied under two types: Intrinsic Motivation and Extrinsic Motivation.

The first one comes from inside while the second one depends on the surrounding environment. Keeping the above role of the teacher and learner in view, the provision of motivation to satisfy their needs is to be sought, investigated and studied for assuring the degree and importance of the psychological impact on the way and style of the learning. Each learner is privileged and entitled to have freedom in a natural environment but in Pakistan, there is always a problem in the satisfaction of learners’ needs in various educational institutions which has created an alarming situation which adversely affects the learners’ behavioral ability.

The present study investigated the value of extrinsic motivation in the teaching learning process of English language at BS level. Numerous related factors such as L1 aptitude, degree of resemblance between L1 and L2 and motivational features concerning L2 made learning of the latter a complicated procedure. Theorists are of the opinion that the importance of the concept of motivation is multifaceted and it plays key role in enhancing students’ achievement level. It provided the main inducement to recruit learning a foreign language and then the will power to protect and maintain this development. The efficacy of motivation in learning English language was realized only when it enhanced learning ability and as such achievements in the target language though it was not the only factor to achieve the desired goal.

**Literature Review:** A language is the combination of human behavior, whose drive is to give vent to thoughts and feelings, and specifically to convey them to others. Languages are purely encoding and decoding method of transforming ideas, feelings and wishes by means of a scheme of willingly abridged symbols.

According to Saif-Ul-Haq, M. (2000, P.12) Language plays vital role in the life of man which cannot be underestimated. Language and society are interrelated and interdependent. Language is the root of social development. In a nutshell, it is the flesh and blood of human philosophy. Had language not been there, civilization could scarcely have started and surely could never have achieved its advanced forms. Languages are social phenomenon. Human beings collaborate with one another through significant noises (oral words) and scribes (transcribed words) and we are always involved in the process of communal relations. The role of language is two-fold; that is, social and non-social. In the former case, it is used for communication and interaction while the latter belongs to an individual personal feelings and thoughts. Searle, J.R. (1969, P.522) states that some educationists are of the opinion that mother tongue should be strictly avoided when the target language is being taught. Classroom should be transformed as if it is a small “Language Island” where purely the target language; English is utilized for all purposes. On the contrary, some experts maintain that mother tongue can be usually employed for teaching a second language like English.

Searle, J.R. (1969, P.242) states that the learning of the mother tongue differs from learning the foreign language in number of ways. Some of these points of difference are that learning of the mother tongue is a natural process; the child has the strongest motivation to learn it; it is because he wants to express his needs and wants; if the child does not learn the mother tongue, he cannot adjust himself in society. On the contrary, the learning of a foreign language is an unnatural course of action. Usually a child is less motivated to learn it. The will to learn foreign language is missing. The child learns the mother tongue in a natural environment. He is surrounded by a number of teachers. His parents and relations coax him to learn the language. He listens to the mother tongue most of his waking hours. The foreign language is taught in an artificial environment. More often than
not the child’s only contact with the foreign language is the classroom. There are a number of holidays in the
school and the time devoted to the teaching of the foreign language is limited.
Many factors are involved in affecting students learning strategies. Learners study by diverse means and their
method in a specific course or assignment is affected by its outlook as well as their drives. Regarding facilitating
learners effectively and in a good sense, English instructors have to persuade them to appreciate the matter to be
taught profoundly. Ausubel (1963, p. 2) pointed out disparity between significant and rote learning that learners’
motivation was a significant feature for stirring up momentous knowledge. The difference seems almost
analogous to that of surface and deep learning. Entwistle (1988, p.2) recognizes three likely approaches:

1. a surface approach is when the students’ aim is merely to replicate the substance needed for the
accomplishment of lessons;
2. a deep approach is when the learners’ aim is to arrive at comprehension of the material from their own
perspectives.
3. a strategic approach is when the learners’ aim is valuable and thriving, no matter what the means are.

Evidently, the above three approaches have a tendency to acquire different learning strategies and consequently
unusual results. As for as surface approach is concerned it results in rote learning whereas a deep approach
results in developing students’ sense of analysis, scrutiny, verification and connecting the same to their thoughts
through positive manner. Concerning strategic approach a learner may employ any means just to improve his
grades and realize his goals. The strategies learners observe have an effect on their learning. Learning by heart
results in extensive information of facts whereas a deep approach may produce a deep level of thoughtfulness.
Rossum and Schenk (1984, p.73) pointed out that deep approach is necessary to develop high quality learning.

Students’ previous experiences are key factors which affect learners’ approach to learning as disputed by
constructivist; that is, the learning mode they have until that time employed, their discernment of their doings
and their perspective. According to Ramsden (1988, p.22) says that students’ motivation is vital, but it may not
essentially agree on whether they make use of a deep or a surface approach.

Objectives: Major objectives of this study were to:
a. recognize the wants apropos of the aptitude of English language of the learners at BS level,
b. locate useful means of inspiration for learning English language,
c. determine the instructors’ manners by means of motivational techniques,
d. evaluate presentations of the learners educated through experimental method,

Methodology: A pretest and posttest control design was followed to investigate the effectiveness of motivational
techniques. The design included both experimental and control groups. Random selection of the population was
carried out. They were randomly assigned groups and treatments. Accordingly, among all the group members, the
special effects of various considerable extraneous variables were evenly disseminated, anticipating them to be
Corresponding. Purposive sampling techniques were used for the selection of the Sample. 40 students at BS level
out of 120 were randomly selected, divided into two groups of 20 each.

Analysis of the Data
Analysis of Data of Pretest of Control and Experimental Groups

<table>
<thead>
<tr>
<th>Statistics</th>
<th>Symbols</th>
<th>Result of Pre-Test (Control Group)</th>
<th>Result of Pre-Test (Experimental Group)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Cases</td>
<td>n</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Sum of Scores</td>
<td>Σx</td>
<td>1187</td>
<td>1298</td>
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<tr>
<td>Mean Scores</td>
<td>X̄</td>
<td>59.35</td>
<td>64.9</td>
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<tr>
<td>Sum of Squared Score</td>
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<td>75645</td>
<td>87780</td>
</tr>
<tr>
<td>SS = Σx² – (Σx)^2/n</td>
<td>SS</td>
<td>75468.88</td>
<td>87569.4</td>
</tr>
</tbody>
</table>

H₀: E = C
Hₐ = E > C

\[ t_{-cal} = 0.26 \]

\[ \alpha = 0.05 \]

\[ t = \frac{\alpha n_1 + n_2 - 2}{.05 (38)} = 2.021 \]

C.R t cal > tab
So, it is not rejected. The result is insignificant. It means that the mean score of both groups is equal. It was found that calculated value of \( t = 0.26 \) is not greater than table value of \( t = 2.021 \) at \( \alpha = 0.05 \) level. \( H_0 \) is not rejected and the result is insignificant.

### Analysis of Data of Posttest (Control & Experimental Groups)

<table>
<thead>
<tr>
<th>Statistics</th>
<th>Symbols</th>
<th>Result of Post-Test (Control Group)</th>
<th>Result of Post-Test (Experimental Group)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Cases</td>
<td>N</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Mean Score</td>
<td>( \bar{X} )</td>
<td>64.1</td>
<td>77.35</td>
</tr>
<tr>
<td>( SS = \frac{\sum x^2 - \left( \frac{\sum x}{n} \right)^2}{n} )</td>
<td>SS</td>
<td>86426</td>
<td>122713</td>
</tr>
</tbody>
</table>

- \( H_0 : \mu_E = \mu_C \)
- \( H_A : \mu_E > \mu_C \)
- \( t_{cal} = 0.33 \)
- \( t_{tab} = 2.021 \)

The result is again insignificant but the \( t \) value is close to critical boundary as compared to the value of \( t \) in Pre-Test. It was found that calculated value of \( t = 0.33 \) is not greater than table value of \( t = 2.021 \) at \( \alpha = 0.05 \) level and the result again is insignificant but the calculated value of \( t = 0.33 \) is greater than calculated value of \( t = 0.26 \) in Pre-Test and is close to the critical boundary/region. It means that the students of Experimental Group achieved higher score than that of Pre-Test.

### Discussion:
Motivational techniques play key role in the learning-teaching process of a language. It is a designed and methodical attempt on the part of a teacher for setting up order concerning teaching. The learners may perhaps discover similarities in learning between foreign language and their mother tongue. Whereas through traditional method, a child learns foreign language, word by word, with the help of first language. Keeping in view the magnitude of English language in the world around and its application in our daily life and as such to improve its standard, the researcher deemed it necessary to do a research work regarding motivational techniques in the teaching-learning process. Hence this study was conducted on the role of motivation in the English language at BS level. The data obtained was analyzed statistically, discussed and construed, conclusions were drawn and recommendations at the end were made.

Both the groups were compared based on pretest and posttest. The analyses showed that there is no significant dissimilarity between the results of the control and the experimental groups’ pretests. Consequently the null hypothesis, “there is no significance of difference between the mean scores of experimental and control groups on pretest and posttest” was accepted at 0.05 level. Thus, there is significant similarity between the two groups.

In view of the result of posttest, the experimental group performed significantly better vis-a-vis the control group. The difference between the two means was significant at 0.05 levels. Therefore, the null hypothesis that, “there is no significance of difference between means scores of the experimental and control groups in posttest,” was rejected at 0.05 levels which showed considerable improvement in the result of the posttest of the experimental group. These findings supported the idea that motivational techniques play a vital role in augmenting learning.

The overall results of the study indicated that instruction with the help of motivational techniques improved the learners’ accomplishment. These results support the Nihalani’s (1979) observations that an individual by birth is endowed with distinct potentials. All stakeholders ranging from parents to society and teachers are responsible in molding these potentials in right direction. The students taught with motivational techniques performed better than those who were taught with traditional method.

### Recommendations:
On the basis of the findings of the research work and the conclusion drawn, the following recommendations were made: A multiplicity of motivational techniques may well be used so that curiosity for English language learning is stimulated at various levels. The English teachers may use well-organized lectures and they should ensure students’ involvement in the same. Group activities may well be set by the instructor to expose the latent qualities of learners. To generate curiosity and to make learners obtain good results, a variety of A.V aids may be used. At the start of the lesson as a warm up activity, core questions should be asked from the
class to develop their curiosity. For obtaining better results, sense of competition among students should be built by the instructor in the class. Question answer session may offer occasions in English language teaching to engage learners in accommodating communications. To encourage the learners, they may be given rewards. Students’ outcomes should be frequently reviewed and feedback be recurrently communicated to the learners.

The following practices may be followed while teaching English language: to display on a video in English language class; make available reading interventions; to develop lexis building; to teach academic English and plan peer learning. Although these strategies can benefit all young learners, the use of motivational techniques is mostly helpful to English Language teachers and learners alike. A teacher is a central bridge between students and their learning; he can effect smooth transition of knowledge. Motivational techniques may cause effective change in students’ learning so the teachers must use them.

Undergraduate and Graduate teaching and research ought to be seriously reinforced. For this purpose, universities should develop centers of excellence in English Language Teaching and Learning. It is proposed to institute a national research fellowships scheme and to create funds to finance research by individual scholars as well as teams and for this purpose, M.Phil, Ph.D. Programmes should be instituted. It is also proposed to initiate a plan of nationwide professorships which may be financed by the Centre. Need-based reforms in syllabi and curricula should be initiated. Up to date method of English language teaching may be taken up in all language departments. To revise pay scales and service structure of the teaching staff may be a vital step in elevating the value of education. Central Bank should finance research schemes in the shape of advancing loans to students on merit basis. An expert committee drawn from pertinent fields should be assigned the duty of raising students’ language proficiency at higher level. Appropriate provision may be made to ensure enough supply of English Language books. Learning by rote without developing critical thinking among English language learners should be discouraged.

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EU-Pakistan RELATIONS: AID AND ASSISTANCE TO PAKISTAN FOR DEVELOPMENT SINCE 9/11

MUNAZZA KHAN®

ABSTRACT In 2012, EU-Pakistan celebrated 60th years of their diplomatic relations. The celebration also marked a new beginning in various fields particularly strengthening of economic and democratic institutions in Pakistan. The aid and assistance program that has been offered by EU is for the development of Pakistan’s economy which would help Pakistan to strengthen itself in South Asia. Numbers of projects that have been initiated by EU are to strengthen the Pakistan’s society such as in 2009 EU Action Plan for Afghanistan and Pakistan which was grounded on rule of law, rural development and promoting sub-national governance. Similarly, in 2012 the WTO waiver and Pakistan’s axis to EU market can ensure Pakistan’s development on economic grounds and made it self sufficient rather than to rely on aids in future as well. The paper also discuss the objections of other countries on waiver and Pakistan’s axis to EU market, viz-a-viz Pakistan’s growing tilt towards EU made US vulnerable of its future relation.

Introduction: Since 9/11, the world order has taken major shifts and alters shape of the international politics, as it was decades ago. Pakistan becomes the epic center of all the contemporary politics and the world has realized the importance of strategic depth which Pakistan has. On the one hand, however, both the Pakistan’s Foreign Minister Ms Hina Rabbani Khar and Chief of Army Staff Pervaiz Kayani have rejected the very concept of strategic depth and its constraints and compulsions in which Pakistan’s foreign policy should and must be formulated and carried on. While on the other hand the world is still focusing on the importance of the notion of Pakistan’s strategic depth. Therefore, what we are witnessing at large is the Europe’s increasing interest in the region particularly to help out Pakistan in its development program so that it would be able to come out of the clutches of current wave of extremism, as Pakistan is the foremost and direct victim of the War on Terror. The presence of Osama bin Laden on Pakistani soil, current struggle of Pakistan’s armed forces in the areas such as FATA and Baluchistan are the pertinent examples that how much Pakistan been plagued with the War on Terror and alone it is very difficult to wash the strains of terrorism from the soil of Pakistan. EU has come forward in recent years with the aid and assistance programs to take out Pakistan from the clutches of strong wave which has weaken its stability and peace at large over a decade (Munazza Khan: 2012).

The year 2012, also marked the celebrations of diplomatic relations between EU and Pakistan. At this occasion Pakistan is looking forward to improve its ties and enhance its relations further in economic, political and all other areas of interests. EU, vis-à-vis has forwarded its hands of aid and assistance along with trade openings for Pakistan.

EU was always been generous towards Pakistan. It not only provided aid to handicap Pakistan for its future rather it tries to establish and proposes such plans for the development which would help Pakistan in the long run to strengthen its democratic institutions.

In this article I would like to highlight some of the aspects of the relationship between EU and Pakistan vis-à-vis its implications on India and US in respect to its trade ties.
Rationale of EU: EU foreign policy is guided by the principle of universalism. For countries and regions beyond its neighborhood, the EU strikes a delicate balance between genuine universalism and the prioritization of specific geographical areas where the action of the Union can make a difference and where its responsibility is at stake, to prevent mass violence, supporting democratic regimes under threat, or establishing and strengthening democratic regimes and institutions or in the event of a serious challenge to international security (Álvaro de Vasconcelos: 2010). This foreign policy prioritization is based on effectiveness and common interest of the EU member states in avoidance of short term interests of its members (Álvaro de Vasconcelos: 2010). The Treaty of Lisbon, also stated clearly in this regard, that the action oriented policies must be in compliance with the principles which have guided its own creation, development and enlargement. Therefore, EU also want to pursue those policies for itself and “seek to advance in the wider world” (Álvaro de Vasconcelos: 2010). These include principles of the UN Charter and International Law, promoting multilateral solutions to common problems. Thus, EU proposes these principles in 2003 and its implementation confirmed by the 2008 report, through European Security Strategy report which refers to an international order based on effective multilateralism as strategic objective of the Union.

On the basis of this strategy EU also endorsed an EU Action Plan for Afghanistan and Pakistan in October 2009. The Action Plan grounded on rule of law, rural development and promoting sub-national governance. EU has always pursued far better strategy than unilateral military operations led by US. EU forge political consensus in lieu with the principles and values guided by the Lisbon Treaty on the basis of which EU’s decision of aid and assistance for development in any part of the world based on contributing to effective multilateralism which in fact calls for a depoliticisation of assessments on the basis of which political decisions are taken as well as for some form of accountability at the EU level. (Álvaro de Vasconcelos: 2010)

Pakistan: Interests and Expectations: There is a need to understand that the regional peace cannot be achieved until major internal issues of Pakistan are not addressed. Growing extremism and deteriorating economic conditions has also brought terrorism at home. Many terrorist groups are operation within South Asia and Central Asia. But the condition of Pakistan became more critical the time it went into the venture of War on Terror. Pakistan’s economy has been affected severely. The pace of development is very low. Today, Pakistan is fighting a war internally but at the same it is unable to cater the needs of internally displaced persons (IDPs) all because of economic drawback.

European powers wanted to withdraw its forces from the region by 2014 but the dream couldn’t approach its final position yet. There is a deep requirement for EU to revisit its policies and strategies towards Pakistan and there is a need to view Pakistan not only from the prisms of Afghanistan. With the second largest Muslim population on Earth (more than 190 million people), a growing arsenal of nuclear weapons and serious internal challenges, Pakistan’s significance to world peace and stability is indeed much greater than that of Afghanistan. (Patryk Kugiel: 2012)

With the presence of Osama bin Laden, the world had viewed Pakistan with doubt. Over the years, the terrorists plots have been ended up in linking those terrorists from Pakistan, religious extremism, illegal drugs, organized crime and regional instability, all these factors are also impacting on the regional peace and security of Europe. Therefore, there are possibilities in front of the world; first is that if Pakistan would be able to find its path to development it could become an emerging middle power (Patryk Kugiel: 2012) , however, if it moves in the opposite direction and descends into further political and societal mayhem, it will need much more aid and assistance to get rid of the epidemics of terrorism and extremism than today.

A peaceful, secured, democratically strong and prospering Pakistan is in the best interests of the EU and the world. Pakistan is looking forward for its better relations with the EU particularly for economic and strategic reasons. EU is already Pakistan’s largest trading partner estimated 21% of its exports. (n.d.) EU also caters support and investment in technological and infrastructure sectors vis-à-vis reduction in tariffs. The other very important aspect is strategic partnership with the EU. Pakistan would be better able to improve its international standing through a potential alternative Western ally to the US. Pakistan would be able to balance the situation as EU has extended its similar partnership with India as well. (n.d.)

History of EU-Pakistan Relations: European Commission has been engaged in various projects and programs of worth more than €500 million from the very beginning of its cooperation with Pakistan since 1976 (according to Wikipedia). The Commission was always been dedicated to the development, for which it initiated various projects to boost the development by both means, i.e. betterment of infrastructure and social development. 1980s saw some development projects including development of roads, bridges, a fishing harbor facility, rural electricity infrastructure, livestock, education, vocational training and integrated rural development. The European Union in particular, and all European countries are the strongest advocates of human rights and social welfare. This was also evident in 1990’s. When commission made efforts to strengthen, modernize and develop the social sector in Pakistan. It helped and supported, whether they are large or small scale, NGOs to penetrate in those fragments of the society, which were out of the reach of government including population welfare, child
labor, income generation, drug demand reduction and rural health. The focus of the EU in that decade was primarily on human development and environmental degradation in compliance with the political structure of the country. With the help of the European Commission, Pakistan, whose prime focus was on hard power politics and developing its nuclear arsenals, also tilted its focus on human development. It initiated educational programs at provincial level.

**Post 9/11:** Pakistan became the epicenter of the world in post 9/11 era. The doctrine of strategic depth enhances the importance of Pakistan in the world. Therefore, there was immense pressure on Pakistan to take active part in the US led-War against Terrorism. Pakistan has faced multiple squeezes due to its central position in the region vis-à-vis its partnership in the war against terrorism. Pakistan, itself, has suffered from the extreme waves of terrorism from the extremist Jihadist groups within and without the state. The integrity and stability of the country was at stake. At that crucial moment, Pakistan needed support from the world to deal with the degradation and destabilization it was facing. European Commission has realized the importance of Pakistan and also realized that how crucial it is to support Pakistan, if EU wanted peace and stability at home. Therefore, Commission supported Pakistan through € 50 million for financial service reforms and to support development of micro-finance SMEs. According to *Country Strategic Paper for 2007-2013* published in collaboration with Pakistan European Community, in the period from 2002 to 2006, commission allocated €75 million country’s development and economic cooperation.

**EU Aid and Assistance during Natural Catastrophe:** Pakistan, since last few years, has been the victim of devastating natural catastrophe. Starting from October 2005 earthquake to the floods of 2011, Pakistan has faced sever challenges to deal with the reconstruction and supporting its people who have been suffered from those natural calamities. Along with various other countries, EU moved forward towards Pakistan. The commission proposed an assistance package of € 93.6 million, consisting of both humanitarian aid (€ 43.6 million) and reconstruction support (€ 50 million) for commitment in 2005. Substantial assistance was also provided under other thematic budget lines, including for Afghan refugees in Pakistan.

Under its environment cooperation policy, over the last decade the EC contributed a total of € 32 million to rehabilitation, management and conservation of natural resources, safeguarding and conservation of biodiversity, education and capacity-building through sustainable resource management with the involvement of local communities. Major target areas included upland areas of Punjab and Khyber Pakhtunkhwa (KP), benefiting more than 2 million people. The EU Commission had proposed the Emergency Autonomous Trade Preferences (ATPs) for Pakistan offered in the aftermath of the devastating 2010 floods. The package included tariff free export of 75 Pakistani products to EU markets for three years. The package also got WTO waiver. (Gareth Chappell: 2009)

**Current Involvement:** Many shifts and alterations have been made in the foreign policy of Pakistan since the democratic government has came in Islamabad. The recent government focused on the betterment of its diplomatic vis-à-vis trade relations with key states throughout the world including India. EU was always been of great importance for Pakistan. EU provides one of the biggest markets in the world and greater opportunities for import and export. The diplomatic and economic ties, between the two, were at their worst since Pakistan became one of the major participants of war against terror. However, there were serious setbacks on different occasions due to which the relations between the two entities struck badly, either in the face of sanctions imposed on Pakistan or diplomatic accusation. The most recent incident which blow EU-Pakistan relations, were the comments of British Prime Minister David Cameron, during his visit to India, accusing Pakistani state of promoting the export of terrorism by stating, “We want to see a strong and a stable and a democratic Pakistan, but we cannot tolerate in any sense the idea that this country is allowed to look both ways and is able in any way to promote the export of terror, whether to India or whether to Afghanistan, or anywhere else in the world.”(Robert Mackey: 2010). The row came as Wajid Shamsul Hasan, Pakistan's high commissioner, wrote: “One would have wished that the prime minister would have considered Pakistan's enormous role in the war on terror and the sacrifices it has rendered since 9/11.”(Robert Mackey: 2010) The allegations made by David Cameron were more of relied on the information leaks and the bilateral visit between India and Britain would be achieved without destructing the prospects of regional peace and stability. (Nicholas Watt: 2010)
However, later on Lady Ashton, the EU’s foreign policy chief, has tried to undo the damage to EU-Pakistan relations. Many efforts were made on higher level to smoothen the relations between the two in post-flood period, when there were great chances that flood could further devastate and destabilize the country. On the basis of this blow to the relationship between the two, the high representatives from EU felt the necessity to establish a long term plan which would be coherent and sustainable strategy to deal with EU-Pakistan relations for the long term. Pakistan and the European Union have agreed to the establishment of a Pak-EU Steering Committee on Counter terrorism, for prospect cooperation of both on curbing terrorism. It was, however, been recognized that Pakistan has made enormous sacrifices and its land and its people has suffered immensely from terrorism. The loss, though which Pakistan is moving, is unimaginable. The need is to recognize the importance of peace and stability in the region with the commitment for an Afghan-led and Afghan owned peace process, which is not possible without support of international community.

The EU and Pakistan has enhanced their cooperation and commitment to fight terrorism. The need to combat terrorism has brought EU and Pakistan much closer for Pak-EU Strategic Dialogue for the first time. On the occasion, Pakistan and the European Union reaffirmed their commitment to fight terrorism.

Trade: A tool to Development

Bringing economic stability and development to Pakistan is vital in order to tackle the root causes of poverty and conflict. (Javeria Solana: 2007) Pakistan’s economic prosperity and stability is hostage to its trading ties with emerging economies, such as India and China, and access to big markets. (Munazza Khan: 2012). EU is one of Pakistan’s top trading partners. The EU accounts for 20% of Pakistani external trade with Pakistani exports to the EU amounting to €3.4 billion, mainly textiles and leather products) and EU exports to Pakistan amounting to €3.8 billion (mainly mechanical and electrical equipment, and chemical and pharmaceutical products.

Since 2001, EU policy is to stay constructively and strongly engaged with Pakistan and to make a significant and visible engagement, both in political and economic terms. Measures include resumption and upgrading of political dialogue, signature of a 3rd Generation Co-operation Agreement, as well as additional development assistance. (Summary of the Treaty)

To enhance Pakistan’s capability on WTO matters, EU launched an assistance program in 2004 to reform procedures and processes for trade facilitation in accordance with EU policies and values (Munazza Khan: 2012). In this regard, we cannot undermine the amazing step of obtaining WTO waiver for Pakistan, following the dreadful floods. This would certainly help Pakistan to access and enhance greater gains from EU’s markets.

Pakistan and European Union also moved forward to implement a new Five Year Engagement Plan which attempts to strengthen vis-à-vis diversify their traditional relations of donor and recipient and enhance their cooperation and partnership in other areas of mutual concerns. The Dialogue (2012) provided an opportunity to review EU development cooperation including the broad parameters of the second EU Multi-annual Indicative Program (MIP) for 2007-2013, which included projects for rural development and natural resource management, education and human resource management, governance and human rights, and trade development.

The European Union also reiterated its commitment for area-based community development, particularly in the Malakand Division. Appreciating the steps taken by Pakistan in implementing its international human rights commitment, High Representative Ashton said both sides would further work closely in this regard.

EU is also benefitting Pakistan from its Generalized System of Preferences (GSP), according to which Pakistan would receive duty free treatment from the year 2014.

The concessionary access which Pakistan achieved in 2002 lasted for three years later on, Javeria Solana: 2012). Pakistan has been attempting for similar arrangement. The scheme would replace the current GSP scheme from January 2014, under which, some of the existing criteria for GSP Plus beneficiaries have also been changed. Most significantly as per the new criteria a country will be eligible for GSP Plus only if its GSP covered exports to the EU account for less than 2% of the EU’s total GSP imports, instead of the 1% applied currently. This increase in criteria from 1% to 2% will make Pakistan and a few other countries eligible to apply for GSP Plus, provided they fulfill the conditions, such as the commitment to effectively implement 27 international conventions relating to good governance, human rights and sustainable development etc.

On the occasion of 50th anniversary of diplomatic relations between both entities, EU and Pakistan realized the need for much closer economic and business ties between the two. EU has recognized Pakistan’s efforts for its liberalizing trade policies with India.

The EU’s 27-member states are engaged in development programs with a total a value of 750 million euro. Over the last four years the EU’s humanitarian agency, ECHO, provided over 370 million euro in humanitarian aid to Pakistan, making it the number one international humanitarian actor in Pakistan. EU is still working on to increase its investment to empower local communities in Pakistan which are threatened or victimized by militancy and extremism.
European Union can be an important player in peace and development as it is also an ally of US in war against terrorism. EU’s support and assistance to Pakistan in crucial times is of great importance as it can be a major source of direct investment in future, which would be a great opportunity for Pakistan to boost its economy.

Trade between the EU and Pakistan comes under the purview of an EU-Pakistan Joint Commission, which was established in 2007 to discuss trade policy developments and individual market access issues which accommodate trade and to lay a platform for reinforcing economic and political ties (Nadia M. Abbasi: 2009).

Pakistan’s exports are dominated by textiles and clothing. Exports of textiles and clothing to the value of the €2.6 billion entered the EU from Pakistan in 2007, about 80 per cent at a preferential tariff rate. Currently, efforts are under way to broaden the base of the export profile and reduce reliance on the textiles and clothing sectors. (Saman Kegama: 2012)

The EU has supported Pakistan’s efforts to integrate into the global economy by granting Pakistan’s exports to the EU reduced tariffs under the EU’s Generalized System of Preferences (GSP). This allows almost 20 per cent of Pakistan’s exports to enter the EU at zero tariffs while a further 70 per cent are allowed to enter at a preferential tariff rate. (Nadia M. Abbasi: 2009)

The EU has also provided Pakistan with substantial humanitarian and development aid – worth EUR 500 million since 1976 – for a mix of infrastructure and social development projects and to boost financial sector reform and promote small and medium-sized enterprises (SMEs). Nonetheless, there have been major ups and downs in relations between the EU and Pakistan depending on whether the latter has been under military or civilian rule.

The EU imports textiles and clothing with a value of EUR 3.5 billion annually, but EU anti-dumping investigations has strained the trading relationship. Pakistan is unhappy about its exclusion from the EU’s GSP-plus scheme since the EU restored the system after India won a World Trade Organization dispute panel against Pakistan’s inclusion in 2005. Pakistan argues that it is now subject to higher tariffs on its exports of textiles and other products to the EU compared with other South Asian countries, some of which enjoy duty free access to the EU market. Unless all South Asian countries operate on a ‘level playing field’, Pakistan fears that EU investors and importers will move into Bangladesh or Sri Lanka, which have duty free access to the EU market, or to India once the FTA is negotiated. (Saman Kegama: 2012)

Cooperation with Pakistan dates back to 1974, but the 2004 cooperation agreement paved the way for closer relations. Since the start of its cooperation with Pakistan, the Commission has committed more than €500 million to projects and programs.

The Country Strategy Paper 2007-2013 focuses on poverty reduction, notably through assistance in rural development and natural resources management as well as education and human resources development, notably in the North-West Frontier Province (NWFP) and Baluchistan. The financial allocation for the 2007-2010 periods is €200 million.

Heavy monsoon rain that started late June 2010 triggered the most severe floods in Pakistan in 80 years. The EU immediately provided substantial funds to assist the most vulnerable victims. In March 2012, a new political framework - the EU-Pakistan five year Engagement Plan - was endorsed by both sides. The Plan is intended to take relations to a new level by intensifying dialogues across priority areas including: political cooperation, security, governance and human rights, trade, energy and a range of sectoral cooperation areas.

Table 1: The Major Import Partners

<table>
<thead>
<tr>
<th>Rank</th>
<th>Partners</th>
<th>Mio. Euro</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>China</td>
<td>4,625,4</td>
<td>15,6</td>
</tr>
<tr>
<td>2</td>
<td>EU 27</td>
<td>4,312,4</td>
<td>13,9</td>
</tr>
<tr>
<td>3</td>
<td>Saudi Arabia</td>
<td>3,431,5</td>
<td>12,4</td>
</tr>
<tr>
<td>4</td>
<td>United Arab Emirates</td>
<td>3,855,2</td>
<td>11,5</td>
</tr>
<tr>
<td>5</td>
<td>Kuwait</td>
<td>1,741,0</td>
<td>5,5</td>
</tr>
</tbody>
</table>

Table 2: The Major Export Partners

<table>
<thead>
<tr>
<th>Rank</th>
<th>Partners</th>
<th>Mio. Euro</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>EU 27</td>
<td>3,267,6</td>
<td>22,6</td>
</tr>
<tr>
<td>2</td>
<td>United States</td>
<td>2,366,2</td>
<td>16,2</td>
</tr>
<tr>
<td>3</td>
<td>United Arab Emirates</td>
<td>1,725,4</td>
<td>11,8</td>
</tr>
<tr>
<td>4</td>
<td>Afghanistan</td>
<td>1,263,9</td>
<td>8,7</td>
</tr>
<tr>
<td>5</td>
<td>China</td>
<td>681,7</td>
<td>4,4</td>
</tr>
</tbody>
</table>

EU-Pakistan Relations: India as a Factor

India is a strategic partner of the EU and its relations with the EU are far better than that of Pakistan. India stands with EU on the grounds of strategic and business partnership while on the other hand the relations of Pakistan with the EU are always been referred as that of the donor and the recipient. However, with the improving ties with India and granting of MFN status, Pakistan is able to strengthen and smoothen its relations with India in recent years with the efforts of the democratic government seated in Islamabad. The efforts of seeking better and workable ties with India proved an achievement. One of the important aspects is that India is likely to withdraw its opposition on the controversial trade-aid package proposed by the European Union (EU) for Pakistan, at the General Council of the World Trade Organization (WTO) (Nayanima Basu: 2011). Pakistan can maximize its benefits on 75 products for the European markets for three years and 67 products are allowed axis at no tariff rate. On the remaining eight, tariff rate quotas (TRQ, limited imports at reduced duty) would apply. The package has been initiated with a hope to benefit Pakistan with $300 million per annum (Josy Joseph: 2011). However, the case as expected was not as simple as it appears. As it threatens the market of other competitors in the region. For India, Brazil, Bangladesh, Peru and Vietnam. (Munazza Khan: 2012)

Pakistan must realize that Indian and EU ties are limited to their respective constituencies as both the entities are skeptical of each other’s role as a major strategic player in South Asia. The India-EU Free Trade Area agreement had given new momentum to bilateral ties. Now with the absence of even an FTA, the main challenge before policy makers, still, is to strengthen its relations with EU.

Conclusion: Pakistan poses both challenges and opportunities for the EU. Strategic Dialogue as per the engagement plans would prove a right platform to address the wide and inclusive cooperation on the issues of mutual concern. However, at the first round, both the entities are required to focus on most alarming issues faced by Pakistan i.e. peace and stability, economic and regional cooperation which would pave the way for a successful transition in Afghanistan by 2014 with Pakistan’s productive help. EU is also in a state to address Pakistan’s internal security challenges including growing religious extremism. Apart from US military cooperation and unilateral actions in Pakistan which raised anti-American sentiments among the masses, EU
should focus on political and economic support. EU is well positioned to address Pakistan’s weak democratic structure with weak democratic institutions which are the prime source of instability and chaos at home. The EU must continue aid for rural development and education and pay more attention to trade-related technical assistance such as to improve sanitary and phytosanitary standards, protection of intellectual rights. More important, the EU can better be able to strengthen Pakistan through trade, granting access to the EU market, GSP and locating FDI in Pakistan.

Pakistan not only needed economic aid and assistance but also support to strengthen democratic institutions to ensure strong democratic government in future. All those efforts would help both to earn confidence and good will and popularity amongst the masses. India’s recent withdrawal of its objections to the WTO waiver sought by the EU for granting duty free access to some Pakistani products shows that action at the regional level can indeed bear fruit.

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ESTIMATING Returns to Higher Education in 
Pakistan

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ABSTRACT: The study estimated returns to various levels of education in Pakistan using the 2008 PSLM survey. The study used various specifications of Mincer-type model to estimate returns to higher education. Analysis showed that as compared to primary education, income of household increased by Rs. 540.3 with attaining education of middle, which further increases by Rs. 919.2 with secondary education. Under-graduates have a per month income of Rs. 3,334.5 higher than those having primary education which further increases to Rs. 4,378 for graduates. Hence, household income per month increases with attaining higher education indicating that private returns to higher education (collectively graduate and undergraduate levels) is the highest as compared to other levels of education. Promoting higher education in the country can be a very useful tool to fight the menace of poverty.

Key Words: Higher Education; Education Returns; Mincer-type model;

JEL Classification: H43; I21; I23 and I2

1. Introduction: Education improves human capital. It leads to economic and social development of a country. Barro & Lee (2000) reported that education provides skills and knowledge which are advantageous in providing new services with enhanced quality. Their study indicates that differences in economic growth of countries can be elucidated by the development indicators for education, especially, investment in long term education programs.

Investment in education has both quantifiable and non-quantifiable (or non-market) benefits. The quantifiable benefits include increase in human productivity, and earnings. The non-quantifiable benefits include increase in the knowledge of the people and produce good and law abiding citizens. In this regard private and social returns to different levels of education have been estimated in large number of developed and developing countries. These studies include Colclough, Kingdon & Patrinos (2010).

Private rate of returns are generally higher than social rate of returns of the investment made in education. Social rates of return consider the costs of education in its calculation and hence lower than the private rate of return. Models estimating returns to the investment made in the education assumes that both input and output markets efficiently function and good earnings are reliable measures of productivity at the margin. The estimates of the return to investment made in education also do not account for external benefits of education. These benefits include the benefits of an individual’s education for other people. Basic Education enables the students to learn basic soft skills i.e. reading, writing and numeracy. The application of these skills in day to day life proves productive and helpful to families and communities. Similarly, higher education which includes scientific research renders services that it contributes to the collective wellbeing of the society rather than individual benefits. The presence of such spell over is needed to be incorporated while estimating returns to public education. Important attempts have been made by the researchers to quantify their scale and impact Colm, Vincent & Ian (2010).

Determining the returns to the different levels of investment in education have been remained a question of interest for the researchers. Over the last three decades, researchers like Psacharopoulos(1973, 1981, and 1985) have recapitulated studies relating to the rate of return to education in developing countries. Becker (1962) made important contributions to estimation of returns to the investment made in education. Since then
hundreds of studies have been published determining the role of estimating the return to education investment. Card (1999), Ashenfelter, Harmon & Oosterbeek (1999) and Colin, Vincent & Ian (2010) present detailed review of these studies. The results of these reviews continue to strongly influence policies and international aid in the education sector in developing countries, particularly in Sub-Saharan Africa. In terms of social returns, these studies collectively put higher education in third place, following primary and secondary education.

Pakistan has been investing about 2.2 to 2.4 percent of the GDP during 1995 to 2007 as against the UNESCO recommended level of a minimum of 4 percent of GNP for developing countries. However, during 2007-2008, allocation to education investment increased to 2.49 percent of the country’s GDP. But, few studies have estimated returns to education in Pakistan. These studies have not estimated and compared these effects across the provinces. Since, higher education is devolved to provinces under the 18th constitutional amendments, therefore, it is important for the policy makers in the provinces to know the returns to investment made in education for better formulation of educational policies. For example, the Government of Khyber Pakhtunkhwa recently increased its allocation for the budget of higher education from two percent of the provincial gross domestic product to four percent, increasing the budget to Rs. 64 billion for the year 2012-13. It is a substantial increase given that no estimates of the returns to the investment made in higher education in Khyber Pakhtunkhwa is available.

The objective of this study is to estimate returns to higher education in Pakistan. Education can be defined as a continuous variable (years of education). It is included in the earning equation both in linear and quadratic forms. This specification assumes that the return to education is the same for different education levels, a rather restrictive approach since earnings are determined by the educational level. In the alternative specification education level is used as the determinant of earnings. Hence, this specification allows estimation of different effects of education on earnings. This study estimates the returns to different levels of education as observed in Pakistan i.e. primary (up to five years), middle (5-8 years), secondary (9-10 years), higher secondary (11-12 years), under-graduate (13-14 years) and graduate (above 14 years) of education.

2. Review of Literature: Review of the relevant literature has an important place in a research study. It highlights the background of the problem to be examined. It also provides further orientation about the problem and eliminates the possibility of unnecessary duplication of efforts. This chapter brings conceptual and theoretical threads together from current literature on the problem under investigation. The chapter provides foundations to the development of the conceptual and empirical frameworks used to estimate the returns to higher education in Pakistan.

In labour economics the most discussed issue is that whether the rate of return to education has been remained stable over time. While of interest to educators and potential students, this issue has significant implications in economic theory as well. Labour supply and business deals performed between investors and savers respond positively to economic incentive if the benefits to skilled labour are steady and approximately in accordance with the advantages to other long-term investments in capital. Welch (1970) and Carnoy & Marenbach (1975) proposed that research in measurement of the rate of return over time has attested to its long-run stability. Richard Freeman (1975) suggested, however, that a permanent decline occurred in the rate of return to a college education in the early 1970s. He argues that demand growth gradually decreased, while college supply continued to grow despite the drop in returns. Freeman’s study captured the attention of many researchers to acknowledge his empirical results.

Welch (1979) demonstrated that the decline in returns can be explained by a large group of new temporary workers and by the concentration of new entrants in the labour market. It has also been questioned that whether the onslaught of economic recession in early 1970s could also explain a temporary decline. Although much energy is already being invested by economists to determine or acknowledge whether government and individual are investing optimally in education sector. Much of this work came from Becker (1962).

From 1995 to 2002, Chinese Household Income Project (CHIP) data, an estimate of return to schooling can be obtained for each individual through Nonparametric Kernel Method (KMs) Li & Racine (2004). It facilitates to assess the heterogeneity in schooling rates of return between and within gender groups in urban China. Substantial heterogeneity observed in schooling coefficients. It also indicates that as labour market performs more effectively in urban areas, the range of heterogeneity in schooling returns reduces over time for both genders.

Songa, Orazem & Wohlgemuth (2008) study the role of mathematical and verbal skills on the return to graduate and professional education in United State. The students with higher average verbal scores in Graduate record examination (GRE) are more likely to attend graduate school whereas students with higher average score in quantitative skills are less likely to attend graduate schools. This sorting effect means that students whose cognitive skills are associated with lower earnings at bachelors level are the most likely to attend graduate school. They have estimated a model using the standard log earnings framework presented in equation (1).
\[
\ln y_i = S \beta_x + X_i \beta_s + \mu_i \beta_u + \left( \eta_i \beta_{u} + \mu_i \right).
\]

(1)

where \( \ln y_i \) is the observed earnings of the \( i \)th individual; \( S \) is the observed schooling level measured by a vector of dummy variables with the value of one indicating the individuals highest degree earned; \( u_i \) is a random error term; and \( \beta_x, \beta_s, \beta_u \) represent, respectively, the estimated return to schooling level, individual attributes and measured ability of the individuals major. The regression error term is \( \xi_i = (\eta_i \beta_u + u_i) \).

Songa, Orazem & Wohlgemuth (2008) estimated annualized return to masters or doctoral degree from about 5 percent to 7.3 percent and 12.8 percent respectively. While estimated return to professional degree raises from 13.9 percent to 16.6 percent. So these finding correspond to a large increase in relative earnings received by postgraduate degree holders in the United State over the past 20 years.

Songa, Orazem & Wohlgemuth (2008) their primary data source for the study is the Scientist and Engineer Statistics Data System (SESTAT) collected by the National Science Foundation (NSF) in United State. The 1993 wave of SESTAT also incorporated the 1993 National Survey of college graduates, the full sample includes 133,399 individual who received a bachelor’s degree between 1939 to 1992. Their working sample excludes individual who received their bachelors degree before 1963 and after 1986.

Niaz (2009) studies return to Private and Public education in Bangladesh and Pakistan. The main objective of the study is to look at wage differences between Private and Public graduates in Bangladesh and Pakistan within the context of Private and Public schools in South Asia. While evidence in support of wage advantage of private school graduates in Bangladesh is lacking, Pakistani private school graduates are found to earn more than public school graduates. They presented the following model in equation (2)

\[
\min_{\beta(\theta)} \left\{ \sum_{i \in Y} \left( y_i - x_i \beta(\theta) \right)^2 + \sum_{i \in X} \left( 1 - \theta \right) (y_i - x_i \beta(\theta)) \right\}
\]

Niaz (2009) assumed that Return to education do not vary across levels of education in Pakistan and Bangladesh. In both countries, graduates from Private Schools have more year of schooling. They found that in Bangladesh the earning premium of Private Schools graduates is driven mostly by characteristic endowment of waged workers and the market return to these characteristics is rather negative. In contrast, the data from Pakistan indicates that a substantial proportion of private school premium remain consistent after excluding small differences in attributes of the individuals. They conclude that Private Schools are more effective than public schools in Pakistan as compared to those in Bangladesh.

Niaz (2009) the source of data for Bangladesh is the relevant household survey from the Household Income and Expenditure Survey (HIES) conducted in 1999 to 2000 by the Bangladesh Bureau of Statistics. For Pakistan they used Pakistan Integrated Household survey (PIHS) conducted in 2000 to 2001.

Niaz (2009) analyze that the annual growth rates in per-capita income average accelerated from about 1.6% per annum in the first half of the 1980s to 3.6% by the latter half of the 1990s, and to 5.0% from the late 1990s to the 2000. In rural Bangladesh poverty is main factor behind the masses failure to invest sufficient money or resources in children’s education. The reason for household underinvestment in boys’ education in rural Bangladesh is that the rate of return to education may not exceed the returns from alternative investments to the 2000 for Bangladesh is the relevant household survey from the Household Income and Expenditure Survey (HIES) conducted in 1999 to 2000 by the Bangladesh Bureau of Statistics. For Pakistan they used Pakistan Integrated Household survey (PIHS) conducted in 2000 to 2001.

Jung & Choi (2009) study that how technological changes influence supplemental educational earnings between Science and Engineering (S&E) Occupation and non-Science and Engineering Occupation. They conclude that Science and Engineering occupation demand specific knowledge and skills and thus their vulnerability to Technological changes vary as compared with other disciplines of education. To test the hypothesis, they used modified Mincerian Earning Equation and built the model presented in equation (3).

\[
\ln w_{il} = \beta_0 + \beta_1 E_i + \beta_2 T_i + \beta_3 \delta_{il} + \beta_4 A_i + \beta_5 M_i + \beta_6 I_i + \beta_7 Y_{il} + \sum_{j} \beta_{il} l_{ij} + \delta & + \mu_{il} \]

(3)

where \( w_{il} \) is the hourly earnings of individual \( i \); \( E_i \) represents the year of schooling of individual \( i \); \( E \) represents the potential labour market experience (= age-year of schooling-6) of individual \( i \); \( T \) denotes the tenure year of individual \( i \); \( A \) is \( = 1 \) if individual \( i \) resides in seoul area, otherwise \( A = 0 \); \( M \) is \( = 1 \), if individual \( i \) is married with spouse, otherwise \( M = 0 \); \( Y \) is year dummies, with 1998 as a reference year; \( I_{il} \) industry dummies, with manufacturing industry as reference industry; \( S&E_{il} = 1 \) if individual \( i \) holds S&E occupation, otherwise \( S&E_{il} = 0 \).
Jung & Choi (2009) found a positive and significant earning effect of Skill-biased Technological Change (SBTC) for male workers not only for those in Science and Engineering occupation but also for those in Non-Science and Engineering occupations. Considering that Science and Technology specific skills are more important for Science and Engineering workers whereas general skills are more critical to non-S&E occupation, therefore they suggest that the skill-biased technological changes that occurred in Korea dominate Science and Engineering specific skills as well as general skills occupations. They also found that Quantile regression results suggest that the earning effects of SBTC is more apparent for male S&E workers as compared with Non-Science and Engineering workers.

Jung & Choi (2009) uses the data from the Korean Labour and Income Panel Survey (KLIPS) 1998 to 2005, a survey of the household and individual in Korea. The KLIPS provide information about the socio-economic characteristics of the individuals, such as labour market status, age, year of schooling, region of work place, tenure, as well as monthly wages and working hours for 1998 onwards.

Abdoulaye & Bity (2010) reported that in the past 15 years in Sub-Saharan Africa, there is a substantial expansion in enrolment at all the three levels of learning. Governments have devoted more resources to higher education under pressure from students, teachers and families, effectively changing the strongly recommended order of priorities given by their international aid agencies. A considerable number of graduates from higher learning swarm into the market due to the rapid growth in education industry. Have these recent developments affected returns to higher education in Sub-Saharan Africa over the last decade? The answer to exactly this type of question should be the basis of the decision to invest more or less in this level of education.

Green & Zhu (2010) study increasing dispersion in the return to graduate education in Britain’s and relate this development to rising over qualification. They distinguish between “real” and “formal” over qualification. Real over qualification is associated with job dissatisfaction. While formal over qualification has been increasing over time. Real qualification has been steady or rising only slowly. In line with convention they defined an individual to be overqualified if her or his own qualification (Q) exceed her jobs required qualification (RQ).where index i takes on value 0 to 4. From 1992 onward in a 14 years period, the number of overqualified people increased significantly. Furthermore, successive age groups entering employment have been experiencing greater over qualification. Among women graduates over qualification ratio went high from 23 percent to 32 during the period from 2001 to 2006. Therefore the standard implication drawn is that the state should provide regular information on the distribution of the return to graduate education.

Green & Zhu (2010) uses the data from the 2006 UK Skills Survey, along with the three earlier surveys: employment in Britain in 1992, The 1997 Skill survey and the 2001 Skills survey. The 2006 Skill survey was designed to be comparable with the earlier survey. The 2006 survey covered employed people aged 20 to 65 across the UK with an achieved sample of 7,787 individual.

Warunsiri & Mcnown (2010) study the rate of return to education in Thailand for workers born during 1946 to 1947 through Pseudo-panel approach. This approach takes into account the unobservable individual characteristics such as ability or motivation that may influence the estimated rate of return to education. One strong result that there is a downward bias in estimates of the rate of return to education is based on individual data. They developed a model expressed in equation (5)

\[
E_{ct} = \beta_0 \delta_{ct} + \beta_1 X_{ct} + \beta_2 \bar{X}_{ct} + \mu_{ct}. 
\]

Where \(E_{ct}\) and \(\bar{X}_{ct}\) can be represented as year of education and year of experience (or age). \(C (C=1, C)\) is defined as cohorts, based on year of birth by tracking birth year cohort. The term \(\bar{X}_{ct}\) is heteroskedastic, leading to biased standard error and \(\delta_{ct}\) is the cohort mean of \(\delta_{ct}\).

3. Methodology
3.1 Data: Data use in this paper is taken from Pakistan Social and Living Standard Measurement (PSLM) 2008. PSLM data on Education is a good source to observe the progress in education Sector. Besides other socio-economic and demographic information, PSLM survey provides data on education level and income of the household head and is suitable for estimation of the Mincer kind of models. The sample size of PSLM for the year 2008 was 15,512 households, including 6,388 households from Punjab, 3,734 household from Sindh, 2,794 households from Khyber Pakhtunkhwa and 2,170 households from Baluchistan. The universe of this survey consists of all urban and rural areas of the four provinces and Islamabad excluding military restricted areas. In 2008, PSLM comprised of 1113 enumeration blocks. Each city/town has been divided into enumeration blocks consisting of 200-250 households identifiable through sketch map. Each enumeration block has been classified into three categories of income groups i.e. low, middle and high, keeping
in view the living standard of the majority of the people. List of villages available by Population Census Organization obtained as a result of Population Census 1998 has been taken as rural frame. For urban area Islamabad, Lahore, Gujranwala, Faisalabad, Rawalpindi, Multan, Bahawalpur, Sargodha, Sialkot, Karachi, Hyderabad, Sukkur, Peshawar and Quetta have been selected as large sized cities each of these cities constitute a separate section and has further sub divided according to low, middle and high income groups. After excluding population of large sized cities the remaining urban population in each defunct division in all provinces has been grouped together to form a layer. For rural areas each district from Punjab, Sindh and KPK provinces has been grouped together to constitute a layer. Whereas non-operational administrative division has been treated as section of Baluchistan province.

3.2 Econometric Analysis: The study estimates the monetary private returns to education of a risk neutral individual. If non-monetary returns to education exist, then the model used in this study underestimate the returns from education. Private non-monetary returns include own health, spouse and family health, fertility, higher saving rates, improved family life (Haveman and Wolfe, 1984) and own’s wealth (Oreopoulos, 2007). Public non-monetary benefits of higher education include crime reduction, social cohesion, technological change and charitable giving (Haveman and Wolfe, 1984). Another benefit of higher education is increased turnover in elections (Milligan, Moretti, and Oreopoulos, 2004; Dee, 2004).

This study proposes a Mincer type model to estimate return to higher education. The proposed model is given as under.

$$\ln(y) = \alpha + \beta_1 H_i + \gamma X + v_1$$

where $y$ is the logarithm of monthly income (or wage) of household $i$, $H_i$ is the years of higher education, $X$ is a matrix of explanatory variables including socio-economic and demographic variables, $\alpha$, $\beta_1$ and $\gamma$ are the parameters to be estimated and $v_1$ represents the random error term. Parameter $\beta_1$ is the focus of this study which shows the effect of higher education on monthly income (or wage). The model is also estimated using linear specification.

4. Results and Discussion

4.1 Educational Profile of the Country: It is acknowledged that education is the one of the most important factor contributing to poverty reduction. Education plays an overarching role and has a harsh impact on all aspects of human life. It is a central investment for human and economic development. One of the main objectives of MDGs is to improve the percentage of literate Population. As compared to other SAARC countries Pakistan literacy rates are very low. From the last few years the primary objective of the government is to improve the level and quality of education. Great importance is given to the primary level education because it built the core of the literate population. Literacy and primary level education enrolment rates in Pakistan have shown progress during last five years but are still low compared with the countries of the region. This problem arises because of the basic communication and continuously multiple system of education that uncertainly blocks quality of education.

According to the PSLM survey 2008, out of the total uneducated (i.e. those who have never attended a school) in the country, 40.7 percent belong to Punjab, 20.5 percent to Sindh, 22.5 to Khyber Pakhtunkhwa and 16.3 to Baluchistan. About 42.6 percent of Punjab’s population have no formal education. The same in Sindh, Khyber Pakhtunkhwa and Baluchistan are 37.6, 52.9 and 54.7 percent, respectively.

Similarly the proportion out of total Primary educated in the country, 43.7 percent belong to Punjab, 33.2 percent belong to Sindh, 12.4 percent to Khyber Pakhtunkhwa and 10.6 percent to Baluchistan. About 15.6 percent of Punjab population have primary education. The same in Sindh, Khyber Pakhtunkhwa and Baluchistan are 20.8, 9.9 and 12.1 percent, respectively shown in table 4.1.

Table 4.1 reported that out of total middle education level in the country, 52.3 percent belong to Punjab, 19.0 percent belong to Sindh, 18.5 percent belong to Khyber Pakhtunkhwa and 10.4 percent belong to Baluchistan. About 12.5 percent of Punjab population have middle level education. The same in Sindh, Khyber Pakhtunkhwa and Baluchistan are 7.9, 9.8 and 7.9 percent, respectively.

Out of the total SSC education (i.e. those who have attended SSC level) in the country, 50 percent belong to Punjab, 21 percent belong to Sindh, 18.5 percent belong to Khyber Pakhtunkhwa and 10.4 percent belong to Baluchistan. Above 17.2 percent of Punjab population have SSC level education. The same in Sindh, Khyber Pakhtunkhwa and Baluchistan are 12.7, 14.3 and 11.5 percent respectively.

Total HSSC with in education level in the country, 40.4 percent belong to Punjab, 32.7 percent belong to Sindh, 15.8 percent belong to Khyber Pakhtunkhwa and 11.1 percent belong to Baluchistan. In Punjab about 5.5 percent population have HSSC formal education. The same in Sindh, Khyber Pakhtunkhwa and Baluchistan are 7.8, 4.8 and 4.8 percent, respectively shown in table 4.1.

Total Graduate with in education level in the country, 33.1 percent belong to Punjab, 40.1 percent belong to Sindh, 15.5 percent belong to Khyber Pakhtunkhwa and 11.3 percent belong to Baluchistan. In Punjab
3.6 percent population have Graduate formal education. The same in Sind, Khyber Pakhtunkhwa and Baluchistan are 7.6, 3.8 and 3.9 percent respectively shown in table 4.1. Total Post-graduate with in education level in the country, 31 percent belong to Punjab, 32.5 percent belong to Sind, 20.3 percent belong to Khyber Pakhtunkhwa and 16.2 percent belong to Baluchistan. About 3 percent of the Punjab population have Post-graduate education. The same in Sind, Khyber Pakhtunkhwa and Baluchistan are 5.5, 4.4 and 5 percent, respectively provided in table 1.

Table 4.2 shows the categories of education level in rural and urban areas. Where the proportion of un-educated is 73 percent in rural area and 27 percent in urban area, which is a huge gape similarly on the other side if we look for the proportion of post graduate in rural area its just 24.4 percent and in urban area its 75.6 percent which is completely opposite to the percentage of the uneducated. So the gape shows that rural areas still need development so that the illiteracy rate could be decreased.

Table 4.3 shows the monthly income of uneducated and educated by educational level across the four provinces. Monthly income for uneducated in Khyber Pakhtunkhwa is 5,567 Rs/month which is maximum as compared to other three provinces, for primary level the maximum monthly income is in Baluchistan 6,677 Rs/month, for middle level the maximum monthly income is in Punjab 7,854 Rs/month, for SSC level the maximum monthly income is in Punjab 10,521 Rs/month, maximum monthly income for HSSC level is also in Punjab 17,313 Rs/month, maximum monthly income for graduate level is in Punjab is 18,097 Rs/month and maximum monthly income for post graduate lies in Punjab is 24,767 Rs/month respectively. Overall results shows that in Pakistan average monthly income is 8518 Rs/month for 9163 cases.

4.2 Returns to Higher Education: Three specifications are used to estimate returns to various levels of education. The first specification (Table 4.4) estimates returns to various levels of education (i.e. primary, middle, secondary, higher secondary, undergraduate and post graduate) to estimate their returns. Table 4.5 shows returns to higher education (i.e. collectively graduates and undergraduates) as compared to other levels of education while table 4.6 presents disaggregated returns of education by splitting other levels of education into primary, middle and secondary levels.

The models fitted that data very well as 31 to 45 percent of the variation in the dependent variable is explained by the independent variables. F-statistics for all the estimated models is statistically significant indicating that all the independent variables collectively statistically significantly determine the dependent variable. Table 4.4 shows that all the variables, with the exception of dummies representing Punjab and poverty, are statistically significant. Urban population earn Rs. 1107.4 per month per household higher than those living in rural areas. Similarly, employed and self-employed earned Rs. 4970.5 and Rs. 2,135.5 per month higher as compared to the base category of other employment.

The model shows that household’s income per month increases as education level increases. As compared to the base category of primary education, income of household increases by Rs. 540.3 with attaining education of middle, this further increases by Rs. 919.2 with secondary education. Under-graduates have a per month income of Rs. 3,334.5 higher than the base category of primary education which further increases to Rs. 4,378 for those having graduate education. Hence, household income per month increases with attaining higher education indicating that private returns to higher education (collectively graduate and undergraduate levels) is the highest as compared to other levels of education.

In the next specification (Table 4.5), graduate and undergraduate categories are lumped as one and rest of the education levels are grouped as another category. The model shows that as compared to all other levels of education, households having higher education earn Rs. 3,389.9 per month higher. Hence, on average private returns to higher education is about Rs. 3,389.9 per month. In table 4.8, three broad categories of education i.e. middle, secondary and higher education are included in the model. Results of this specification show that households having a graduate or post-graduate household head earned Rs. 3,677.9 more than those having primary education. All these results, re-enforces the fact higher education has the highest returns as compared to any other level of education.

Conclusions and Recommendations: This study estimates returns to various levels of education using the 2008 PSLM survey. The survey shows that formal literacy rate is highest in Punjab (44.8 percent), followed by Sind (27.8 percent), Khyber Pakhtunkhwa (16.4 percent) and Baluchistan (11.1 percent). There is a huge gap between the formal literacy of rural and urban areas. The proportion of un-educated is 73 percent in rural area as compared to 27 percent in urban area.

The survey shows that 40.7 percent of uneducated belong to Punjab, 20.5 percent to Sind, 22.5 to Khyber Pakhtunkhwa and 16.3 to Baluchistan. Similarly 43.7 percent of the primary educated population belong to Punjab, 33.2 percent belong to Sind, 12.4 percent to Khyber Pakhtunkhwa and 10.6 percent to Baluchistan. In case of middle education, 52.3 percent of them belong to Punjab, 19.0 percent belong to Sind, 18.3 percent belong to Khyber Pakhtunkhwa and 10.4 percent belong to Baluchistan. Half of the population having
secondary level of education belong to Punjab, 21 percent belong to Sind, 18.5 percent belong to Khyber Pakhtunkhwa and 10.4 percent belong to Baluchistan. About 40.4 percent of population having HSSC belong to Punjab, 32.7 percent belong to Sind, 15.8 percent belong to Khyber Pakhtunkhwa and 11.1 percent belong to Baluchistan. Punjab hosts 33.1 percent of the graduates, Sind 40.1 percent, Khyber Pakhtunkhwa 15.5 percent and Baluchistan 11.3 percent.

The study used various specifications to estimate returns to higher education. Results show that as compared to the base category of primary education, income of household increases by Rs. 540.3 with attaining education of middle, which further increases by Rs. 919.2 with secondary education. Under-graduates have a per month income of Rs. 3,334.5 higher than the base category of primary education which further increases to Rs. 4,378 for those having graduate education. Hence, household income per month increases with attaining higher education indicating that private returns to higher education (collectively graduate and undergraduate levels) is the highest as compared to other levels of education. However, on average, households having higher education, earn Rs. 3,389.9 per month higher as compared to all other levels of education.

The study showed that higher education has very high returns and hence it should be promoted throughout the country. Promoting higher education can be a very useful tool to fight the menace of poverty in the country.

Table 4.1: Formal educational levels across the provinces

<table>
<thead>
<tr>
<th>Category</th>
<th>Punjab</th>
<th>Sind</th>
<th>KP</th>
<th>Baluchistan</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Un-educated</td>
<td>2,782</td>
<td>1,020</td>
<td>816</td>
<td>357</td>
<td>6,530</td>
</tr>
<tr>
<td>Primary (Up to 5 years)</td>
<td>1,020</td>
<td>775</td>
<td>286</td>
<td>140</td>
<td>2,240</td>
</tr>
<tr>
<td>Middle (6-8 years)</td>
<td>816</td>
<td>296</td>
<td>286</td>
<td>140</td>
<td>1,560</td>
</tr>
<tr>
<td>SSC (9-10 years)</td>
<td>1,126</td>
<td>473</td>
<td>416</td>
<td>235</td>
<td>2,250</td>
</tr>
<tr>
<td>HSSC (11-12 years)</td>
<td>357</td>
<td>289</td>
<td>140</td>
<td>98</td>
<td>884</td>
</tr>
<tr>
<td>Graduates (13-14 years)</td>
<td>234</td>
<td>284</td>
<td>110</td>
<td>80</td>
<td>708</td>
</tr>
<tr>
<td>Post-graduates (Above 14 years)</td>
<td>195</td>
<td>205</td>
<td>128</td>
<td>102</td>
<td>630</td>
</tr>
<tr>
<td>All</td>
<td>6,530</td>
<td>3,724</td>
<td>2,905</td>
<td>2,043</td>
<td>15,202</td>
</tr>
</tbody>
</table>

Table 4.2: Categories of educational level in Rural and Urban areas.

<table>
<thead>
<tr>
<th>Categories</th>
<th>Rural</th>
<th>Urban</th>
</tr>
</thead>
<tbody>
<tr>
<td>Un-educated</td>
<td>5105</td>
<td>1891</td>
</tr>
<tr>
<td>Primary (Up to 5 years)</td>
<td>1502</td>
<td>830</td>
</tr>
<tr>
<td>Middle (6-8 years)</td>
<td>861</td>
<td>699</td>
</tr>
<tr>
<td>SSC (9-10 years)</td>
<td>1109</td>
<td>1141</td>
</tr>
<tr>
<td>HSSC (11-12 years)</td>
<td>326</td>
<td>558</td>
</tr>
<tr>
<td>Graduate (13-14 years)</td>
<td>209</td>
<td>499</td>
</tr>
<tr>
<td>Post-graduate (Above 14 years)</td>
<td>154</td>
<td>476</td>
</tr>
<tr>
<td>All</td>
<td>9266</td>
<td>6094</td>
</tr>
</tbody>
</table>
Table 4.3: Monthly income of educated and non-educated by educational level across the province of Pakistan (Rs/Month)

<table>
<thead>
<tr>
<th>Category</th>
<th>Punjab</th>
<th>Sind</th>
<th>KP</th>
<th>Baluchistan</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>N</td>
<td>Mean</td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>Un-educated</td>
<td>5,438.2</td>
<td>1261</td>
<td>4799.1</td>
<td>806</td>
<td>5567.6</td>
</tr>
<tr>
<td>Primary (Up to 5 years)</td>
<td>6,525.1</td>
<td>657</td>
<td>6089.5</td>
<td>501</td>
<td>6667.4</td>
</tr>
<tr>
<td>Middle (6-8 years)</td>
<td>7,854.5</td>
<td>504</td>
<td>7141.8</td>
<td>233</td>
<td>6375.7</td>
</tr>
<tr>
<td>SSC (9-10 years)</td>
<td>10,521.7</td>
<td>768</td>
<td>7985.1</td>
<td>383</td>
<td>7577.2</td>
</tr>
<tr>
<td>HSSC (11-12 years)</td>
<td>17,313.2</td>
<td>253</td>
<td>9547.8</td>
<td>252</td>
<td>10427.8</td>
</tr>
<tr>
<td>Graduate (13-14 years)</td>
<td>18,097.9</td>
<td>188</td>
<td>15735.3</td>
<td>246</td>
<td>12449.0</td>
</tr>
<tr>
<td>Post-graduate (Above 14 years)</td>
<td>24,767.2</td>
<td>172</td>
<td>21176.4</td>
<td>182</td>
<td>20147.9</td>
</tr>
<tr>
<td>Pakistan</td>
<td>9262.8</td>
<td>3803</td>
<td>8364.3</td>
<td>2603</td>
<td>7809.1</td>
</tr>
</tbody>
</table>

Source: Authors calculations using PSLM data (2008)

F-statistics 285.893 (0.000) shows that significant differences exist in the means of income.
### Table 4.4: Regression estimates of the returns to various levels of education in Pakistan (Linear Model)

| Variable          | Parameter | Standard error | t-Ratio | P>|t|
|-------------------|-----------|----------------|---------|-----|
| Punjab            | -135.6    | 84.134         | -1.61   | 0.107 |
| Sind              | -675.8    | 89.660         | -7.54   | 0.000 |
| KP                | -809.1    | 95.951         | -8.43   | 0.000 |
| Urban             | 1,107.4   | 66.462         | 16.66   | 0.000 |
| Self-Employed     | 2,135.5   | 85.228         | 25.06   | 0.000 |
| Employed          | 4,970.5   | 84.480         | 58.84   | 0.000 |
| Poor              | -49.5     | 103.089        | -0.48   | 0.631 |
| Middle            | 540.3     | 94.909         | 5.69    | 0.000 |
| Secondary         | 919.2     | 93.420         | 9.84    | 0.000 |
| Higher Secondary  | 1,808.8   | 167.384        | 10.81   | 0.000 |
| Graduate          | 3,334.5   | 224.010        | 14.89   | 0.000 |
| Post Graduate     | 4,378.2   | 309.137        | 14.16   | 0.000 |
| Family Size       | 146.4     | 8.644          | 16.93   | 0.000 |
| Per Capita Expenditure | 2.8 | 0.197         | 14.40   | 0.000 |
| Constant          | -4,003.8  | 195.782        | -20.45  | 0.000 |
| F-Statistics      | 542.18 (0.000) | Adjusted R-squared | 0.453 |

### Table 4.5: Regression estimates of the returns to higher education in Pakistan (Linear Model)

| Variable          | Parameter | Standard error | t-Ratio | P>|t|
|-------------------|-----------|----------------|---------|-----|
| Punjab            | -110.9    | 84.884         | -1.31   | 0.191 |
| Sind              | -673.5    | 90.679         | -7.43   | 0.000 |
| KP                | -802.1    | 97.031         | -8.27   | 0.000 |
| Urban             | 1,164.1   | 67.079         | 17.35   | 0.000 |
| Self-Employed     | 2,226.5   | 85.913         | 25.92   | 0.000 |
| Employed          | 5,115.6   | 84.784         | 60.34   | 0.000 |
| Poor              | -10.6     | 104.238        | -0.10   | 0.919 |
| Higher Education  | 3,388.9   | 184.862        | 18.33   | 0.000 |
| Family Size       | 157.5     | 8.707          | 18.08   | 0.000 |
| Per Capita Expenditure | 3.1  | 0.199         | 15.46   | 0.000 |
| Constant          | -4,244.9  | 197.273        | -21.52  | 0.000 |
| F-Statistic       | 720.8(0.000) | Adjusted R-squared | 0.440 |
Table 4.6: Regression estimates of the returns to middle, secondary and higher education in Pakistan (Liner Model)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Parameter</th>
<th>standard error</th>
<th>t-Ratio</th>
<th>P&gt;t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Punjab</td>
<td>-151.4*</td>
<td>84.199</td>
<td>-1.80</td>
<td>0.072</td>
</tr>
<tr>
<td>Sind</td>
<td>-676.8</td>
<td>89.795</td>
<td>-7.54</td>
<td>0.000</td>
</tr>
<tr>
<td>KP</td>
<td>-812.5</td>
<td>96.092</td>
<td>-8.46</td>
<td>0.000</td>
</tr>
<tr>
<td>Urban</td>
<td>1,110.4</td>
<td>66.566</td>
<td>16.68</td>
<td>0.000</td>
</tr>
<tr>
<td>Self-Employed</td>
<td>2,138.6</td>
<td>85.362</td>
<td>25.05</td>
<td>0.000</td>
</tr>
<tr>
<td>Employed</td>
<td>4,981.5</td>
<td>84.584</td>
<td>58.89</td>
<td>0.000</td>
</tr>
<tr>
<td>Poor</td>
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REFERENCE


THE ROLE OF ZAKAT IN SOCIO ECONOMIC DEVELOPMENT

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Introduction: The word Zakat is the noun of Zaka which means 'increase' or 'growth'. It is also related to 'purification', 'enlargement' and 'flourishing'. In Fiqh terminology Zakat means 'financial donation'. Zakat means that the Muslims who own resources above a certain level, should divide a fixed proportion of it among those who are eligible to collect Zakat.

According to Dr. Yusuf al-Qardawis' definition, "Shariat levies Zakat on a prescribed portion of wealth, which Allah has made it obligatory to pay to the deserving". Further the term Zakat applies also to the act of setting apart a prescribed amount of wealth as Zakat.¹

Objectives of Zakat: Objective of Zakat is not only to support the poor and the destitute and to effect the division of wealth in society, but Zakat is also a pillar of Islam and a mandatory act of adoration. It source of heart and soul purification and transforms a Muslim into a truthful and dutiful servant of Allah. Muslims pay gratitude to Allah for what he has bestowed to them through the payment of Zakat. Allah wishes to cleanse the heart of man from the love for wealth and replaces it with His Love.

Hence the purpose of Zakat is to replace love of the world with the true love of Allah. To this end man has been induced not only to pay Zakat, but also to give away more. The purpose of Zakat is to eradicate greed, selfishness, envy, heartlessness and exploitation from the society and instill selflessness, kindness, sincerity, consideration, co-operation, brotherhood and companionship.

Social and economic justice is the focus of Islamic ideology. Zakat is an instrument to achieve these targets in Muslim society. Zakat and other charities have multi-dimensional impacts. Firstly, its target is purification of business activities. Quran describes that when Zakat is paid, remaining assets are purified (9:103). Prophet (pbuh) pointed out that charity purifies the activities of a trader. Establishment of civic system for providing people a better social life is the second objective of charities in Islam. Economic justice is achieved through the mechanism of automatic transfer of funds from the rich to the poor brings about economic justice in society.

The main objective of this study is to provide a comprehensive description of zakat System. Simultaneously we have to analyze current situation of Zakat collection and its contribution in the social and economic development, specifically in Pakistan. Then conclusion will be drawn to propose policy changes in order to make a country progress on social and economic fronts by implementing Zakat in true sense and spirit. Zakat is an obligatory charity in Islam which is designed to protect the poor financially as well as socially.

¹ See Al-Qardawi, Yusuf, op.cit,pp.990-991
**The System of Zakat:** Zakat, in its literal sense, means 'purification' and 'growth'. According to the Islamic beliefs, it is a specific amount of the material goods of the rich to be paid to the poor of the society if a whole year is passed over a specific limit of the wealth. Payment of zakat, as enunciated in the Qur'an and the Sunnah, purifies soul and leads to increase in material welfare in this world and growth of religious merit in the hereafter. The root of the word zakat leads to different meanings including; to increase, to grow, to flourish, to augment, to increase in the purity of heart, to increase in integrity, or to befit. Primarily the root denotes an increase or augmentation, particularly, of a positive, favourable or auspicious thing or virtue. It is also related that it means "to purify". However, in the Qur'an the word ‘Azka’ has been used along with ‘Athar’. Zakat also means increase or augmentation or growth or development as the term ‘aatoozzaka ‘ah ’ appears in many verses of the Holy Qur'an, which means to give or offer or provide someone something, or to do or perform. This term about the basic concept of zakat, does not mean just to give some fixed sum from the money to the poor, though it includes the accomplishment of zakat. It is much more than that. Zakat is the only tax imposed on rich who possess property more than a given limit. This levy is imposed on wealth as well as income. ‘Zakatbale’ items, legitimate modes of Zakat distribution and exemptions all these things are properly listed in Islam without any ambiguity. Hence, at the time of the Prophet (SAW), there was clear description about Zakat for all the items used at that time for trade including gold, silver, sheep, cows, camels, agricultural products etc. List of exemptions was also obvious including items of personal use like house, furniture, clothes etc. The rates of this levy were exactly determined, so were the criteria of 'Zakatability'. The texts of the Qur'an and the Sunnah in this regard are well known.

**Disbursement of Zakat in the light of Quran:** Disbursement of Zakat has been explicitly and categorically described in Quran so that there remains no confusion about the use of this money. The Holy Qur'an enumerates eight heads or type of persons upon whom Zakat or charity may be bestowed.

**Translation:**

The alms (or Zakat collections) are only for the needy and indigent, and those who are employed to collect them and for those whose hearts are to be reconciled, ‘and the ransoming of slaves and for helping the debtors, and for the cause of Allah and for the way-farers. It is an obligatory duty imposed by Allah and Allah is All-Knowing All-Wise.

1. **The Needy:** A person is needy (faqir) who depends upon others for his sustenance. He possesses something but not enough for his needs. He is unable on account of some physical defect to earn his livings. He is compelled to beg under the stress of most straitened circumstances.

2. **The Poor:** The Poor (Masakin) are the miserable people. They do not even have enough clothes to wear and food to eat. They are fit to earn sufficient but they are unable to do so on account of poverty and lack of resources. They are self-respecting poor men who exert their utmost to find an honest living and stand on their own feet. They are always desirous of preserving their dignity and do not like to disclose their poverty to people. Such persons deserve charity. Abu Huraira (Allah be pleased with him) reported Allah's Messenger (peace and blessings of Allah be upon him) as saying: Maskin is not he who is dismissed with one or two dates, and with one morsel or two morsels. In fact, maskin is he who abstains (from begging). Read if you so desire the verse: They beg not of men importunately.

3. **Zakat Collectors (Amilina 'Alaiha):** Zakat Collectors are the persons whom the Islamic Government appoints in order to administer and collect the Zakat. These people are entitled to get their salaries from the Zakat fund.

4. **Incliners Towards Truth:** The Mu'allafat-i-Qulub refers to the people whose hearts are made to incline towards truth. It means new converts of Islam. When a convert leaves his people, environments and society, he is naturally ostracized. It is therefore the bounden duty of the Muslims to assist him in every way, even if the convert is well-to-do. Zakat may still be given to him so that his feeling towards Islam may be consolidated.

5. **Emancipation of Slaves:** The term fir-riqabi means that a man who wants to secure his liberty. He must

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3 9:60
4 (2 : 273) (Muslim)
be given assistance out of the Zakat fund so that he may pay his master, the required sum and release his neck from the bondage.

6. The Debtors: Ghairimimina concerns those people who are under the burden of debt and cannot save enough to pay off their debts. This does not mean that Zakat should be given to a person who possesses one thousand rupees and is in debt to the extent of hundred rupees. It means that if a person, after paying his debt is left with possessions whose value is less than the amount of Nisab, then Zakat may be given to him in order to relieve him from his indebtedness. Jurists have, however, warned against giving Zakat to persons who have incurred debts through extravagance, gambling and other evil occupations. Zakat can only be given for the payment of legitimate debts.

7. Jihad and Propagation of Islam: Fi-SabiliLah applies to all good (acts) which are done in the way of Allah, and especially the assistance of those people who sacrifice their time, energy and convenience in order to propagate the cause of Islam and defend it against the hostile attacks of enemies.

8. The Way-Farer: Ibnissabil signifies a traveller who may be in well-to-do circumstances but sometimes may find himself stranded in a strange locality and hence stands in need of help. A part of the Zakat fund should therefore be spent on him to relieve him from his difficulties.

Heads of Zakat and their economic significance: Islam has described above mentioned eight heads in which Zakat may be disbursed. All of these categories have significant impact on socio economic development of society. When poor and needy people get resources to meet their basic needs, economic activity is increased in society due to increase demand and resultant production of these products. There is a social impact in the form of crime reduction because most important cause of crime is hunger and starvation. Employment is generated in the Zakat collection department. So, Zakat system when applied throughout the country brings about huge employment opportunities, especially for educated people. Today, banks and other businesses are facing a problem of default from their clients. Zakat paid to the debtors also brings an improvement in socioeconomic system of a country because the possibility of default is reduced and hence the credit risk involved in businesses is reduced. Payment of Zakat for supporting newly converted to Islam or willing to convert, helps in bringing harmony in Muslim society. They become in the mainstream of society without any fear of indulging into poverty in case of their social boycott. Slavery has been discouraged in Islam. Zakat is most important tool in abolition of slavery. This step brings great change in social structure as the slaves become equally respectable and responsible members of society. Zakat is also available for social development because in the way of Allah is not only limited to Jihad but it means that Zakat may be spent for the provision of facilities to the society. These facilities include education, health, disaster prevention and rehabilitation and all other humanitarian services. Use of Zakat for travellers does not mean only to pay directly to the travellers. Rather it has broad implications. Muslim scholars like Dr. Hameed Ullah point out the use of Zakat on providing transportation facilities for the travellers. It implies that development of motels for travellers, subsidized means of transport, roads and train infrastructure may also be considered.

Socioeconomic structure of every Muslim person and Islamic society is rooted in the faith of Allah. Values of Islam influence social and economic behaviors of society and individuals. Islamic society has the ability to overcome all the human inconsistencies and contradiction when values of Islam are practiced. Islamic brotherhood is not merely a spiritual or moral support rather it backed by solid support and financial solidarity through payment of Zakat.

The Economic System of Islam:

In the light of the above mentioned basic characteristics of the Islamic way of life a stable economic system can be established which will achieve man of poverty, hunger and exploitation and bring him economic prosperity at all levels; individual social and international. The spirit and bed rock of this system is the enforcement of economic justice. The economic system of Islam takes the following measures to establish justice:
1. Circulation of Wealth: In the capitalist system wealth continues to accumulate in a few hands. In the laissez-faire economy there is no limit on earnings.

   The capitalist system brings into existence two distinct classes: the Haves and the Have-nots. Islam firstly declares it illegal to use unfair means for accumulation of wealth. Secondly, even in the lawfully earned wealth of a person Islam prescribes a legal share for the poor sections of the Society. Thus wealth starts flowing from the rich to the poor. As stated in Quran:

   “...So that it (the wealth) does not remain circulating among your rich people only”.

   When wealth is transferred from the rich to the poor the collective demand in the economy increases. To satisfy this demand there is an inevitable growth in production. As a result new job opportunities open up for the people. The cycle continues and the overall economy flourishes by leaps and bounds.

2. Just Distribution of Wealth: Disparity between rich and poor is decreased when rich distribute some of their wealth to poor and resultantly the clashes between these two classes are minimized. Cooperation and kindness bring about harmony in society.

3. A Remedy for Unemployment: Zakat is not only paid to meet the basic needs but it is also available for the skilled workers to stand on their feet by earning their own livings. Zakat is a tool for the reduction in present day major economic problem of unemployment if professionals like farmer, tailors, launderers etc. are offered help to purchase equipment of their professional need.

4. Socioeconomic Assistance: Zakat is a tool to provide economic security to the deprived people of society.

   In the words of Syed Abu Ala’ Maududi:

   "It is a cooperative society, an Insurance Company, a Provident Fund of the Muslims. It is a fund for the assistance of the unemployed. It is a means of livelihood for the disabled, the sick, the orphans, the widows and the jobless. It is a guarantee that no one shall lack necessaries of life in the Muslim Community."

5. Eradication of Poverty: Almost all the developing countries including Pakistan are facing severe problem of increasing poverty ratio year by year. In Pakistan more than 50 percent of population is living under poverty line. Capitalistic system is one of the major causes of this surge in poverty. In this system poor are becoming poorer and rich are becoming richer due to exploitation. Capitalists are only concerned with maximization of their profits. They even throw millions of tons of food in sea and don’t distribute among hungry poor just because they want to maintain price in market.

   Zakat helps poor to gain purchasing power. If this system is implemented in true sense poverty may be eliminated as in time of Hazrat Umar bin Abdul Aziz (RA) we saw that there were no poor. Allama Iqbal, similarly, explained Islam as a system in which poor are able to tax rich not in the form of charity but a legal right.

6. Economic Expansion: As in the past, so in modern economy the people prefer to hoard their wealth underground instead of investing it in business. Islam curbs this tendency through the system of Zakat. If an individual hoards his wealth, and doesn’t use in economic activity, all of his wealth will be eliminated through the payment of Zakat. So, indirectly Islam encourages economic and business activities. As a result economy will grow and expand and job opportunities will increase.

   The Apostle of Allah (S.A.W) observed:

   "Beware! If any of you is a guardian of a wealthy orphan, he should invest his ward's wealth in trade and should not hoard it lest Zakat should exhaust it.”

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5 [59:7]  
6 Maududi, Economic System of Islam, p.132
7. Elimination of Concentration of Wealth:

Prof. Kuznet in his book 'Economic Development and Unequal Distribution of Income,' writes:

"It is generally observed that the rich are comparatively richer and the poor, poorer. For instance, in Pakistan, sixty per cent of the population receives twenty-eight per cent of the Gross National Income; in Ceylon this ratio is thirty per cent and in America thirty-four percent. In India and Pakistan twenty per cent of the population (the rich class) receives fifty-five per cent of the Gross National Income."

The above-quoted statistics make it clear that wealth continues to accumulate in few hands and poverty grows apace.

The System of Zakat halts the process of concentration of wealth. According to Syed Abu Ala' Maududi:

"In contrast Islam decrees that in the first place money should not be hoarded; but if it has been accumulated, it should be spilled into the channels of Zakat so as to irrigate dry land and turn the whole surrounding area into a green pasture."7

Economic Importance of the Zakat System:

A. Importance in the Sphere of Expenditure of Wealth:

(1) Observance of economy and moderation have been declared as laudable acts.
(2) Extravagance and wasteful spending has been declared as undesirable and culpable. At the same time stinginess and concentration of wealth have been severely condemned and warning of Allah's wrath has been given to those who indulge in these acts.
(3) Muslims are exhorted to spend their surplus wealth for the support and economic uplift of the poor and needy men of Allah.

B. Importance In the Sphere of Production of Wealth:

(4) Earning by lawful means only has been enjoined and all unlawful means of earning have been strictly banned. Usury, gambling, bribery, felony, prostitution, hoarding, dancing and singing, production and sale of obscene and immoral things have been declared unlawful and Muslims are forbidden to indulge in them.
(5) Financial Institutions which deal in interest-bearing transactions are mainly responsible for raising the all-pervading evil of subjecting the weak to economic exploitation, tyranny and injustice at the national and international level. In the presence of this interest-based system, there is no hope of reform and eradication of tyranny and injustice. Islamic Economic System bans all forms of interest. It adopts interest-free forms of providing capital for business and other purposes. In this way a big source of tyranny has been forever removed from the Islamic Economic System.
(6) All forms of harmful, dubious and deceitful transactions are forbidden.

C. Importance In the Sphere of Distribution of Wealth:

One basic cause of economic injustice is that tyrannical and unjust attitudes have entered into the system of the distribution of wealth. In this connection the imbalance and injustice in the fixation of the wages of factors of production destabilizes the whole economic system. The economic system of Islam lays special emphasis on organizing the distribution of wealth on a just and equitable basis and takes effective action in this regard.

For instance,

(7) The rights of the workers have been clearly defined and effective measures have been taken to protect these rights.

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7 [The Economic System of Islam]
The compensation for the factors of production, land, labour and capital has been fixed on just and equitable basis and the process of fixation of compensation has been made foolproof against force, coercion, fraud and deceit.

(9) All actions which tend towards concentration of wealth have been proscribed. The absolute ban on interest is a step in the same direction. Moreover, all actions which impede the circulation of wealth have been proscribed.

Along with encouraging voluntary spending within lawful limits, legal duties of paying Zakat and Sadqat have been imposed so that wealth may keep on flowing from the rich to the poor.

**D- Importance In the Sphere of Exchange of Wealth**:

(10) Islamic law lays down that all transactions of exchange of things must take place with the mutual agreement of the parties and all such agreements should be absolutely free of coercion, pressure or deceit. Thus the possibility of any wrong, injustice and violation of rights in business transactions has been removed forever.

**Measures for Economic Development**:

It is the duty of an Islamic State to take all necessary measures to promote economic construction and development in its jurisdiction. The Islamic State will encourage private enterprise to step up economic progress and harmonise it with its overall concept of life. In this connection all possible help and facility shall be provided to the individual entrepreneur. However, that state can directly take part to provide basic paraphernalia of progress and construct the necessary infrastructure. For instance, development of an irrigation system, expansion and renovation of means of communication, construction and maintenance of routes on land and sea, implementation of educational and health plans, power generation and exploration of sources of energy, capital or skill intensive projects or carrying out of public utility projects — works which do not attract investment of private entrepreneur due to their low yield of profit — can also be completed under public enterprise and management. In this connection special attention should be given to the development of defense industry in order to achieve self-sufficiency in defense and make the country invincible against any kind of external aggression.

The state can also promote and accelerate the process of economic development by means of its monetary, fiscal and commercial policies. Economic planning and use of modern technology can also help in this enterprise.

Equitable distribution of wealth is not only necessary for the stability of the state because it eliminates the class conflict between rich and poor, but is also essential for the achievement of economic prosperity and carrying forward the process of development. Factors of production, who receive an equitable wage, willingly cooperate in development efforts. It is, therefore, incumbent upon the Islamic state to establish a system of equitable distribution of wealth and curb all those factors which cause unjustified difference in private incomes.

In the auspicious reign of the Holy Prophet (S.A.W) this purpose was achieved by three means:

1. By means of collection and distribution of Zakat and Ushur.
2. By means of distribution of Fay (Spoils gained without fighting) among the poor.
3. By means of moral inducement and advice that the well-to-do should voluntary give financial assistance to the needy.
In the reigns of the right-guided caliphs, especially in the period of expansion of conquests, the above-mentioned policy was vigorously implemented. Utmost endeavours were made to keep the system of distribution of wealth equitable. The guiding principle in the matter of distribution of Wealth for Islamic State in all periods is that it should take measures to prevent concentration of wealth in few hands. It should ensure that the circulation and distribution of wealth takes place over a wide range of population and every citizen has an easy access to the goods and services required by him.

Besides the enforcement of Zakat and Ushr and the law of inheritance and instituting measures of inducement and persuasion the Islamic State can levy taxes to obtain the surplus wealth of the rich. Allah Almighty says in the Holy Quran:

"And in their wealth the suppliant and the deprived have also a right." [Al-Zariat:19]

A tradition reports the Holy Prophet (S.A.W) as saying:

"In their wealth, the deprived have a right over and above Zakat."

The state can so manipulate its expenditure as to extend more benefit to the poor and economically weak sections of the population. Planning in the spheres of education, health, housing and transportation may be geared to provide greater facilities to poor than to the rich.

SOCIAL JUSTICE IN SOCIETY

Islam is not merely a system of rites and rituals; it is a complete code of man's individual and collective life. Islam is a natural religion formulated by the Creator of the Universe with His all-embracing Knowledge to suit the demands of human nature in a full and exact measure. Hence it lays down rules and regulations keeping in view the interest of every sphere of life. The steps taken for the construction and reform of one sphere do not disturb the function of other sphere of life.

Below we throw light on different aspects of social justice from the Islamic point of view:

Members of a society are tied to each other in several different bonds. A pleasant social life, peace and tranquillity depend on balance and harmony in these relations. In this sphere, Islam has set up a comprehensive system wherein rights of the parents, neighbours, travellers, guests and patients have been defined and willing co-operation and sympathetic harmony has been created between members in their various capacities. Islam emphasizes that maintaining sympathetic and harmonious social relationships is a means of winning reward and favour of Allah and thus ensures the existence of a balanced and just society.

As regards justice in the social sphere, Islam focuses special attention on the institution of the family. Islam takes very effective and elaborate steps for the maintenance and stability of the family. Islam has safeguarded the natural instincts and passions of man and woman from waywardness and chaos by regulating their relationship on the basis of Nikah (Marriage Contract).

Islam has set-up strong bounds of chastity and purity of thought and action and has defined the rights and duties of marriage partners on a just and balanced scale. Under the Islamic System, responsibility for running the home has been laid on the woman and that of earning livelihood and protection and supervision of the members of the family upon the man. Supervision and upbringing of children is the joint responsibility of husband and wife. By means of moral education and training and the creation of a pleasant righteous society, Islam
has narrowed the possibility of a rift between husband and wife. In case of a marital conflict, Islam prescribes a wise framework for firstly resolving the problem within the family or through a family council or in the last resort through a court of law.

Islam has abolished all arbitrary and false social distinctions and introduced equality between man and man. Islam rejects distinctions based on wealth, rank, position, race, caste and colour and declares piety and good service as the sole criterion of prestige and honour. This closes all the loopholes of social wrong and a stable environment of social justice is created.

**Economic Justice in Society**

Economic justice holds special importance in the sphere of social justice. Earning a livelihood has always been the main concern of human life. It is unthinkable to establish social justice without first ensuring economic justice. That is why special emphasis is laid in the Islamic system of life on the establishment and stability of economic justice.

Economic Justice means balance and harmony in economic relations. Economic workers are bound to each other in many ties. The employer and the worker, buyer and the seller, consumer and the producer, borrower and the lender are integrated in economic activity. To establish their ties on a just and balanced scale so that the rights of none of these economic workers are infringed is called economic justice.

The concept of economic justice in Islam comprehends several aspects of economic activity.

The following aspects are especially noteworthy:

Every factor of production should receive compensation in proportion to his services.-No one should subject the other to injustice and exploitation.

Everyone should have complete freedom and full opportunities to struggle for his livelihood without distinction of caste, colour, race or region.

The right of individual ownership of consumer goods and assets, that is, means of production should be recognized in order that a harmony between man's economic wants and his natural spirit of freedom may be established. However, essential means of production are liable to be nationalised in real public interest. There is no absolute and final bar to nationalization of means of production.

Basic necessities of life on a reasonable scale should be provided to every individual so that no one could be deprived of food, clothing, housing, medical aid and education.

Means of life are the Grace and Bounty of Allah So economy should be observed in their use and no account of wastage should be allowed, so that surplus resources may be used to provide for the needs of other members of the society. On the one hand Islam prohibits extravagant and needless spending and thus creates balance in the consumption and on the other it expands the availability of resources for production by forbidding stinginess.

The struggle for livelihood has been encouraged, but this struggle has been confined within lawful limits. The interests of the society have been fully safeguarded by banning unlawful means of earning. This ban
closes all avenues of economic injustice and exploitation.

The system of distribution of wealth has been put on an equitable basis by transferring the surplus wealth of the affluent class through Zakat and Sadqat to the poor and the destitute.

Accumulation of wealth has been condemned and steps have been taken to remove its motivations and to increase the circulation of wealth in order to boost economic growth. The Law of Inheritance is a step in the same direction.

All avenues to injustice and oppression have been closed by the law that transactions should be based on mutual agreement.

System of Zakat in Pakistan

System of Zakat was first time introduced in 1980 in Pakistan in the form of Zakat Ordinance under Zia Government. Zakat collection position in Pakistan is described in following table.

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It is evident that collection of zakat has been continuously decreasing each year since 2006. It has many implications. People may have lost their confidence in the government and political leadership. Consequently they prefer to pay Zakat by their selves rather than contributing in centralized collection system. On one hand, the collection is decreasing and on other hand populations and poverty percentage is increasing year by year. This situation has resulted in serious decline in provision of Zakat funds to the needy people.

In Pakistan Zakat is disbursed in the following manner:

I. Guzara Allowance Rs 1000 per person per month.
II. Marriage allowance is paid upto Rs. 25000.
III. For patients Rs. 5000 to 25000 is paid.
IV. Permanent Rehabilitation Scheme (phase I, II and III) provide loans for skilled workers to establish their own business by paying Rs. 10000 to 50000.
V. Availability of relief funds for any natural disaster effected persons.
VI. Zakat funds are available for needy students in public sector institutes and Madrasas.
VII. Poor patients are provided medicines and other facilities including dialysis etc. from Zakat fund.
VIII. Special allowances are paid to lower scale staff of Zakat department.

Conclusion and Recommendations

On the basis of the preceding discussion we can put forward a framework for the contemporary use of the Zakat fund in financing the Islamic socioeconomic infrastructure. Social impact of Zakat may be materialized when it is used on collective level rather than individual level and in progressive way. Therefore, emasculation of a 5-year plan and an annual plan Budget for the Zakat treasury (Baitul-Mal) is necessary. We suggest preparation of a five-year plan as well as annual plan for the receipts and expenditure of Zakat.
institutions. In the absence of a public treasury (Baitul-Mal) we feel the need for the establishment of an Islamic international federation for Zakat institutions, or a world Islamic organization affiliated to the Organization of Islamic conference. We are also, in favor of preparing a detailed accountancy guide for such an organization, in line with the requirements of our time, wherein the Zakat is properly dealt with and systematized in all respects.

Broad outlines for financing the Islamic socioeconomic infrastructure from Zakat funds are indicated below:

Channel of Payments for the Poor and the Needy:
• Zakat funds, under this category, could be spent on Islamic education of the children of the poor.
• The establishment of at least one Islamic educational school each year in every town with one meal freely provided to its pupils.

Training and Rehabilitation:
• Zakat fund may be utilized to provide skills and training to the poor so that they are able to start their own small businesses.
• Supplying of necessary tools

Medical Treatment and Health Care:
• Establishment of dispensaries in different localities for providing medical treatment to the poor in all fields of specialization free of charge or against nominal fees.
• Whenever possible, volunteer doctors or doctors charging nominal fees should be employed for these dispensaries.
• The Zakat institution should assume part of the costs of treatment of some individuals, eligible for Zakat, in some hospitals where a number of beds, carrying the name of the Zakat in-saliation may be reserved for the in-patients.
• Disbursement of zakat in the form of shares would preserve anonymity and enhance dignity of the regular recipients of zakat.

Need for Research:

To improve the current system of Zakat prevailing in Pakistan, we recommend an extensive research activity to point out the problem areas and provision of solution to these problems. There are large discrepancies in current system which can be improved only by conduction a thorough study.
ATTAINMENT OF CONSERVATION ABILITY AMONG PRIMARY SCHOOL CHILDREN IN THE LIGHT OF PIAGET’S COGNITIVE THEORY

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ABSTRACT Education brings positive changes in an individual according to the concerned society. In education Piaget’s cognitive theory has a vital role. Piaget's discoveries have had an impact upon curriculum, instruction and assessment in schooling, particularly for mathematics. The aim of this study was to determine Piaget’s notion of cognitive development particularly his concept of attainment of conservation. The design of the study was descriptive and cross sectional. Population of the study included all the Primary Schools in District Kohat, North-West of Pakistan. Sample comprised four schools, two each from urban and rural areas and a total 160 students including 80 each from rural and urban (Both genders) were selected through simple random sampling. Moreover the sample consisted of grades IV and V with equal proportion of both genders. Seven tasks were developed to attain the objectives of this particular study. Data was collected through performance of children and further tabulated, analyzed and interpreted by using SPSS 17. Results revealed that rural school children showed slightly better performance as compared to urban students, it might be due to late enrolments in the schools and female performance is slightly better as compared to male students.

Keywords: Conservation, Cognition, Gender

Introduction If teachers are familiar about Intellectual stages of their students they can handle students in a better way and can provide them learning materials, and adopt learning methodology according to their mental level. If teachers are aware of the level of their students they will never be angry if something is not clear to their students, it may be possible that their students still not reach to that particular level where they can understand those things.

In Cognition mental performed some processes to obtain knowledge and grasping of that knowledge; those processes comprises on some sort of knowing, thinking, remembering, perceiving, and problem solving. The development of cognition is primarily distributed into three stages: sensory-motor, concrete operational and formal operational. {1}. 
Piaget's concept of cognitive development stages is an integral part of his theory. Conservation is the most famous of all logical operations associated with the stage of concrete operations level of Piaget's theory of intellectual development. Conservation means, if we change the place of physical object, it will not affect its length, quantity or number of that particular items. {1}. Different types of conservation can be observed: Conservation of Number, length, area, amount of substance, weight, quantity and liquid volume etc. Present study is based on the concept of conservation of concrete operation stage of Piaget’s theory of cognition. It brings into limelight the importance of cognitive development and its understanding in teaching profession. Teachers will be able to teach and mold their teaching strategies according to the cognitive levels of the students with special focus at concrete operational stage of Piaget’s cognitive theory.

**Literature Review**

The scientific study of psychology in education refers to the educational psychology {2}. There are so many learning theories which contributed in educational psychology e.g. John lock tabula rasa theory, jean Jacques Rousseau natural theory, Charles Darwin maturational theory, Sigmund Freud’s theory of psychosexual development, gestalt learning theory presented by Heinz Werner, behaviorist theory presented by Pavlov and Skinner and Piaget’s theory of cognitive development. This theory of cognitive development is the most powerful contributions to psychology in the past century. During the human life period the progression of modification and stability which occurs is called development {3}. To attain one specific pointin a developmental stage contains so many months. Although children are usually grouped by their physical age, but when children pass through each stage their development levels may vary significantly. {4}

According to one other psychologist there are so many factors which affected this difference of developmental stages like culture, experience maturity, and the ability of the child. {5}. But according to Piaget experiences of each developmental stage only provide foundations for the next stage and children develop gradually and progressively during the different stages. {6}.

The following four key concepts were cited in {7}, which Piaget found so useful in describing what he observed.

1. Schema: As structures, schemata (the plural of schema) are the mental counterparts of biological means of adapting. Schemata can also be simplistically thought of as concepts or categories and used to process and identify incoming stimuli.
2. Assimilation: This is the intellectual process in which a person assimilates new things into existing perceptions of things.
3. Accommodation: It is the formation of new perception as respective to the existing one.
4. Equilibration: It is the balance between assimilation and accommodation.

Piaget described four stages of cognitive development:

1. Sensory-motor stage: This stage starts from birth and continue up to two years. Different children passess at different rate of development. This stage is called sensory-motor stage because children uses their five senses and through these senses they experiences their outer world. Children perceiving their world with their own perception.
2. Pre-operational stage: this stage marked from two to seven years. In this stage children performed some small logical problems, learn language and to do some small operations.
3. Concrete operational stage: this stage starts from seven years and goes to eleven years. This is the stage where children starts thinking independently and logically, they uses different aspects of the things or matters.
4. Formal operational stage: this age is counted from the age of eleven and continues to sixteen years. Here logical thinking is more profound and abstract. Cited in {8, 9, and 10}.

There is a lot of research literature, where researchers try to understand the cognitive theory with their different aspects. To check the Conservation of volume researcher used two balls of clay identical in size, shape and weight. He asked the subjects’ predication, judgment and explanation questions. The sample consisted of 175 children of 5 to 11 years. Out of them 56 children were conservers of volume. {11}

One other researcher used two similar cylinders differing in weight and two glasses of water. The subjects from age 8 to 12 (N=27) were asked why two cylinders were raising the water levels equally. Percentage of conservers was 48 at 12 years, which were the highest among all the age groups of the study. {12}

To check the conservation researcher, tested 332 school children on plastic-ball tasks. He uses in his study children of minimum 7 years 8 months to a maximum 10 years 8 months. Each child was asked a judgment and an
Study is highly significant because cognition play a vital role in teaching learning process and conservation ability is one of the clue towards true education of children.

Research Methodology

The study is descriptive in nature, because it describes the present situation of the scenario. Researchers try to collect the original record of children age from the schools age records registers and selected the sample only of the age of seven to eleven years old children, because this is the age where Piaget says that children starts thinking logically and he named this stage as a concrete operational stage.

Population & Sample

Population of the study comprised all Primary Schools in District Kohat, North-West of Pakistan. Sample comprised four schools, two each from urban and rural areas and a total 160 students including 80 each from rural and urban (Both genders) were selected through simple random sampling but researchers selected the sample only of the age of seven to eleven years old children. Moreover the sample consisted of grades 4th and 5th with equal proportion of both genders.

Research Instruments: The researchers prepared the following seven tasks to check the attainment of conservative ability among primary school children in District Kohat.

1. Conservation of Length: In length conservation, a child is presented with two eight inch long strips of plastic pieces are laid parallel to each other that is their edges are exactly same with one another. The child asked if these sticks have the same length, when child is satisfied that they were of the same length. Than one of them move a little and asked the students that which one is longer. Conserver child were say that both sticks having same length.

2. Conservation of Weight: Two balls of same amount of plastic given to the students and asked for judging their weight, that either they are of the same weight. Than press one of them. And asked again which one is heavier? Conserver child will respond that both balls of the same weight.

3. Conservation of Area: Take four blocks of equal size of plastic and arranged them in the center of a paper and asked the students that see the area these blocks take than arranged them in the corners of a paper and asked the students that either they take the same area or not. Conserver child will respond that on the change of the position of blocks there is no effect on the area covered by blocks.

4. Conservation of Amount of Substance: Take two rubber bands have the same length & width and show them to the child and asked them that either they take same rubber. They will say yes then one of them is rolled and again repeats the question, which one having more rubber? Conserver child will say that both rubber bands are of the same length.

5. Conservation of Quantity of Items: Two shapes of equal blocks of plastic is arranged with 6 x 2 and 4 x 3 different size one will be high and other one will be flat. And asked the students which shape contains more blocks. Conserver child will respond that both shape carry equal blocks.

6. Conservation of Liquid Volume: Two identical glasses A and B, contain the same amount of water. The child is asked, “Is there the same amount of water in these two glasses?” The child responds that they are the same. Than the water in glass B is poured into a tall thin glass and the child compares glass A and C. the same question is repeated. Conserver child will responded again that both glasses contain same amount of water.

7. Conservation in Situations Supported by Logical Reason: On a paper two figures are printed one of them is 24+42=66 then asked the students that what would be the answer of 42+24=? If students stats to count them it means they have not conserved it and if they judge their reversibility it means they have conserved it.
Data Collection and Interpretation: Researchers personally visited and administered the conservative ability tasks (CAT) from the student. To achieve the objectives of the study seven tasks were developed, including Conservation of Number, length, area, amount of substance, weight, quantity, liquid volume and conservation in situations supported by logical reason. Those who responded on all the seven tasks were classified as conservers. Those who partially responded got one mark as per task conserve. Data was collected, tabulated, analyzed and interpreted by using percentage and graphics methods.

Results And Discussion: Following table show the performance of the respondents collected through these seven tasks.

Class 4th and Class 5th

Table 1

<table>
<thead>
<tr>
<th>Group Statistics</th>
<th>Class</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female/Male</td>
<td>4th</td>
<td>8</td>
<td>38.50</td>
<td>15.14</td>
<td>5.35</td>
</tr>
<tr>
<td></td>
<td>5th</td>
<td>8</td>
<td>58.87</td>
<td>5.40</td>
<td>1.91</td>
</tr>
</tbody>
</table>

Table 1a

<table>
<thead>
<tr>
<th>Independent Samples Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levene's Test for Equality of Variances</td>
</tr>
<tr>
<td>F</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>Female/Male</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

An independent sample t-test was conducted to compare class 4th and 5th Male and Female students. The analysis of data in Table 1 and 1a indicates the comparative result of Performance of the class 4th and 5th male and female students on the conservative ability task. There was a significant difference found in the scores for class 4th (M=38.50 SD=15.14) and class 5th (M=58.87 SD=5.40) Conditions; t (14) = -3.58 p=.003. The result revealed that there was significant difference found between class 4th and 5th conservative ability task score as well as mean difference shows that class 5th performed better as compared to the class 4th.
Urban Vs Rural

Table 2

<table>
<thead>
<tr>
<th>Group</th>
<th>Area</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female/Male</td>
<td>Urban</td>
<td>8</td>
<td>48.12</td>
<td>16.21</td>
<td>5.73</td>
</tr>
<tr>
<td></td>
<td>Rural</td>
<td>8</td>
<td>49.25</td>
<td>15.23</td>
<td>5.38</td>
</tr>
</tbody>
</table>

Table 2a

Independent Samples Test

<table>
<thead>
<tr>
<th></th>
<th>Levene's Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
<th>95% Confidence Interval of the Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>Sig.</td>
<td>t</td>
</tr>
<tr>
<td>Female/Male</td>
<td>equal variances assumed</td>
<td>0.50</td>
<td>.826</td>
</tr>
<tr>
<td></td>
<td>equal variances not assumed</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

An independent sample t-test was conducted to compare class Urban and Rural Male and Female students. The analysis of data in table 2 and 2a indicates the comparative result of Performance of the Urban and Rural male and female students on the conservative ability task. There was a non-significant difference found in the scores for Urban (M=48.12 SD= 16.21) and Rural (M=49.25 SD= 15.23) Conditions; t (14) = -.143 p=.888. The result revealed that although there was non-significant difference found between Urban and rural conservative ability task score but their mean difference shows that Rural performed slightly better as compared to the urban.

Male Vs Female

Table 3

<table>
<thead>
<tr>
<th>Class</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female/Male</td>
<td>Male</td>
<td>8</td>
<td>45.12</td>
<td>19.21</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>8</td>
<td>52.25</td>
<td>9.88</td>
</tr>
</tbody>
</table>
An independent sample t-test was conducted to compare Male and Female students. The analysis of data in table 3 and 3a indicates the comparative result of Performance of the male and female students on the conservative ability task. There was a non-significant difference found in the scores for Male (M=45.12 SD= 19.21) and Female (M=52.25 SD= 9.88) Conditions; t (14) = -.933 p=.367. The result revealed that there was non-significant difference found between Male and Female conservative ability task score but their mean difference shows that Female student performed better as compared to the Male Student.

**Findings**

1. It was found that teachers were not familiar about the Piaget’s cognitive theory of learning and his concept of developmental stages and their influence on children.
2. Analysis of the responses to the task on conservation showed the description of cognitive functioning of children's mind. It showed that children of relatively lower conservative abilities who were there in class IV as compared to those who were in class V. Majority of the students in class V was still at middle to mature level of concrete operations.
3. Additionally Primary school children of district Kohat having the same conservation ability as elsewhere. Rural school children having slightly more conservative ability as compared to urban school children due to late enrolment in the schools.
4. Performance of female children was slightly better than male children.
5. These differences between boys and girls and urban and rural children in primary school supports Piaget’s theory which emphasis that such advancement in intellectual development as conservation abilities are mainly results of hereditary factors such as age and maturation, rather than environmental factors.
During research it was observed that practical implication of Piaget’s cognitive theory and his concept of Conservative ability are not given proper attention in the teaching aims of primary level subjects in Pakistan.

Recommendations
1. Teachers may understand the cognitive levels of their students and adjust their teaching accordingly to the mental level of their students.
2. The curriculum planners need to give suitable place to this subject both as a topic for study and as a tool for the development of student’s conservative ability.

REFERENCES
List of Conservative Ability Tasks

To check the conservative ability seven tasks were conducted as shown in Figure 1

Figure 1

These were the tools which were used to check the conservative ability of primary school children.

1. **Conservative Task of Length**
   Two eight inch long strips of plastic pieces laid parallel to each other
   
   Figure 2

   Than one of them move a little.

   Figure 3

   And asked the students that which one is longer. Conserver child will say both were the same.
2. **Conservation of Weight**: Two balls of same amount of plastic given to the students and asked for judging their weight.

![Figure 4](image1.png)  ![Figure 5](image2.png)

Than press one of them and asked again which one is heavier?

3. **Conservation of Area**: Take four blocks of equal size of plastic and arranged them in the center of a paper and asked the students that see the area these blocks take

![Figure 6](image3.png)  ![Figure 7](image4.png)

And asked the students that either they take the same area or not.

2. **Conservation of Amount of Substance**: Take two rubber bands of the same length & width

![Figure 8](image5.png)

and show them to the child and asked them that either they take same rubber. they will say yes. Then one of them is rolled

![Figure 9](image6.png)
And again repeats the question, which one having more rubber

5. Conservation of Quantity of Items
Two shapes of equal blocks of plastic is arranged with 6x2 and 4x3 different size one will be high and other
one will be flat. And asked the students which shape contains more blocks. Conserver child will responded that
both shape carry equal blocks.

Figure 10

And asked the students which shape contains more blocks.

6. Conservation of Volume
Two identical glasses A, and B, contain the same amount of water.

Figure 11

The child is asked, Is there the same amount of water in these two glasses? The child responds that they are the
same. Then the water in glass B is poured into a tall thin glass C,

Figure 12

And the child compares glass A and C. the same question is repeated. Child having the conservative ability give
the correct answer.

7. Conservation in Situations Supported By Logical Reason
On a paper two figures are printed one of them is \(24+42=66\) then asked the students that what will be the
answer of \(42+24=?\)
If students start to count them it means they are not conserve it and if they judge their reversibility it means they conserve it.
PERFORMANCE ASSESSMENT OF MOEAS ON CEC’09 TEST INSTANCES: A PRELIMINARY EXPERIMENTAL RESULTS

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ABSTRACT. Evolution is one of the indispensable processes of life. Biologists have found the basic laws of evolution and computer scientists have algorithmically modeled these process on computers as a result evolutionary algorithms (EAs) are developed. EAs are population based techniques which employ different variation operators for the process of evolution. It is well known fact that different operators behave differently on different optimization problems. The dynamic use of the multiple operators are scarcely studied in the field of evolutionary computing (EC). The use of multiple operators dynamically is good idea for solving multiobjective optimization problems. In this paper, we examine these effects by employing differential evolution (DE), particle swam optimization (PSO) and genetic algorithm (GA) altogether in the framework of multi-objective EA (MOEA). We have used the ZDT test problems and recently designed complicated test instances for the special session of the Congress of Evolutionary Computing 2009 (CEC’09). The approximated results of the used MOEA that habituating multiple search operators is much promising compared to to state-of-the-art MOEAs on most test problems.

Keywords: Multi-objective optimization, Evolutionary algorithms, Pareto Front, Multiobjective Memetic Algorithm (MOMAs).

1. Introduction. Multi-objective optimization have wide application in all fields of Sciences, Engineering, Economies and Logistics. Many real life problems are daily arise in these fields which involves more than one objective functions such as analyzing design tradeoffs, selecting optimal product or process designs, minimizing cost while maximizing comfort while buying a car, maximizing performance whilst
minimizing fuel consumption, emission of pollutants of a vehicle. Mathematically, a MOP can be formulated as under:

\[
\begin{align*}
\text{minimize} & \quad F(x) = (f_1(x), \ldots, f_m(x))^T \\
\text{subject to} & \quad x \in \Omega
\end{align*}
\]  

(1)

Where \( \Omega \) is the decision variable space, \( x = (x_1, x_2, \ldots, x_n)^T \) is a decision variable vector and \( x_i, i = 1, \ldots, n \) are called decision variables, \( F(x) : \Omega \rightarrow R^m \) is consist of \( m \) real valued objective functions and \( R^m \) is called the objective space.

If \( \Omega \) is closed and connected region in \( R^n \) and all the objective function in (1) are continuous of \( x \), we called it continuous MOP.

In practical applications of optimization, it is very common, the objective functions of the MOP are in conflict with one another or mostly incommensurable. One needs a set of optimal solutions to solve these problems. Multiobjective evolutionary algorithms (MOEAs) are highly effective and powerful techniques and used to find a set optimal solutions in single simulation run to MOPs.

Over the past decade, a number of MOEAs [3, 26, 25, 16, 6, 1] have been suggested that emphasizing on multiple Pareto-optimal solutions that well converge to real Pareto front (PF) and uniformly distributive along the real Pareto front (PF) of the problem (1). To promote diversity, most of these algorithms are utilizing different diversity techniques such as fitness sharing, niching approach, Kernel approach, nearest neighbor approach, histogram technique, crowding/clustering, relaxed form of dominance and restricted mating [2]. Among them, a fast and elitist non-dominated sorting algorithm (NSGA-II) [3], SPEA2: improving the strength Pareto evolutionary algorithm [25], the Pareto archive evolution strategy (PAES) [8], multiobjective genetic algorithm (MOGA) [5], and niched Pareto genetic algorithm (NPGA) [6] are long-familiar and well known Pareto dominance based approaches.

Multiobjective memetic algorithms (MOMAs) is recently growing and attractive area of research in the field of evolutionary computation (EC). They are mainly inspired from the models of adaptation found in nature. They habituate genetic algorithm to explore the search space globally and various local search heuristics for exploitation purposes. Memetic algorithms (MAs) are also referred to in the literature as Baldwinian evolutionary algorithms (EA), Lamarckian EAs, cultural algorithms, or genetic local search. They are also called hybrid MOEAs [17]. Hybrid MOEAs are aiming to overcome the shortcomings of stand-alone MOEAs by utilizing different efficient techniques [15].

A multi-algorithm genetically adaptive multi-objective (AMALGAM) is recently developed MOMAs. It has two versions, one for multiobjective optimization [20] and other for single optimization [21]. These algorithms have used multiple search operators for creating offspring population. The used operators are particle swarm optimizer (PSO) [4], differential evolution (DE) [19] and NSGA-II [3]. Furthermore, in its framework the resources are dynamically allocated to operators based on its individual performances. Moreover, the proposed method solve the given MOPs directly as like NSGA-II [3]. On the other hand, multiobjective evolutionary algorithm based on decomposition (MOEA/D) [22] is newly developed paradigm. It
decomposes given MOP into a number of different single objective optimization sub-problems and then uses a population-based method to optimize these subproblems simultaneously. MOEA/D [22] have many hybrid versions [7, 9, 11, 10, 14, 12, 15]. These algorithms do not solve MOP directly.

The rest of this paper is organized as follows. Section 2 outlines the framework of a multi-algorithm genetically adaptive multi-objective (AMALGAM). Section 3 presents experimental results of the used MOEAs over ten unconstrained MOP of the CEC’09 [24] and five ZDT test problems [27]. Section 4 offered discussion of the experimental results. Section 5 concludes this paper with some possible future plan.

2. A Multi-algorithm Genetically Adaptive Multiobjective [20]. Algorithm 2 outlines the framework of the AMALGAM [20]. In Sept 1, a population $P$ of size $N$ is generated uniformly and randomly in the search space of the given MOP. We evaluate each member of the population, find their crowding distance and assign rank to them. After that, we divide the population $P$ into equal sizes of subpopulation according to the number of search operators employed in the evolutionary process of the AMALGAM [20]. The used search operators are DE (A), PSO (B), GA (C), are assigned equal size of subpopulation in the initialization step of algorithm. The resources are dynamically allocated to individual search operator based on its own individual performance as explained in subsection 2.1.

2.1. Update of $P_1$, $P_2$, $P_3$.

- We calculate the number of solutions that successfully enter to the next generation in the framework of the AMALGAM [20]. A successful solution is awarded by 1 and unsuccessful is by awarded 0. The best search operator gets more resources in the form of subpopulation as compared to others.
- Let $\delta_1$, $\delta_2$, $\delta_3$ are total number of non-dominated solutions produced by DE, PSO, NSGA-II and successfully enter to next generation of optimization.
- We normalize the successful solutions, $\delta_1$, $\delta_2$, $\delta_3$ in order to convert them into $\zeta_1$, $\zeta_2$, $\zeta_3$
- Update $P_k$, $k = 1, 2, 3$ by formula (2)

$$P_k = \frac{\zeta_k}{\sum_{k=1}^{3} \zeta_k} \times N \quad (2)$$

- For Example: suppose $\delta_1 = 30$, $\delta_2 = 40$, $\delta_3 = 30$ such that $N = \delta_1 + \delta_2 + \delta_3$, then $\zeta_1 = \frac{30}{30+40+30} = 0.30$, $\zeta_2 = \frac{40}{30+40+30} = 0.4$, $\zeta_3 = \frac{30}{30+40+30} = 0.3$. $P_1 = 0.30 \times N$, $P_2 = 0.4 \times N$, $P_3 = 0.3 \times N$.

3. Parameters Setting and Experimental Results. All the used test problems contain two objectives and three objective functions. The parameters of the ZDT test [27] and CEC’09 [24] are explained in the following subsection 3.1 and subsection 3.2.

3.1. Parameter Settings for ZDT Problems.

- $N = 100$: population size for 2-objective test instances.
- $F = 0.5$: scaling factor of the DE;
- $CR = 0.5$: crossover probability for DE;
Algorithm 1 A Multi-algorithm Genetically Adaptive Multiobjective [20]

Input::
1:: MOP: the multiobjective optimization problem;
2:: N: the population size;
3:: F_{eval}: maximum function evaluations;
Output:: \{x^1, \ldots, x^N\} and \{F(x^1), \ldots, F(x^N)\};

Step 1:: Initialization

Step 1.1: Generate an initial population P of size N uniformly and randomly.
Step 1.2: Calculate the F-function values of each member of the P population.
Step 1.3: Calculate the crowding distance and assign rank to each member of the P.
Step 1.4: Divide P into three subpopulation P = \{P_1, P_2, P_3\} such that |P| = |P_1| + |P_2| + |P_3| = N
Step 1.5: Set F_{initial} = N

Step 2: Evolutionary Process of AMALGAM

while F_0 \leq F_{eval}

Step 2.1: Execute method A on sub-populations P_1, method B on sub-populations P_2 and method C on sub-populations P_3.
Step 2.2: Combine the new populations of A, B and C Q = Q_A \cup Q_B \cup Q_C.
Step 2.3: Calculate the F-function values of Q population.
Step 2.4: Combine the new and old population, C = P \cup Q.

Update

Step 2.5: Select N best individuals among C population with high ranks and crowding density.
Step 2.6: Update P = \{P_1, P_2, P_3\} (Explanation can be found in subsection 2.1.)
F_{initial} = N + F_{initial}

endwhile

- w is the inertia factor which lies in [0.8, 1.2];
- c_1 and c_2 are the two acceleration constant or acceleration coefficients that usually lies between 1 and 4;
- ur_2 \in [-1, 1] is a continuous uniform random number
- w = 0.5 + rand/2: inertia factor which lies in [0.8, 1.2];
- c_1 = c_2 = 1.5: acceleration constant or acceleration coefficients that usually lies between 1 and 4;
- \xi = 1:
- F_{eval} = 25000: maximum function evaluations;

3.2. Parameter Settings for CEC’09 Test Instances. This subsection explains the parameters setting to validate AMALGAM on CEC’09 test instances [24].

- N = 600: population size for 2-objective test instances;
- N = 1000: for 3-objective test instances;
• $F = 0.5$: scaling factor of the DE;
• $C/R = 1$: crossover probability for DE;
• $F_{\text{eval}} = 300,000$: maximum function evaluations;

3.3. Performance Metric. In the existing literature of evolutionary computing, various indicators have been developed and employed for evaluating the performance of MOEAs. In this paper, we have applied inverted generational distance (IGD) [28] as a performance indicator/measure. IGD demands for two set of solutions and determining the distance between them.

![Figure 1. Inverted Generation Distance (IGD) has been used as a Performance Indicator. The above solutions (blue fill circle) are approximated solution of the algorithm and (black fill circle) are the Pareto solutions uniformly distributive along the Pareto Front (PF).](image)

Let $P^*$ be a set of uniformly distributed points along the PF as shown in the Figure 1. Let $A$ be an approximate set to the PF, the average distance from $P^*$ to $A$ is defined as [22, 23]:

$$D(A, P) = \frac{\sum_{v \in P^*} d(v, A)}{|P^*|}$$

Where $d(v, A)$ is the minimum Euclidean distance between $v$ and the points in $A$. If $P^*$ is large enough to represent the PF very well, $D(A, P)$ could measure both the diversity and convergence of $A$ in a sense.

The IGD metric measures how well is the Pareto-optimal front represented by the obtained solution set. The IGD metric measures both the convergence and the spread of the obtained solutions. Smaller the the IGD metric value, better is the obtained solution set.

4. Discussion of the ZDT Test Problems and CEC’09 Test Instances Experimental Results. The simulation related parameters are as follows.

- Operating system: Windows XP Professional
- Programming language of the algorithms: Matlab
- CPU: Core 2 Quad 2.4 GHz
- RAM: 4 GB DDR2 1066 MHz
Table 1. The IGD-metric values of the AMALGAM [20] in 30 independent runs over ZDT1-ZDT4 and ZDT6. AVG-T means average CPU time in seconds.

<table>
<thead>
<tr>
<th>ZDT</th>
<th>Best</th>
<th>Median</th>
<th>Mean</th>
<th>St.Dev.</th>
<th>worst</th>
<th>AVG-T</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZDT1</td>
<td>0.004421</td>
<td>0.004623</td>
<td>0.004705</td>
<td>0.000237</td>
<td>0.005481</td>
<td>14.940230</td>
</tr>
<tr>
<td>ZDT2</td>
<td>0.004521</td>
<td>0.005599</td>
<td>0.005577</td>
<td>0.000190</td>
<td>0.006216</td>
<td>14.580179</td>
</tr>
<tr>
<td>ZDT3</td>
<td>0.005263</td>
<td>0.005297</td>
<td>0.005287</td>
<td>0.000171</td>
<td>0.005588</td>
<td>14.696021</td>
</tr>
<tr>
<td>ZDT4</td>
<td>0.005606</td>
<td>0.007045</td>
<td>0.007003</td>
<td>0.000587</td>
<td>0.008047</td>
<td>19.90</td>
</tr>
</tbody>
</table>

Table 2. The IGD-metric values of the NSGA-II [3] in 30 independent runs over ZDT1-ZDT4 and ZDT6. AVG-T means average CPU time in seconds.

<table>
<thead>
<tr>
<th>ZDT</th>
<th>Best</th>
<th>Median</th>
<th>Mean</th>
<th>St.Dev.</th>
<th>worst</th>
<th>AVG-T</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZDT1</td>
<td>0.0042193</td>
<td>0.004472</td>
<td>0.004369</td>
<td>0.000139</td>
<td>0.004258</td>
<td>18.01</td>
</tr>
<tr>
<td>ZDT2</td>
<td>0.0043213</td>
<td>0.004649</td>
<td>0.004656</td>
<td>0.000182</td>
<td>0.005011</td>
<td>22.85</td>
</tr>
<tr>
<td>ZDT3</td>
<td>0.005132</td>
<td>0.00912</td>
<td>0.01388</td>
<td>0.000139</td>
<td>0.004258</td>
<td>22.85</td>
</tr>
<tr>
<td>ZDT4</td>
<td>0.006421</td>
<td>0.00825</td>
<td>0.009649</td>
<td>0.000139</td>
<td>0.004258</td>
<td>22.85</td>
</tr>
<tr>
<td>ZDT5</td>
<td>0.005606</td>
<td>0.007045</td>
<td>0.007003</td>
<td>0.000587</td>
<td>0.008047</td>
<td>19.90</td>
</tr>
</tbody>
</table>

- 30 independent runs were performed for each test problem.

4.1. Discussion on IGD-metric Values. Table 1 and Table 2 offer the minimum (Best), Median, Mean, and standard deviation(std) and maximum (worst) IGD-metric value brought out by AMALGAM [20] and NSGA-II [3], respectively. These statistics were recorded by executing each algorithm 30 times independently with different random seeds on each ZDT test problem [27] and CEC’09 test instance [24]. The average CPU time spent by each algorithm are also recorded in the last columns of 1 and Table 2. As is evident from these Tables, the AMALGAM [20] is able to find an approximate solution set well near to the global Pareto optimal front for most problems with reduced the IGD-metric values as compared to NSGA-II [3]. In most test problems, global convergence is obtained for both test problems. However, the complete Pareto front for all CEC’09 test instances are not effectively attained by the AMALGAM [20]. The primary reasons of this could attributed to the profile of objective functions of the CEC’09 test instances [24] are mostly multi-modal near the global Pareto-optimal frontier, nd a slight perturbation in the optimization variables causes the solutions to become dominated.

4.2. Discussion of the Pareto Front (PF) of ZDT and CEC’09 Test Instances. Figures 2 and Figures 6 depict the approximated Pareto front (PF) along the real PF of ZDT test problems displayed by AMALGAM [20] and NSGA-II [3], respectively. These figures indicate that both algorithms have produced better PF in best run of 30 independent runs. Figures 3 and Figures 7 demonstrate the 30 PFs altogether generated by AMALGAM [20] and NSGA-II [3], respectively. These
figures indicate AMALGAM [20] has produced all 30 in better distribution ranges of the all 30 PFs as compared to NSGA-II [3].


We have also plotted 30 PFs altogether estimated by AMALGAM [20] in the figure 5. The figure 9 exhibited the Pareto fronts of the NSGA-II [3] in its 30times independent runs over the problems UF1-UF4 and UF7-UF10. These figures clearly indicated that AMALGAM [20] has tackled the CEC’09 test instances in terms of diversity and proximity. Furthermore, it has spend less CPU time compared to NSGA-II [3] on each test problem.

<table>
<thead>
<tr>
<th>CEC’09</th>
<th>best</th>
<th>mean</th>
<th>median</th>
<th>st. dev.</th>
<th>worst</th>
<th>AvG-T</th>
</tr>
</thead>
<tbody>
<tr>
<td>UF1</td>
<td>0.029425</td>
<td>0.059633</td>
<td>0.057992</td>
<td>0.008557</td>
<td>0.070121</td>
<td>286.307532</td>
</tr>
<tr>
<td>UF2</td>
<td>0.011432</td>
<td>0.013029</td>
<td>0.013217</td>
<td>0.001367</td>
<td>0.016769</td>
<td>288.558110</td>
</tr>
<tr>
<td>UF3</td>
<td>0.091044</td>
<td>0.135348</td>
<td>0.136503</td>
<td>0.022927</td>
<td>0.199235</td>
<td>297.999586</td>
</tr>
<tr>
<td>UF4</td>
<td>0.040359</td>
<td>0.041061</td>
<td>0.041020</td>
<td>0.000332</td>
<td>0.041678</td>
<td>286.159044</td>
</tr>
<tr>
<td>UF5</td>
<td>0.166357</td>
<td>0.171420</td>
<td>0.171810</td>
<td>0.002873</td>
<td>0.178301</td>
<td>258.823135</td>
</tr>
<tr>
<td>UF6</td>
<td>0.068589</td>
<td>0.079046</td>
<td>0.078552</td>
<td>0.005998</td>
<td>0.089807</td>
<td>308.462841</td>
</tr>
<tr>
<td>UF7</td>
<td>0.014943</td>
<td>0.017678</td>
<td>0.017795</td>
<td>0.001254</td>
<td>0.020975</td>
<td>290.402351</td>
</tr>
<tr>
<td>UF8</td>
<td>0.103736</td>
<td>0.234141</td>
<td>0.230682</td>
<td>0.026012</td>
<td>0.261557</td>
<td>720.849149</td>
</tr>
<tr>
<td>UF9</td>
<td>0.056616</td>
<td>0.067999</td>
<td>0.114652</td>
<td>0.085662</td>
<td>0.325894</td>
<td>700.875474</td>
</tr>
<tr>
<td>UF10</td>
<td>0.273304</td>
<td>0.327886</td>
<td>0.326948</td>
<td>0.020030</td>
<td>0.360955</td>
<td>686.032888</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CEC’09</th>
<th>best</th>
<th>mean</th>
<th>median</th>
<th>st. dev.</th>
<th>worst</th>
<th>AvG-T</th>
</tr>
</thead>
<tbody>
<tr>
<td>UF1</td>
<td>0.051996</td>
<td>0.106873</td>
<td>0.096076</td>
<td>0.024862</td>
<td>0.128739</td>
<td>759.27</td>
</tr>
<tr>
<td>UF2</td>
<td>0.016012</td>
<td>0.019849</td>
<td>0.020050</td>
<td>0.001407</td>
<td>0.023589</td>
<td>518.07</td>
</tr>
<tr>
<td>UF3</td>
<td>0.066353</td>
<td>0.098234</td>
<td>0.097065</td>
<td>0.017958</td>
<td>0.134235</td>
<td>491.95</td>
</tr>
<tr>
<td>UF4</td>
<td>0.052199</td>
<td>0.054388</td>
<td>0.054551</td>
<td>0.001274</td>
<td>0.056679</td>
<td>393.60</td>
</tr>
<tr>
<td>UF5</td>
<td>1.523087</td>
<td>1.671735</td>
<td>1.676288</td>
<td>0.099452</td>
<td>1.844279</td>
<td>792.28</td>
</tr>
<tr>
<td>UF6</td>
<td>0.705834</td>
<td>0.762023</td>
<td>0.762271</td>
<td>0.028052</td>
<td>0.831784</td>
<td>822.79</td>
</tr>
<tr>
<td>UF7</td>
<td>0.067270</td>
<td>0.114403</td>
<td>0.112305</td>
<td>0.012055</td>
<td>0.125719</td>
<td>722.11</td>
</tr>
<tr>
<td>UF8</td>
<td>0.095436</td>
<td>0.108548</td>
<td>0.120433</td>
<td>0.030475</td>
<td>0.195112</td>
<td>1443.73</td>
</tr>
<tr>
<td>UF9</td>
<td>0.088857</td>
<td>0.188603</td>
<td>0.160832</td>
<td>0.047975</td>
<td>0.218996</td>
<td>1270.73</td>
</tr>
<tr>
<td>UF10</td>
<td>0.473865</td>
<td>0.744428</td>
<td>0.781509</td>
<td>0.134987</td>
<td>1.043141</td>
<td>1359.30</td>
</tr>
</tbody>
</table>
Figure 2. Plots of the final non-dominated solutions in the objective space displayed by AMALGAM [20] in its best run among 30 independent runs over ZDT1-ZDT4 and ZDT6 problems.

On some CEC’09 test instances such as UF5 and UF6, both algorithms have faced problems of genetic drift and their population follow some good solutions that discovered in its early stages of evolutionary process. In highly multi-modal problems like UF5-UF6, the search process often gets stuck in a locally optimal basin and algorithms are not offer further improvement.

5. Conclusion and Future Plan. Different operators suite different optimization and search problems. The dynamic use of multiple operators in the framework of evolutionary algorithms have exhibited good performance while dealing with complicated MOPs have been investigated [7, 9, 14, 11, 12, 10, 15].

A multi-algorithm genetically adaptive multi-objective (AMALGAM) [20] is a sequentially algorithm which is based on Pareto dominance concept. It solve given problem differently from [7, 14, 11, 12, 10, 15]. This algorithm has incorporated the strengths of DE [18], PSO [4], NSGA-II [3] and producing new population with self-adaptive manner. Each search operator is getting credit upon on its own success. Those who perform better is getting more resources. The experimental results of the AMALGAM [20] compared to NSGA-II [3] are promising on both types of problems including the CEC’09 test instances [24] and substantially used ZDT problems [27].

In future, we intend to analyze the performance of the used EAs on real-world problems like:

- Tubular permanent magnet linear synchronous motor (TPMLSM).
- Cancer chemotherapy problems.
Figure 3. Plots of the 30 PFs altogether in the objective space displayed by AMALGAM [20] for ZDT1-ZDT4 and ZD6 problems.

- Fuzzy multi-objective reliability redundancy allocation problem.
- Multiobjective Engineering design problems.
- Multi-Objective Capacitated Arc Routing Problem.
- Passive Vehicle Suspension Optimization.
- Multi-objective mobile agent-based Sensor Network Routing.
- Oil and Gas Well Drilling problems.

We also intend to analyze the performance of more MOEAs on CEC’09 test instances. We will also examine the performance of various enhance versions of differential evolution [13] in combination with other MOEAs for solving the above problems.

REFERENCES

Figure 4. Plots of the final non-dominated solutions in the objective space displayed by AMALGAM [20] in its best run among 30 independent runs over UF1-UF10 problems.

Figure 5. Plots of the 30 PFs altogether in the objective space displayed by AMALGAM [20] for UF1-UF4 and UF7-UF10 problems.


Figure 6. Plots of the final non-dominated solutions in the objective space displayed by NSGA-II [3] in its best run among 30 independent runs over ZDT1-ZDT4 and ZDT6 problems.

Figure 7. Plots of the 30 PFs altogether in the objective space produced by NSGA-II [3] for ZDT1-ZDT4 and ZDT6 problems.
Figure 8. Plots of the final non-dominated solutions in the objective space display by NSGA-II [3] in its best run among 30 independent runs over UF1-UF10 problems.

Figure 9. Plots of the 30 PFs altogether in the objective space display by NSGA-II [3] for UF1-UF4 and UF7-UF10 problems.

STUDIO APPLICATIONS AND SOFTWARE DEVELOPMENT KITS FOR MICROSOFT KINECT: A SURVEY

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ABSTRACT: The invention of Motion sensing camera “Microsoft Kinect for XBOX” opened new dimension for the research community. First objective of Kinect was to work with XBOX for playing games. However, people started using it for the recognition of human activities. Kinect for XBOX provided two types of information 1) RGB and 2) Depth. People developed tools, drivers and algorithms to work with it. Later, Microsoft itself released the Windows edition of Kinect with a software development kit (SDK). However, several open source and propriety vendors modified the performance of their existing tools and drivers to work with Kinect for Windows. It was now difficult for the newer one to select an appropriate set of studio application and SDK to work with Kinect for Windows. Keeping in view this point, we have presented a study for the Windows edition of Kinect based on several features like platform, file formats etc. Our study will definitely help the research community involved with Kinect for Windows to select an appropriate set of drivers and SDK’s for their work. This study will be a valuable contribution not only for the users of Kinect, also for the owners of various tools.

Keywords: Kinect; Microsoft; studio applications; features; comparative study; software development kit.

1. Introduction. Initially the purpose of Microsoft Kinect was to work with XBOX for playing games [1]. This device broke the Guinness books world record of most selling device in the first 60 days of its launch [1]. The community working in the domain of human activity recognition took a different sight towards this motion sensing camera. They developed a number of tools for capturing visual information from Microsoft Kinect. They developed algorithms for processing the RGB and depth information provided by the Microsoft Kinect [2-5]. They also modified already developed SDK’s and drivers to work with the windows edition of Microsoft Kinect.

The Kinect for Windows edition got lot of attention from the research community as a motion sensing device. People developed set of drivers and development environments for XBOX Kinect. Later they modified them to work with Kinect for Windows edition. Currently a number of tools are available in the market. The
problem arises which to use, why to use and how much benefit it will provide on the other one. Although, Microsoft is also present in the race with lot of functionalities. But the other competitors in the market are also not behind.

We picked up this problem and decided to provide a detailed study which will definitely help the new ones working with Kinect for Windows. Our study will also address the questions asked in the above paragraph. To the best of our knowledge, we decided to compare the tools on the basis of few most commonly used and asked questions. These features are the common ones among those who are asked by a novel user first of all.

In our work we have evaluated 05 most commonly used tools / SDK’s freely available in the market. We evaluated tools on the basis of various parameters such as license information, supported platform, supported development environment, information components extracted, exported file formats and the skeleton information extracted etc. As discussed above, these are the features which are normally asked by a user.

We divided our work into two sections. In the first section we present the introduction of each tool with its features in detail and in the second section we present a comparative overview of these tools.

1. **SDK's and Drivers.**

2.1. **Microsoft SDK & Drivers.** Microsoft launched its Kinect for Windows Software Development Kit (SDK) in 2011 [6]. Microsoft has never thought to support the Kinect for Windows for development. It was very much surprising for Microsoft a great interest by the people in the device for development purpose. Presently the Microsoft is aggressively providing support in terms of drivers and SDK [7]. The Microsoft SDK is available free of cost and can run on windows environment with its development possible in C++ and C# languages [8]. The exported file format depends upon the development environment. It provides RGB, Depth and Skeleton information and can track all 20 joints of human body. The major limitation of Microsoft SDK is that it couldn’t store Depth and Skeleton information on the disk for offline use. However, it provides enhanced facilities like Background removal, Realistic capture with Kinect fusion, improved tracking robustness with Kinect fusion, HTML interaction sample, Multiple sensor Kinect sample and adaptive UI sample [9], [10] and [11].

2.2. **CL NUI SDK and Drivers.** This is a partially free SDK package along with drivers. It has trial version for 30 days and a propriety version available after that [3]. It’s for windows platform and supports development environment like C, C++ and C#. It exports file in the format which is dependent upon the development environment. The skeleton information can be extracted by applying different algorithms on the depth map information which decreases the overall performance of the system. It can support only one Kinect sensor at a time.

2.3. **Open Kinect.** It’s an open source product that provides drivers and SDK to work with Kinect for XBOX [2]. It provides support for various platforms like Windows, Linux and MAC. It also support for multiple languages such as Python, C, C++, C# and more. Its exported file format depends upon the development environment. It provides only RGB and depth map with no direct skeleton information. However, the SDK provides special depth processing algorithms to extract skeleton information from depth map this extra processing slows down the efficiency of overall system.

2.4. **Open NI.** Open NI is one of the oldest set of SDK and drivers for Kinect sensor [4]. It supports one Kinect at a time and provides only RGB and Depth information. It can run on Windows and UNIX platforms and supports only C++ development environment. It provides a set of algorithms to process the depth information obtained from Kinect to extract skeleton information. However, the skeleton data provides information for only 17 joints of the human body.

2.5. **NUI Capture.** NUI Capture Analyze is an application for recording, analyzing and storing Depth, RGB, skeleton and audio data from Microsoft Kinect [4]. It provides the facility for exporting provided information into Matlab file format [12]. The support documents are divided into 04 sections provided by NUI Capture [13]. The first section covers installation information [14]. The capture section discussed the camera settings information in various environments [15]. The export section provides information about procedure to export data along with supported file formats. The last one is play back section which provides reuse information about previously recorded sessions [16].
The installation section provides information about both installation and UN installation of NUI Capture in windows environment. The capture section provides option of the data capturing with different settings along with previewing and permanently storing videos in the disk. We can first adjust frames per second rate, audio levels and file formats during preview and then to record data permanently on disk. The information recorded by NUI capture can be exported in the form of RGB, Depth and Skeleton frames along with .avi and .mat file formats. You can also play back the previously recorded session using NUI capture [16].

The major information exported by NUI capture lies in the .mat file. The .mat file has plenty of information for each frame of a recorded session. Each frame has its own depth, color, skeleton and face values, depth frame to color frame mapping, skeleton frame to color frame mapping and the face triangle.

However, it’s just a data capturing tool and has no particular development environment. It provides information of all the 20 joints of human body. It exports information in the form of .mat file which can then easily be used in any development environment on any platform. It also provides the functionality of 3-D session viewer [17].

3. A Grid Analysis of Kinect Studio Applications. Which Kinect data capturing tool (drivers and SDK etc) would be appropriate for a specific work is a big question before a person starts developing dataset for his/her project. In any project, you may need different functionalities like; offline availability of skeleton information, direct skeleton information, storage of Depth, RGB and Skeleton for later use, multiple Kinect sensors and portable files format etc.

Keeping in view, all of the requirements, we have provided a comparative study of the major Kinect studio tools available to the best of our knowledge. It includes both open source and commercialized ones. We have evaluated five tools; Open Kinect [2], CL NUI SDK [3], Open NI [4] and NUI Capture with Microsoft’s own drivers and SDK [5 - 6]. To the best of our knowledge, we have provided a grid analysis of most common tools at the end.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Tool</th>
<th>License Information</th>
<th>Operating System</th>
<th>Languages</th>
<th>Information</th>
<th>Exported Information</th>
<th>File Format</th>
<th>Direct Skeleton (No of Tracked Joints)</th>
<th>Offline Information</th>
<th>System Requirements</th>
<th>Graphics Processing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Microsoft SDK &amp; Drivers</td>
<td>Freeware</td>
<td>Windows</td>
<td>C++ and C#</td>
<td>RGB, Depth and Skeleton</td>
<td>RGB, Depth Map</td>
<td>Windows 7</td>
<td>NILL</td>
<td>Windows 7</td>
<td>Generalize Graphics card available for 32 bit Machine</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CL NUI SDK and Driver</td>
<td>Partially Freeware</td>
<td>Windows</td>
<td>C, C++, and C#</td>
<td>RGB and Depth Map</td>
<td>RGB and Depth Map</td>
<td>Wind 7 Machine</td>
<td>NILL</td>
<td>Wind 7 Machine</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4. Conclusion. In this paper, we discussed the origin and use of Microsoft Kinect as motion sensing device. We provide a brief introduction of Kinect for XBOX and Kinect for Windows. To the best of our knowledge, we selected 05 SDK’s and data capturing tools available in the market. We compared them on the basis of nine different features. As per our thinking, these could be the basic features required by the individual who is involved with Kinect for Windows. The study presented in Table 1 will definitely help the research community working in the field of human activity recognition using Kinect sensor to select an appropriate tool.

REFERENCES


ABSTRACT: In this paper we present a review of the existing Computer Aided Primary Education Systems (CAPES). These systems are: ESL Kids Lab, Kiz School, Khan Academy, Kids Math Games, Starfall, YouTube, Learning Chocolate, Learn English Kids and E-learning for Kids. We have conducted a comparative study of these available systems. For the comparison, we have considered different parameters. These parameters include medium of instruction, syllabus, and subject, user friendliness of the system and availability of user interaction, animation, visual ads, audio support and games etc. We have also considered the software cost as well as online availability. On the basis of these mentioned parameters, we have investigated the strengths and weaknesses of these systems.

Keywords: Computer Aided Learning, Computer Assisted Learning, Primary Education, eLearning

1. Introduction. Education means knowledge of something. This knowledge is usually achieved in educational institutes like schools, colleges, universities, etc. Primary education is the first stage of compulsory education. The main purpose of primary education is achieving basic knowledge of science, mathematics, geography, history and social science [Primary Education, 2013]. Visual ads or pictures are normally given in the text books of the primary school. The main purpose of these visual ads is to provide easy way of learning to the students. Due to these pictorial ads, students and specially the children learn faster. Furthermore, these ads make the information representation for the children very easy and are full of interest for them. The interest and motivation of the children in the visual ads lead to better learning. Pedagogy also suggests that images/visual ads help in learning, because images are directly related to long term memory. By seeing an image about a concept, the learner understands it easily and gets the satisfaction about that concept [Using images in education, 2013]. Visual aids like animation, videos and pictures enhance student interest in learning material. It enables the student to understand the main ideas in the text [Yunus, Salehi, & John, 2013]. The use of animation in education has two main goals, first that it is used to attract the students' interest, engage them in learning and maintain their motivation. The second goal is to achieve the cognitive function, which is used for the interest and motivation of the learners [Lowe, 2004]. In Nigeria a study was conducted to know about the importance of the use of animation, cartoons and other visual ads in teaching. The result showed that 100% of teachers and 86.7% of students (from three secondary schools) believed that cartoons and visual ads in the text books help in learning [Ajibade & Elemi, 2012]. Another study was conducted at Aljouf University, Saudi Arabia for the importance of audio and visual aids for English as a Foreign Language (EFL) teaching [Mathew & Alidmat, 2013]. Results showed that audio-visual aids improve thinking and learning in classroom [Ainsworth, 2008]. Animation can also be used for many purposes. We can show to the learners many things through animation that they cannot see in the real life e.g. the movement of atoms/molecules in gases etc. Games also have a good effect on learning. It increases student’s attention and interest in the lesson.

Now a day, computer technology is used in educational institutions for teaching purposes. Different computer aided systems are in practice. In this article we are going to review the different computer aided systems that help learning at the primary level. Computer aided primary education system (CAPES) is a new term introduced in this paper that
means the application of computer technology for teaching and learning at primary level. CAPES are broadly synonymous with Computer-Based Instruction (CBI), Computer-Based Training (CBT), Computer-Aided Instruction (CAI), online education, computer-based learning, and virtual education, Virtual Learning Environments (VLE) and digital education collaboration [E-learning, 2013]. CAPES include computer technologies (software and hardware) for teaching and learning. In this article we will introduce and compare the different available software systems that help learning at primary level. For the comparison, we have considered different parameters. These parameters include medium of instruction, syllabus, and subject, user friendliness of the system and availability of user interaction, animation, visual ads, audio support and games etc. We have also considered the software cost as well as online availability. On the basis of these mentioned parameters, we have investigated the strengths and weaknesses of these systems.

2. Review of the Computer aided Primary Education Systems. During our study, we explored the different available computer aided systems. These systems are: ESL Kids Lab, Kiz School, Khan Academy, Kids Math Games, Starfall, YouTube, Learning Chocolate, Learn English Kids and E-Learning for Kids. Here we present a brief introduction of these systems.

2.1. ESL Kids Lab: ESL (English as a second language) Kids Lab [ESL Kids Lab, 2013] provides English learning and teaching materials for primary school children and also some material for high school students. The learning materials consist of animated videos, printable worksheets, self-grading exercises, flash cards for online work, phonic materials, teaching methods for teachers and some math exercises [ESL Kids Lab, 2013]. ESL Kids Lab learning materials have good audio support for each step. Its medium of instruction is English, which is not good for the English speaker kids. It has a clear syllabus for teaching in English. Cartoon environment is used for teaching which is interesting for children. The cartoons are designed to capture the interest and attention of the children. Visual ads and animations are used in their videos. ESL has a variety of interactive games and exercises. It also includes teaching tips for the teachers. There is no need of installation and all of their materials are online. Progress tracking test is also done at ESL Kids Lab. After completing a step, the child progress is judged through progress tracking test. It has a good user friendly interface but there is no user interaction in ESL system. One can only watch their videos but can’t interact with them. So the child may become bore and lose his/her attention. ESL Kids Lab is not free and one must pay for downloading the lessons. Its medium of instruction is English which is not good for the non-English speakers. Its accessibility for the kids especially for the non-English speakers is difficult. Free demo is not available for the new visitors, so they can’t easily understand its contents. Its contents include only the English materials and a little mathematics materials but other subject(s) are missed here.

2.2. Kiz School: Kiz School [Kiz School, 2013] is an online English program for primary school kids that include animated videos, power point slides, interactive games and quizzes, printable PDF worksheets and flash cards. These are designed to teach grammar, vocabulary, sentence pattern and reading. The system teaches the lessons by level and by unit. There are over 600 PDF worksheets to print for use when a kid is online. The kiz school materials are presented by a pre-defined printable lesson plan [Kiz School, 2013]. Kiz school learning materials are easy and interesting to teach them so that one does not need to be a professional teacher to use these materials. One can download their power point lessons and videos. Every lesson comes with its respective interactive games and exercises so that one does not feel boring and also revise his/her previous learned lessons [Kiz School, 2013]. Animation and visual ads make the Kiz School materials very interesting. There is good audio support for the learners. Free demo is available for each lesson. One can sign up for the first month free. There is no need of installation and one need to download the contents. Kiz School has a user friendly interface design. The system offers a one month trial. The system contains only English materials and other subject are missed here. Its medium of instruction is English which is not good for the non-English speaker. Its accessibility for the kids especially for the non-English speaker is difficult.

2.3. Khan Academy: The Khan Academy is an educational website [Khan Academy, 2013] created in September 2006 by the educator Salman Khan, a graduate of MIT and Harvard Business School situated in USA. The main goal of khan academy is to provide a good quality free education to everyone [Thompson, 2011]. The website contains videos of short duration of more than 4,300 micro lectures and over 260 million lessons. Generally the duration of each video is seven to fourteen minutes. The video lectures are about mathematics, history, healthcare,
medicine, finance, physics, chemistry, biology, astronomy, economics, cosmology, organic chemistry, American
civics, art, history, microeconomics, macroeconomics and computer science, but mathematics is the major subject
which Khan Academy teaches [Thompson, 2011]. These videos are totally free for anyone around the world and are
also stored on YouTube. It can be downloaded. Khan Academy videos and lessons have been translated into many
languages including Urdu. Khan Academy provides the basic operations of mathematics in an easy way. Khan
academy has a large number of students and two million students use its services each month. Some critics have
stated that Khan Academy learning videos make the kids bored, because one just hearing at screen and there is no
interaction for the learner interest [Thompson, 2011]. There is no animation and support of visual ads for the interest
of kids. There are no interactive games for the attention and revision. Khan Academy has not a good user interface.
There is no progress tracking test for the learners.

2.4. Kids Math Games: Kids Math Games [Kids Math Games, 2013] is an online academy to teach English, math
and science to kids. They use worksheets, animated videos, quizzes, pictures, games and fun stuff for teaching. In
math section they teach about the basic addition, subtraction, multiplication, division, counting, money, fractions,
memory, facts, geometry and probability. In science section they teach about the basic technology, chemistry,
biology, physics, weather, animals, earth, scientist, space, planet and funny facts of science. In English section they
teach about the words and vocabulary resources, grammar, reading resources and kindergarten English activities
[Kids Math Games, 2013]. Kids Math Games is an online teaching academy. Their materials are free for anyone
anywhere. There are hundreds of interactive games for each section for the purpose of revision. Their interactive
learning activities are interesting, so one can take interest in the learning material [Kids Math Games, 2013]. Visual
ads and animation are frequently used. They have lessons plan, ideas and science fair projects. Its medium of
instruction is English. There are virtual experiments for science subject. There are clear lessons plan for teaching. It
has a good user friendly interface. There is no free demo for the overview of Kids Math Games. Its medium of
instruction is only English which is not good for the non-English speakers. There is no audio support for the
learners. One can only play online games. There is no progress tracking report facility.

2.5. Starfall: Starfall [Starfall, 2014] opened in September 2002. Its learning material includes only phonics which
is designed for the preschool, kindergarten and other higher classes of primary school. Starfall is an educational site
designed to entertain the students with phonics [Starfall, 2014]. It is divided in four sections to learn English. Starfall
is free for everyone. Animation is used in their phonics for teaching and guidance. User interaction is involved in
phonics. Many interactive games are available and there is a good audio support. When the child completes an
activity, the progress is shown by words or by an audio message. It has a good user friendly interface and its
medium of instruction is English which is not good for the non-English speaker kids. Its accessibility for the kids
especially for the non-English speaker is difficult. They have no clear syllabus and subject for teaching. There is no
free demo of Starfall.

2.6. YouTube: YouTube [YouTube, 2010] is a video-sharing website and was launched in February 2005. One can
upload his/her video(s) and can also watch and share the video(s). It contains every type of video in a large number
i.e. educational videos, movies, music, TV clips, religious videos, short original videos, etc. [YouTube Wikipedia,
2014]. It is the most useable site for education and other purposes. It contains both the cartoon and real environment
lectures. Videos are available in different languages but English is the major one. YouTube does not usually offer a
download link for its videos. One can only upload and watch the videos. So for downloading these videos, one must
use some third-party websites, application and browser plug-in [YouTube Wikipedia, 2014]. One can only watch
these videos but cannot interact with it. Its accessibility for the kids especially for the non English speaker is
difficult.

Its aim is to help students and children memorize English vocabulary by using games, images and pronunciation.
They also teach about animals, body, clothing, community, weather, colors, classroom and other basics. Learning
Chocolate contains the free learning material for the student and kids. It contains interactive games and phonics with
audios. Visual ads and animation are frequently used in the phonics and games. Its medium of instruction is English
which is good for the English speakers. It has a good syllabus for learning English. There is no need of any
installation. It has a good user friendly interface. Learning Chocolate contains only the English material, other
subject are missed here. Its medium of instruction is English which is not good for the non-English speakers. Free demos are not available for the overview. There exist some learning materials which are not suitable for the kids learning level.

2.8. Learn English Kids: Learn English Kids [Learn English Kids, 2014] is an online English learning site for kids. It contains games, songs, stories, animated videos, reading and activities for English learning. It is sponsored by British Council. Parents and teachers can also register themselves to download the learning recourses. Parents and teachers can share their ideas and can ask questions about helping their child to learn English [Learn English Kids, 2014]. Learn English Kids is totally free. One can register free by providing his/her e-mail address. There are a numbers of different types of interactive games for learning and revision. One can watch and listen the stories. With the available worksheets, one can read and write. One can also speak and spell the English words. The grammar is taught through games, quizzes and videos. Learn English Kids has a good user interface. Its medium of instruction is English which is good for the English speaker. Each step is guided through audio or text message. Learn English kids have used the cartoon environment which is interesting for the kids. It teaches only English, other subjects are missed here. There is no progress tracking test to check the performance of the kid. As its medium of instruction is English, so the non-English speaker will face difficulties in learning. User interaction with the system is limited.

2.9. E-learning for Kids: E-learning for kids [Elearning for Kids, 2014] is an online education resource for kids from age 5-12 years. It is established in late 2004 by Neck Van Dam. At this site the educators and experts can share their knowledge and expertise [Elearning for Kids, 2014]. They teach math, science, language arts courses, environmental skills, computer, health, life skills and English language. E-learning education resources are totally free. They teach through level-by-level. They teach in five different languages including English. There are games for each activity and section for the kids’ interest and learning. They have a good syllabus for teaching. Good quality of animation and visual ads are frequently used. Free demo is also available to overview the E-learning. All the learning materials are for kids. It has a good user friendly interface. E-learning learning material is free but can be access only online. There must be an internet connection for learning from e learning. There is no audio support for guidance. Progress tracking test report facility doesn’t exist. Their learning resources are available in seven different areas (math general, science courses, computer, environmental skills, health, life skills and English language), other areas are missed here. They teach in five different languages (English, Dutch, Spanish, French and Portuguese), so the other languages speaker will face difficulties in learning.

We discussed the different computer aided systems for primary level education. In table 1 we have compared the different facilities that these systems provide.

<table>
<thead>
<tr>
<th>Parameters</th>
<th>ESL Kids Lab</th>
<th>KIZ School</th>
<th>Khan Academy</th>
<th>Kids Math Games</th>
<th>Starfall</th>
<th>YouTube</th>
<th>Learning Chocolate</th>
<th>Learn English Kids</th>
<th>E Learning for Kids</th>
</tr>
</thead>
<tbody>
<tr>
<td>User Interaction</td>
<td>Limited</td>
<td>Limited</td>
<td>No</td>
<td>Limited</td>
<td>No</td>
<td>Limited</td>
<td>Limited</td>
<td>Limited</td>
<td>Limited</td>
</tr>
<tr>
<td>Subject(s)</td>
<td>English, Maths</td>
<td>English</td>
<td>Maths</td>
<td>English, Maths, Science</td>
<td>English</td>
<td>All</td>
<td>English</td>
<td>English, Maths, etc</td>
<td>Yes</td>
</tr>
<tr>
<td>Animation</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Table 1. Comparison of different computer aided primary education systems based on the evaluation parameters

3. Conclusion. We discussed that primary school children take great interest in images, animations and games. Many surveys have been conducted to know the importance of these visual ads. There are many systems for fast learning for primary school children. These systems normally contain visual ads, animation and games. In this paper we discussed and compared different systems. For comparison, we have considered different parameters. These parameters are user interaction, medium of instruction, subject, animation, visual ads, games using approach, audio support, progress tracking test etc. From this study we have concluded that most of these systems are non interactive and these systems can be improved if user interaction is also included in these systems.

REFERENCES


COMMUNITY INVOLVEMENT IN CONTROLLING CUTANEOUS LEISHMANIASIS IN IKRAMPUR VILLAGE OF DISTRICT MARDAN THROUGH DISSEMINATION OF INFORMATION AMONG SCHOOL CHILDREN

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ABSTRACT. Cutaneous Leishmaniasis is caused by Leishmania tropica and Leishmania major in Khyber-Pakhtunkhwa, Pakistan by the bite of infected female Phlebotomous sandfly. This study was conducted for the spreading of information on Cutaneous Leishmaniasis among schoolchildren in District Mardan Khyber-Pakhtunkhwa, Pakistan. The study aimed for the development of prevention and control strategies against the disease. Age ranged from 13 to 19 years. All the students (n=200) attended a class and received a pamphlet on Cutaneous Leishmaniasis. Knowledge on Cutaneous Leishmaniasis was evaluated with a pre and post knowledge questionnaire. A significant improvement in knowledge were observed among schoolchildren (p<0.05). The spread of information on Cutaneous Leishmaniasis among schoolchildren can contribute to measures for the prevention of disease.

Key words: Cutaneous Leishmaniasis; schoolchildren; information dissemination

Introduction. Leishmaniasis is an infection caused by trypanosomatid parasites, belonging to genus Leishmania. Leishmaniasis is transmitted to and between humans and other mammals by the bite of female Phlebotomus sand-flies via Anthroponotic or zoonotic cycles. As intracellular amastigotes the parasites persist and reproduce within phagolysosomes of macrophages. Leishmaniasis is from self-limiting cutaneous leishmaniasis (CL) to fatal visceral leishmaniasis (VL) [1]. Each year the approximation of new cases and deaths are 1.5-2.0 million and 70,000 respectively, and 350 million people are at risk of infection and disease as well as an approximately 2.4 million disability-adjusted life-years (DALy) world widely [2]. CL is endemic in 88 countries globally, and 90% of cases occur in Afghanistan, Algeria, Brazil, Syria, Peru, Saudi Arabia, Iran, Iraq and Pakistan [3].

Records about the CL first outbreak in Pakistan are not available, though, in 1935 after a severe earthquake in Quetta the outburst of the disease was happened [4]. But according to the WHO report for the first time CL was reported in 1960 in Pakistan, and the most probable vector of infection is considered to be Ph. Sergenti [5] which is prevalent mostly in mountainous parts of Pakistan [6].

In various regions of Pakistan the disease is known to be endemic since many years, but recently it seems to have become an epidemic in the country [7], caused by Le. tropica and Le. major [8]. The most common type of
CL in Pakistan is called "urban" or "anthroponotic leishmaniasis" [9]. Usually single or multiple lesions occur on uncovered parts (hands, feet, face) of the body starting from nodule or plaque and passes through the stages of crust, ulcer and scar formation [10]. The treatment primarily relies on the drugs available viz., pentavalent antimonials, Amphotericin B, Miltefosine, Paromomycine, Buparvaquone.

The world's largest outbreak of CL occurred in Kabul (Afghanistan) where more than 9% of the population (270,000) was affected. After the Soviet invasion of Afghanistan, the cross-border movement of 3.5 million Afghan refugees occurred into Pakistan, settled in more than 300 formally accepted camps in different areas of Pakistan including the Khyber Pukhtunkhwa [11]. Jalala camp was one of the largest camp in Mardan which carried this infection to local people, therefore the people in Mardan region call it in their local Pashto language as the “Kabalyano bemari” (disease of Afghans) while in Afghanistan it is known as Saldana. The WHO has been working with local health authorities in the Khyber Pukhtunkhwa to control the outbreak of CL by adopting various strategies. Community involvement in controlling this infection is need of the time, so this study, based on a short term intervention by involving schoolchildren, in an attempt to develop a sustainable policy for the control and prevention of CL in Ikrampur village of District Mardan.

Materials and Methods. A dissemination study regarding CL were organized in a Govt Girls High school Ikrampur (Baizo Kharki), Mardan by involving students from 8th to 10th grades in 2013. Total 200 students were involved in this study. All the students from 8th to 10th grades were attended a standardized lecture on Cutaneous Leishmaniasis and received a copy of a pamphlet on the disease.

Study area. This study was conducted in CL endemic village known as Ikrampur (Baizo Kharki), with a population of approximately 25,000 people. This is the last village and Union Council of the District Mardan, situated in the north east strip of Mardan and on the edge of Malakand. A typical village consists of cemented paths and carpeted streets with safe drainage system. Its houses are made from strong stones so the villagers now build their huge houses from bricks and concrete. Most of the village people live simple life and the needs are minimum. It is surrounded by massive mountains. Here three government schools for girls are situated, in which two are primary and one is high school. We selected the high school for our communication purpose consist of approximately 600 students.

A Basic health unit (BHU) is also situated in Ikrampur (Baizo Kharki), where the people from all the nearby villages, including Ikrampur visit for the treatment of CL.

The study included the following items.

• Training students

All students from the 8th to 10th grades were invited to participate. Mean age was 14 years (range: 13-19). All the students attended a CL lecture, at the end of which they received a copy of the pamphlet.

• Pre and Post-intervention Assessments

Pre-knowledge Assessment

Awareness of CL among students were evaluated before the specific class/training by using an individual multiple-choice questionnaire with fourteen (14) closed ended questions; including etiology, mode of transmission, disease identification, possible risk factors, and care seeking behavior, treatment and protective measures.

Questionnaire design

The knowledge towards CL were included mode of transmission, epidemiological features and prevention. The original version of the questionnaire was in Urdu (in order to facilitate the local people) which included fourteen (14) closed ended questions and two (02) open ended questions. The open ended questions included the following domains:

The first part included age, gender, current residence, and family’s income, educational and occupational status.
The second part included queries regarding disease (size of lesion, number of lesions, duration of lesion, position) and its treatment.

**Post knowledge Assessment**

After 45 days of specific classes/training, the post knowledge assessment were taken by using the same questionnaire as for the pre knowledge assessment to compare their results.

During data collection visits, the assessment of hygienic condition around the household (leaves, fruit, or branches on the ground, accumulated garbage, and animal droppings) were assessed.

**Results and discussion.** Cutaneous leishmaniasis causes a public health problem globally. It has now become endemic in 88 countries of the world. It is generally due to the migration and travelling of people. In the present study Mean number (average: 31) of correct answers in pre-knowledge assessment on the questionnaire by the students of all the classes (grade 8th to 10th) were similar and low. 45 days after the class, the mean number of correct answers was 37. A significant difference was observed in the improvement of correct answers by the students (p< 0.05). Performance according to grades was similar (Table. 1). The method used here is practicable and comparatively simple. Once knowledge and health related skills are developed, students begin to lead better lives and contribute to enhance the quality of life in their families. The main idea in this approach is action and participation, with students and their direct involvement in the process. Table. 2 shows knowledge about cutaneous leishmaniasis among schoolchildren. During a survey in Balochistan about cutaneous leishmaniasis visits were made to schools and delivered lectures to students about CL in each class [12]. A cross-sectional descriptive survey in Al-Hassa (Eastern Province of Saudi Arabia) were carried out by including 1824 participants, age ranging from 15- 63 years (mean 35.86±9.54 years). Above 76% of the studied population had a good awareness about the clinical manifestations of CL but the awareness about the vector, transmission, risk factors and protective methods were very little. This study provide a template to plan interventions in Al-Hassa [13].

**Table. 1. Mean number of correct answers and improvement in a questionnaire on Cutaneous Leishmaniasis among 8th, 9th and 10th grade students from a high school prior to and 45 days after a class on the disease (n=200).**

<table>
<thead>
<tr>
<th>Class (No. of students)</th>
<th>Mean test score (%)</th>
<th>Difference (Post-Pre)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>45 days Post</td>
</tr>
<tr>
<td>8th (47)</td>
<td>31</td>
<td>36</td>
</tr>
<tr>
<td>9th (76)</td>
<td>33</td>
<td>38</td>
</tr>
<tr>
<td>10th (77)</td>
<td>30</td>
<td>37</td>
</tr>
<tr>
<td>Total (200)</td>
<td>31</td>
<td>37</td>
</tr>
</tbody>
</table>

Significance difference after class on Cutaneous Leishmaniasis (p<0.05).

**Table. 2. Knowledge regarding Cutaneous Leishmaniasis among the included students (n=200)**

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Questions</th>
<th>Responses (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Correct</td>
</tr>
</tbody>
</table>

2294
<table>
<thead>
<tr>
<th></th>
<th>Question</th>
<th>Option A</th>
<th>Option B</th>
<th>Option C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>*CL is caused by (option): Parasite</td>
<td>39.5</td>
<td>34.25</td>
<td>26.25</td>
</tr>
<tr>
<td>2</td>
<td>*CL is transmitted by the bite of an insect: True</td>
<td>57.5</td>
<td>22.5</td>
<td>20</td>
</tr>
<tr>
<td>3</td>
<td>Females are more affected by the *CL: False</td>
<td>34.5</td>
<td>35.75</td>
<td>29.75</td>
</tr>
<tr>
<td>4</td>
<td>*CL usually affects the (option): uncovered body parts</td>
<td>67.5</td>
<td>22</td>
<td>10.5</td>
</tr>
<tr>
<td>5</td>
<td>The disease more commonly affects children: True</td>
<td>58</td>
<td>27.75</td>
<td>14.25</td>
</tr>
<tr>
<td>6</td>
<td>*CL is initially manifested by (option): blister /papule</td>
<td>65.75</td>
<td>29</td>
<td>5.25</td>
</tr>
<tr>
<td>7</td>
<td>The insect responsible for the disease is (option): sandfly</td>
<td>82.75</td>
<td>7.75</td>
<td>9.5</td>
</tr>
<tr>
<td>8</td>
<td>Sleeping outdoor increases the risk of getting the disease: True</td>
<td>82</td>
<td>9.75</td>
<td>8.25</td>
</tr>
<tr>
<td>9</td>
<td>Sitting on grass/contact with tree leaves cause the disease: False</td>
<td>20.75</td>
<td>56.75</td>
<td>22.75</td>
</tr>
<tr>
<td>10</td>
<td>An infected person should seek treatment at (option): Hospital</td>
<td>93.5</td>
<td>03</td>
<td>3.5</td>
</tr>
<tr>
<td>11</td>
<td>It is self-limited skin problem: False</td>
<td>47</td>
<td>47.25</td>
<td>06</td>
</tr>
<tr>
<td>12</td>
<td>Bed nets are protective against insects that cause the disease: True</td>
<td>88</td>
<td>5.75</td>
<td>6.25</td>
</tr>
<tr>
<td>13</td>
<td>Skin repellents are protective against insects that cause the disease: True</td>
<td>91</td>
<td>6.5</td>
<td>2.5</td>
</tr>
<tr>
<td>14</td>
<td>Sprays are used to kill the insects: True</td>
<td>92.25</td>
<td>05</td>
<td>2.75</td>
</tr>
</tbody>
</table>

*CL: Cutaneous Leishmaniasis

During visits, the hygienic condition were also assessed around the household i.e. leaves, fruit, or branches on the ground, accumulated garbage, and animal droppings (Figure. 1).

It is concluded that the dissemination of information regarding cutaneous leishmaniasis among the students helped to improve their level of knowledge. Their knowledge can contribute in controlling the disease as compared to the local community member.

**Figure.1. Showing accumulated garbage around the houses.**

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UNIFICATION EVIDENCE WHEN PHILOSOPHERS JEW S STUDY VIEWS MAIMONIDES

أدلة التوحيد عند فلاسفة اليهود دراسة الأ راء موسي بن ميمون

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ABSTRACT: This article first about the relations between Muslims and Jews in the Middle Ages, and then for Jews famous philosopher “Maimonides” look for his life, science and specially for his philosophy of unification and then mention the evidence of consolidation at the speakers and finally looking in search long for evidence of consolidation at auspicious. That Maimonides is a Jewish philosopher in the Middle Ages and was influenced by Islamic civilization because he got science of Muslim scholars in this day and era, but this afternoon the influence of Muslims in philosophy and quoted on the uniformity of Research philosophers as between in his famous book "denote Perplexed" themed introductions twenty-five to prove the existence of God, he has no body and no power in the body.
العلاقة بين المسلمين واليهود في عصر الوسطى

إن اليهود كان له شريعة في عصور الوسطى لكن ليست له دولة وليس له وطن لأنَّه اوريشليم ظلت تحت مدينة مسيحية إلى عام 614 ومدينة فارسية إلى عام 629 ومدينة مسيحية مرة أخرى إلى 637 وبعد ذلك ظلت تحت المسلمين إلى عام 1099، ولما استولى صلاح الدين على المدينة عام 1187 واستقبل ثلاثمائة من أحبائهم في عام استقبالاً حسناً.

وكثر التجدد اليهود في سوريا والعراق وفارس ومالهم قوة في بعض الأحيان، ويعيشون اليهود تحت المسلمين في بلاد مختلفة في هذا العصر لكن يتعلمون المسلمين اليهود معاملة حسنة، ولانه قال تعالى في كلامه المجيد (يا أيها الناس إنّا خلقتم من ذكر وأنثى وجعلناكم شعوباً وقبائل لتعرفوا أن أكرمكم عند الله أنتمكم) (إِنْ اللَّهُ عَلِيمٌ خَبِيرٌ).

وشريعة الإسلام هي الرسالة الخاتمة وفلسفيتها خاصة زوّدت بها المسلم لأن يتعامل مع أخيه الإنسان بغض النظر عن عقيدة ومعصب الجنسية والوطنية، وهذه المفاهيم التي رسختها شريعة الإسلام في أبنائها جعلتهم يتعاملون مع طوال البشر ومع كل الأيديولوجيات بعقلانية وتسامح واعتدال انطلاقاً من القاعدة الشرعية التي تحكم الجماعة المسلمة: (كلاً ما لنا ولعبئه ما علينا).

ومن الاستاذان من حيث أنه الإنسان فكير لا يحترم إذا كان من أهل الكتاب؟

ويقول الدكتور القرضاوي في مقالته: "إن تاريخ التسامح الإسلامي مع أهل الأديان تاريخ ناصع البيان وقد رأينا كيف عاش هؤلاء في غاية من الأمن والحرية الكرامة باعتبار المورخين المنصفيين أنفسهم".

ينشروا اليهود زمن الفتح الإسلامي في معظم شبه الجزيرة ويركزون في المدن الرئيسية ولكن بعيد عن قبضائها، لما قتلت المسلمون الأندلس وعندا ما فتح الغربانة والقرطبة وغيرها وكان هدف المسلمين هو الأفادة منهم في أعمال الحروسة لأنهم يسكنون قبل فتح الإسلام في هذه المنطقة، ولم يمنعوا المسلمين اليهود من السكن في البلدان بل جاوروا المسلمين في مساكنهم، ويركزون اليهود في وسط الأندلس على مدينتي كبرتين.

1- قرطبة 2- طليطلة.

ولم يقتصر اليهود على مدن مذكورة التي ذكرناها بل يوجد في إماكن ومدن مختلفة لكون يعاملون المسلمون معهم معاملة حسنة ولهم يعلمون العلوم من العلماء المسلمين في مدارس إسلامية من علم الكلام والطب والفلكيات والفلسفة وغير ذلك من العلوم. وكانت لهم كليات دينية خاصة في بلدان مختلفة تخرج الزعماء الدينيين والعقلين اليهود، كما هو سعدياً وموسي بن ميمون وغيرهم.

شخصية موسي بن ميمون ومؤلفاته
اسم أبو عمران موسى بن ميمون القرطبي. ولد في 20 آذار عام 1135 م في قرطبة، بلدة مركزية في عهد أندلس، وهو مدينة إسلامية في قرطبة. حصل على تدريس الدينية اليهودية والأدب التلمودي عندما استولى الموحدين على قرطبة بعد فتحها، فأصبح فاسدًا ثم فلسطينيًا. استقر بعد ذلك في الأسكندرية قبل أن يعود نهائياً إلى الفلسطن قبل أن يعود نهائياً إلى قرطبة. حصل على تدريس الدينية اليهودية والأدب التلمودي وابن ميمون كان وزيرًا وطبيبًا لمدة طويلة. وكتب كتب الذين يilikون، في حين عرفه التاريخ عبر المدونات الطبية في أوروبا بعد النهضة (رمابي) ميمونيس (Maimonides).

وكان مركز العلمي للفلسفة اليهودية في القرون الوسطى.

وقد حاول ابن ميمون أن يوفق بين العقل والدين كما فعل ابن رشد وابن حزم من قبله.

مارس ابن ميمون الطب فصبة شهرة سعة صادق السلطان صلاح الدين وكان وزيرًا وطبيبًا له ومن ثم طبيبًا لابنه الفاضل. انتخب في الفلسطن رئيسًا لمجلس الحاخامين، وفي العام 1172 رفع إلى مرتبة "النجد" لكنه تخلى عنها وترغب في التعليم والفلسفة.

الحصول العلم.

أولاً حصل ونتلقي العلم في بيتته من أبيه، تعليمات ديانة اليهودية والتمودية. وبعد ذلك تلقى العلم على يد ثلاثة من العلماء المسلمين، فتلقى مباشرةً من ابن الأفلاط في اسمه ابن الصائغ. وتلقى من ابن رشد بشكل غير مباشر، حين عكف، كما ذكر ابن ميمون نفسه. على دراسة مؤلفات ابن رشد طيلة ثلاثة عشر سنة.

وكان ميمون كان حافظًا في رد العلم. وكان له معرفة جيدة بالفلسفة، ولهدى أن اليهود يعارضون بعضهم لولعه واستنباثه بالفلسفة الإغريقية، على ما سموها التي تعمى فلسفة اليهود. حصل ومارس ابن ميمون الطب فصبة شهرة مهنة عند صادق السلطان صلاح الدين وكان وزيرًا وطبيبًا له ومن ثم طبيبًا لابنه الفاضل. وفي العام 1172 رفع إلى مرتبة "النجد" لكنه تخلى عنها وترغب في التعليم والفلسفة. ودبي يسعى عن حقوق اليهود في مصر وفلسطين حتى وفاته. لقب ابن ميمون بالرئيس لعلو شأنه في الفلسفة، وانتها فتاويه من قرارات كبيرية في مجتمعات اليهود.

و مؤلفاته.

ومن مؤلفات ميمون في الفلسفة والطب وخاصًا وأركز ذكر"دالة الحايرين" لأهميته.
كتبت ابن ميمون كتابه "دالة الحائرين" في عام 1186 وعام 1190 م، وأرسله أبوه وأسقفاً إلى تلميذه يوسف بن عقنين. وكتب به باللغة العربية، لكن بحروف العبرية. كما هو عادة اليهودية في العصور الوسطى، وهو كتاب فلسفياً ودينياً. حاول ابن ميمون أن يدخل فيه نظريات ومبادئ فلاسفة المسلمين، لكن يصبحها في قالب اليهودي. وحصل ونال هذه الكتاب شهرة واسعة في عصره حتى الآن. وبهذة الكتاب كنماذج "ذرؤة التفكير اليهودي" الفلسفي في القرن الوسطى وهو تفكير لا يزال يخص عقلية اليهودية إلى يومنا هذا.

يقول موسى بن ميمون في كتابه "دالة الحائرين"، "لغرض الكتاب: إعلان أن مقالتي هذه، ما كان قصدي بها أن ألف شيئاً في علوم الطبيعي أو الخص معاني العلم الإلهي على بعض المذاهب، أو أثرى ما تبره منهما، ولا كان قصد فيها أن أخص واقتبس هيمنة الأفلاك. وإنما الغرضي من هذه المقالة ما قد أعلمنك به (يقصد تلميذه يوسف بن عقنين) في صدرها تبين مشكلات الشرعية وإظهار الحقائق بوطنها التي هي أعلى من أفهام الجمهور.

يحتوي كتاب دالة علي ثلاثة أجزاء، كل جزء يحتوي على فصول: يهتم في الجزء الأول باللهووية والوحدانية وكيفية إدراك الله تعالى، وينظر إلى صفات الله وأسمائه الحسني، وبعد ذلك يتحدث عن الفرق الإسلامية، ويتم في الجزء الثاني بثبات وجود الله تعالى بحيث ذكر خمسة وعشرين مقدمات، ويبحث في هذا الجزء عن وجود الملائكة والنبوة والأئمة وحركة الأفلاك ويتذكر بعض الآراء الفلسفية.
فلسفة اليهود

لا توجد فلسفة يهودية و تاريخه صحيح أنه في التاريخ بعض الفلاسفة ممن انتسبوا للديانة اليهودية، وهم لا يزيدون عن عدّة عبر التاريخ الإنساني على أصبع ديني، وأشهرهم ثلاثة (1) فيلون السكندري، 3. موسى بن ميمون، 3- ابن كمونة الإسرائيلى، أن هؤلاء الفلاسفة (اليهود) لم تكن فلسفتهم (يهودية) بقدر ما كانت انتخاسًا لفلاسفة المجاعة التي عاش هؤلاء الفلاسفة بعدها. فالتفسير (فيلون) الذي عاش بالإسكندرية في زمن الإمبراطور الروماني كاليولا كان يعترف على فلسفة أفلاطون في صورتها الجديدة التي تشكلت بالإسكندرية، وفلاسفة أفلاطون قام فيلون بتروية النوبة تأويلًا رمزياً على الروح الإلهية بأكثر مما عكس طبيعة النص الشرياني، وكذلك الأمر في شأن موسى بن ميمون وأبن كمونة فكلاهما انتسب إلى المحيط الثقافي الإسلاحي في القرن السابع الهجري (الثاني عشر الميلادي) فجاءت فلسفة انعكاساً لهذه البنية الثقافية السائدة آنذاك، كلا ما فيها من أفكار الفلاسفة المسلمين ومذاهب علماء الكمال، فيها أهم فيلسوف يهودي في العصر الوسطى (موسي بن ميمون).

يتلقي العلم على يد ثلاثة من علماء المسلمين، فقد تلقى مباشرة من ابن الأفلح ومن أحد تلامذة ابن الصانع، وتلقى من ابن رشد بشكل غير مباشر.

فإن الفلاسفة اليهود والنصراني الذين شاركوا في الفلسفة الإسلامية وعاشوا في العالم الإسلامي آنذاك يعترفون فلاسفة إسلاميين؛ محمد أبو بكر بن زكريا الرازي مع أنه كان لا يعتق دينًا ما، فقد اعتنق من بين فلاسفة المسلمين. وعلي ذلك، فالفلاسفة أمثال موسى بن ميمون لا يعتبرون فلاسفة من ناحية الشكل فحسب والد موسى بن ميمون فيلسوف إسلامي من ناحية الشكل والوصف لأنه نشأ في المناخ الديني، فقولنا إنه فيلسوف إسلامي لا يعني إننا نرتب إلى القول بأنه مسلم آمن بالإسلام دينًا بل هو فيلسوف إسلامي بالمعنى الثقافي والحضاري فحسب.

فلسفة التوحيد عند الميمون

أن فلسفة التوحيد مهمة جدا للإنسانية لأن أهم وظيفة الإنسان أن يعرف خالقه وصانعه بألوه. ولهم يقول موسى بن ميمون في كتابه الشهير حول فلسفة التوحيد.

"اللا ترى أن تعالى ذكره لنا أراد تكملنا وإصلاح أحوال اجتماعنا بشرائعة العملية التي لا يصح ذكرها إلا بعد اعتقادات عقلية أولها. انراك تعالي حسب قدرنا لاصح ذلك إلا بعد علم الآلاه، ولا يحصل ذلك علم الآلاه إلا بعد علم طبيعي إذ العلم الطبيعي متاحاً لعلم الآلاه ومتمتئ له بزمان التعليم كما تبين من نظر في ذلك.

فذلك جعل إفتتاح كتاب تعالى التكوين"

وكتيب موسى بن ميمون المقدمات خمس وعشرين في أثبات وجود الله ووحدانيته وتنزه من أن يكون جسمًا أوفقة في جسم كما شرح تلك المقدمات التبريزية.

قال أن هذا الكلام إشارة إلى بيان أمير أحدهما المقاصد وثانيهما الأبحاث، أما المقاصد ففيها ثلاثة مسائل إحداهما وجود الله تعالى وثانيهما إثبات أنه ليس بجسم ولاقوة في جسم ثالثهما كونه واحدًا.

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إن الله تعالى، قد تبرهن أنه واجب الوجود لا تركيب فيه، لا يمكن أن يكون وجوده من غيره، وليس وجوده لغيره بل كل موجودات فهو له، وهو المكمل لغيره، المبلغ لكل موجود إلى غاية وثايتهما أنه تعالى ليس بجسم ولا قوة في جسم، أما الجسم فهو عبارة في إصطلاحهم عن الجسم المنخيز، أي الذي يمكن أن يشار إليه إنه هناك بالحسن، أما القوة فهي لفظة مشتركة بين القوة الفعلية والانفعالية، واسم القوة يجمعها جميعا، ولفظة الثلاثة أن الله تعالى واحد، أن لفظة الواحد لها معان كثيرة، لكن يريد أن ذاته غير قابلة للقسمة، أنه تعالى واحد في نوعه ليست حقيقة حاصلة لغيره. أنه تعالى واحد في وجود الوجود أي ليس في الوجود موجود أخر غيره، يكون واجباً.

أدلة التوحيد عند موسى بن ميمون

ذكر ابن ميمون في كتابه الشهير "دلالة الحائرين" المقدمات لإثبات وجود الالهة تعالى ووحدانيته. "المقدمات المحتمل إليها إثبات وجود الالهة تعالى وفي البرهان كونه لا تجاوز ولا قوة في جسمه. وأنه جل إسمه واحد، خمس وعشرون مقامة كلها مبرهنة لانشاد في شيء منها قد أتى أرسل وعلومه بعده من المشانين على برهان كل واحدة منها".

ويتعلم من هذا الكلام أنه إشارة إلى أمرين، أحدهما المسائل المشروعة بالقصد الأول، وهي المقاصد، وثانيهما الأبحاث المتعلقة للوصول إلى تلك المقاصد هي المقدمات، أما المقاصد فقد جعلها ثلاثة مقاصد، إحداها إثبات وجود الالهة تعالى، وثانيهما أنه ليس بجسم ولا قوة في جسم، وثالثهما كونه واحداً.

المقاصد، فهي ثلاثة مسائل

1- إثبات وجود الله تعالى
2- أن الله تعالى ليس بجسم
3- أن الله تعالى واحد

يعقد من هذه المسألة أن الله تعالى موجود هو واجب الوجود لذاته، ولا يمكن أن يوجد من غيره، بل كل ما وجد فيه حتى هو الأصل المطلق أو الأغلى المطلقة لسائر الموجودات كلها هو المكمل لغيره، ولهذة قال البعض إن الله تعالى إسم لواحد الوجود المستجمع لجميع الصفات والكمال المنزه عن النقصان والزوال.

1- أن الله تعالى ليس بجسم

أن الله تعالى ليس بجسم ولا قوة في جسم، ومعنى الجسم فهو عبارة عن الجوهر المنخيز أي الذي يمكن أن يشار إليه وبدأته يمكن أن يفرض فيه أربع مقاطعة على زوايا قواطع، وهي الطول والعرض والعمق، والقوة هي فظة مشتركة بين القوة الفعلية والقوة الفعلية، والقوة الفعلية فهي عبارة عن القوة الفعلية والقوة الفعلية، فهي عبارة عن القوة الفعلية، والقوة الفعلية في إنها قوة إنفعالية لأن الجسم يتغير عن الدافع إما با لسهولة كأرطوبة، وإما بالعصر كالبيضة.
"أن الله تعالى ليس يجسم ولاقوة في جسم" ويراد من هذا القول في ضوء التفاصيل المذكورة أن الله تعالى ليس موجودًا بالصفة التي بنياه في تفصيل الجسم والقوة لأن الله تعالى منزه عن أن يكون في الجهة والحيز أو حالاً فيما يكون في الجهة والحيز.

3. أن الله تعالى واحد:

أن اللفظة الواحد لها معان كثيرة، ونريد في هذا المقام ثلاثة فقط لأن نبين بالتفصيل لتفهيم معني الواحد.

معنى الأول: أن الله تعالى واحد معناه أن ذاته غير قابلة للقسمة لأنه ليس له أجزاء تجتمع فتقوم بهذاته. وتوضيحات معني اسمه يدل كل واحد منها على شيء هو في الوجود غير الآخر.

معنى الثاني: أن الله تعالى واحد في نوع ومعناه أي ليست حقيقة حاسلة لغيره.

معنى الثالث: أن الله تعالى واحد في وجود موجود ومعناه أي ليس في الوجود موجود آخر غيره، يكون واجب ذاته فلواجع ذاته هو لاتغيره لأنه كل ما سواه فهو ممكن لذاته.

هذه تفاصيل وتشريع مجرد الدعوي في هذه المسائل وسياق تحقيقها والدليل عليها في صورة المقدمات.

المقدمات

يحتاج إلى هذه المقدمات لإثبات وجود الله تعالى ووحدانيته، بأن يثبت من هذه المقدمات أن الله تعالى موجود بدون الجسم والقوة في الجسم. وأن الله جل إسمه واجد هذه خمس وعشرون مقدمة كلها مبرهنة عليها.

المقدمة الأولى

"إن وجود عظم ما لا نهاية له محال" 

أن المحققين وأكثر علماء الملة الإلهية قد اتفقوا على صحة هذه المقدمة، ويخالفهم معهم طوال، أولاً تلخيص الدعوي ثم تقييم عليها دليلاً.

فقوله للشيء إنه لانهائية له محال بقال علي وجهين.

أحدهما على سبيل السلب والثاني على سبيل التعدد، الأول هو سبيل السلب فمعناه أن لا يكون للشيء المعني الذي يلتحقه نهاية وذلك المعنى هو الكمية، ويسلب عنه النهاية التي هي خاصته. وثانيه كما يقال النقطة لانهائية لها، وأنت الباري والقهيل والنفس لانهائية لها لأن هذه الأشياء لاكمية لها.

والثاني هو العدول فمعناه أن يكون للشيء كمية لكن تنفي عنه النهاية. والعدول على وجهين: أحدهما أن يعرض له نهاية لكنهم غير موجودة يا فعل ومثاله الدائرة، فإن الدائرة فهي ذات كمية وليس لها نهاية. وثانيهما أن يكون للشيء له كمية ويعتبر من نوع وطبيعته أن يكون له نهاية إلا من شأن بعينه أن يكون له
نهاية، مثلًا الخط الغير المتانوي. فلا يجوز أن يكون خط واحد بالعدد موضوعًا للتناهي ولعدم التناغم، وطبيعة الخط قابلة لأن تكون متانية لكن شك يأتي في الخط الغير المتانوي. ويريد أن يبحث هذه المعنى في هذه المقدمة.

أن البراءات المعترنة التي وصلت إليها، واعتمدوا عليها إثبات هذه المقدمة ثلاثة.

1- بررهان التطبيق 2- بررهان الموازاة 3- بررهان السلمي.

1- بررهان التطبيق: معانه أن يجب بعده عن النهاية في خلاف أو ملاء، فمثلًا أنه نفرض خطًا يخرج من مبدأ هو نقطة (أ) في ذلك الخط الغير المتانوي، ويجه إلى غير النهاية، وسيسمى خط (أ،ب) ونفرض نقطة أخرى في هذا الخط بعد نقطة (أ) بمقدار ذراع وهي نقطة (ج) فتحل لنا خطان أحدهما خط (أ،ب) وهو من جانب (أ) متانه من جانب (ب) غير متانه، والثاني خط (ج،ب) وهو من جانب (ج) متانه وجانب (ب) غير متانه...

وقد فرضنا غير متانه فهو محل. فقد لزم من وضع بعده من متانه إلى غير النهاية محل، فيكون ممتعًا محالًا. فكل عموم هو متانه محدود، وذالك هو المطلوب.

2- بررهان الموازاة: أن صوره هذه البرهان أن نفرض في الخط الغير المتانوي خطًا غير متانه، مثلًا خط (أ،ب) بعد نقطتين درع وهي نقطة (ج)، فتحل لنا خطان أحدهما خط (أ،ب) وهو من جانب (أ) متانه من جانب (ب) غير متانه، والثاني خط (ج،ب) وهو من جانب (ج) متانه وجانب (ب) غير متانه.

وكل ما وضعنا في المقدمة هي نفرض الكرة وحركتها وخروج خط متانه من مركزها متوازيا للخط الآخر وصفته معلومة ضرورة. لكن وضع الخط الغير المتانوي فهو المنزوم للأمر المحال فيكون محالًا، فكل عموم ومقدر يجب أن يكون متانهًا وواحدًا.

3- بررهان السلمي: إن كانت الأبعاد غير متانية يمكن لنا أن نفرض امتدادين خرج من مبدأ واحد كساقي المثلث لا يزال البعد بينهما مزايد بقدر واحد من الزيدات. والاما امتدادان الموجودان غير النهاية ما التباعد المذكور، لكن بينهما بعد غير النهاية مع كونه محصورًا بين الحاضرين فهو محل.

المقدمة الثانية

إن وجود أعظم لأنهاية لсужده محال، وهو أن تكون موجودة معاً والمقسود من المقدمة الأولى كان بيان تناهي الأجسام في المقدار، ويقصد من هذه المقدمة الثانية بيان تناهي الأجسام في العدد. لأنها لوقالت الأجسام غير متانية في العدد للكتبت غير متانية في المقدار، وثبت من مقدمة الأولى تناهي الأجسام في المقدار.

المقدار، مقدار الحلثة في هذه القضية فاسد وهو أن الأجسام غير متانية في المقدار. وإفساد التالي يدل على إفساد المقدار. وهو أن الأجسام غير متانية في العدد. وثبت من هذه الاستدلال أن الأجسام متانية في العدد كما أن الأجسام متانية في المقدار.
المقدمة الثالثة

"إن وجود عقل ومعلومات لا نهاية لعدها محال، ولو لم تكن ذوات عظم مثال ذلك أن يكون هذا العقل مثالاً سبيبة عقل الثاني وسبب الثاني ثالث وسبب الثالث الرابع وهكذا إلى ما لا نهاية. وهذا أيضاً بين المحال والذوات على ثلاثة أقسام، أما أن يكون واجباً لذاته أو ممكن لذاته أو متمتع لذاع.

والواجب لذاته وهو الموجود الذي لا تكون ذاته قابلة للعدم أصلاً وقطع النظر من غيره، بل وجوده ضروري لذاته.

والممكن لذاته وهو الذي لا يكون قابلاً للوجود أصلاً، بل لأن أن يكون القدم ذاته.

والمكان لذاته هو الذي قابلة للوجود والعدم ومعناه وجوده ممكن وأيضاً عدمة ممكن، يمكن أن يوجد في زمن وبعد ذلك.

أن الواجب لذاته لا يحتاج إلى علة بأن يوجد بل وجود ضروري، والممكن لذاته لا يحتاج إلى سبب لأن السبب تحصيل الوجود لا يسبب وجود ومكان لذاته لأن يصبح للوجود والعدم فيه سواء فإن بترشج الوجود على العدم ولا الوجود إلا الوجود الذي يرجع وجوده على عدمه والعدم على وجوده، وسيما ذلك المرجح أو الآخر معلوماً ومسبيباً.

أن المصوصد من هذه المقدمة بيان تناهي العلة والمعلومات انترنتها إلى علة لا تكون معلومة أصلاً بل تكون واجبة الوجود لذاتها.

المقدمة الرابعة

"أن التغير يوجد في أربع مقولات: في مقوله الجوهر، وهذا التغيير الكائن في الجوهر هو الكون والفساد.

ويوجد في مقوله الكم، وهو النمو والإضحلال. ويوجد في مقوله الكيف، وهو الإستحالة. ويوجد في مقوله الأمن، وهو الحركة النقلة وعلي هذا التغير في الآين، نقل الحركة بخصوص." XIV

ذكر في هذه المقدمة أن التغير يوجد في أربع مقولات وهي الجوهر والكم والكيف والأين. أن التغير الواقع في الجوهر مثلاً أن يصير الماء هواء، والهواء ناراً، والطار أرضًا أو بالعكس وسمي هذا التغيير كوناً للنوع، والتغير في الكم هو أن يصير مقدار الجسم أزيد مماكان أو أنقص مما كان وزيادة النقصان قد تكون بيا نضماً جسم آخر، ويفرط عليه وسمي النمو كالناموس إذا زاد مقداره وقد تكون بانتقاص جزء منه وسمي إضمامه، وهو مقابلة النمو، والتغير الذي يقع في الكيف، وسميه استحالة كما أصقراً والإحصار.

وتغير الذي يقع في الآين، كحالة النقلة من مكان إلى آخر، ويقال له هذه الحركة على الخصوص.

وسائر أقسام التغير عبارة على متبادل حال ذات ما بحالة أخرى أو أن يوجد أو يحدث فيه شيء لم يكن فيه موجوداً أو أن يزول عنه شيء أن يكون فيه موجوداً.

المقدمة الخامسة
"هي أن كل حركة تغييرخروج من القوة إلى الفعل" xv

ومعنى أن الموجود إذا كان بالقوة في بعض الكميات فخروج الموجود من القوة إلى الفعلون إما أن يكون
دفعة وهوالكون أو على التدريج وهوالحركة، فكل حركة يخرج من القوة إلى الفعل ولا عكس.

المقدمة السادسة

"هي أن الحركات منهابالذات ومنهابالعرض ومنهابالقسر ومنها بالعرض، أما التي بالذات فrna نقل جسم من مووقع إلى مووقع واما التي بالعرض فما يقال في السواد الذي في هذا الجسم انه
انتقل مووقع إلى مووقع. دمها التي بالقسر فحركة الحجر إلى فوق بقياساوقت على ذلك. واما التي بالجزء
فكحركة المسماي في السفينة لأن إذا تحركت السفينة نقول إنه قد تحرك المسماي. وهكذا كل مؤلف يتحرك
بجميله يقال أن جزءه قد تحرك." xvi

وتشريحت هذه المقدمة واضحة من متن المقدمة.

المقدمة السابعة

"هي أن كل متغير منقسم. وكذلك كل متحرك منقسم وهو جسم ضرورة. وكل مالا ينقسم لا يتحرك ولذلك
لا يكون جسما أصلا." xvii

هذه المقدمة تستعمل على أربعة دعاوي: الأول كل متغير منقسم والثاني كل متحرك منقسم والثالث ان المتغير
أو المتحرك فهو جسم والرابع كل مالى المنقسم لا يتحرك ولا يكون جسما.

المقدمة الثامنة

"أن كلما يتحرك بالعرض فهو يسكن ضرورة. إذ ليس حركته بذاته ولذلك لا يتحرك تلك الحركة
العرضية الدائمة كل متحرك بالعرض فهو يسكن ضرورة لأن حركته ليس بذاته.

المقدمة التاسعة

"أن كل جسم يحرك جسما فإنما يحركه بأن يتحرك هو أيضا في حال تحركه.
كل جسم يحرك جسم آخر فإن تحركيه إما لنفس جسميته أو الخاصية فيه.والثاني أن يكون تحركيه بخاصية
فيه وذلك تحركيه بالحقيقة. إنما هي تلك الخاصية لا الجسم من حيث إنه جسم ومثاله حجر المقااطس إذا حرك
الحديد إما يحركه بخصوصا فيه لا الجسمية. والثاني أن يكون لفس جسميته بأن يتحرك أو يحركه لكونه جسم
فحسب. والثاني الثاني باتل إلا كانت الأجسام المتماسة متحركه بعضها لبعض دائما وهو خلاف المشاهد.

المقدمة العشرية

"أن كلما يقال أنه في جسم ينقسم إلى قسمين: أما أن يكون قواه بالجسم كالاعراض أو يكون قواه الجسم
به كالصورة الطبيعية وكلاهما قوة في الجسم.
كل موجودين يختص بالآخر اختصاصا واحدا ناعتا والآخر متعودا يسمي الناعت ومنهما حالا والمنعوت محلأ.
المقدمة الحادية عشرة

أن بعض الأشياء التي قوامها بالجسم قد تنقسم بانقسام الجسم فتكون منقسمة بالعرض كالوان وسائر القوي

الشائعة في جميع الجسم. وكذلك بعض المقومات للجسم لانفصال وجه كالنفس والعقل.

ولأيلزم من انقسام الجسم انقسامها يعني النفوس المجردة التي ليست بجسم كالنفس الناطقة، واما النفوس

الجسمانية كالنفوس الحيوانية والنباتية فيلزم من انقسم الجسم انقسامها. ويراد بالنفس النفس المجردة في

تمكين الجسم في الحياة دون ما هو فيه ووجود.

المقدمة الثانية عشرة

أن كل قوة توجد شائعة في الجسم، فهي متناهية لكون ذلك الجسم متناهياً.

كل جسم فهي مقدارية المقدار والقوة مقدرة بمقدار الجسم بالعرض فمقدارها انما هو مقدار الجسم فتكون

متناهية المقدارا لحرارة.

المقدمة الثالثة عشرة

أنه لا يمكن أن يكون شيءمن انواع التغير متصلاً إلا حركة المنقلة فقطوالدورية منها.

والغرض من هذه المقدمة أثبات الزمان انما يستحوف بالحركة الوضعية وهي الحركة الدورية.

المقدمة الرابعة عشرة

أن حركة المنقلة أقدم الحركات وأولاها بالطبع، لأن الكون والفساد تقدمها استحالة والاستحالة تقدمها قريب

المحبل من المستحيل ولانمو ولانقص الوني تقدمه كون وفساد.

حركة المنقلة: إن الحركة في الكون كانت نموها فإنهما تحتاج إلى حركة المنقلة. وهي حركة الأجزاء التي هي

شبهة المقدمة بالقوة فتنتقل إليه وتنجر فيه طولا وعرض ومعنى على تناسب محفظ حتى ينمو المغتذي

ويتحرك في كبيعته في كمال نشوه وتمامه فإذن لانمو الونين وتفصيم حركة المنقلة.

ان المستحيل ي安慰 بالطبع أو القسر، أن المستحيل بالطبع فهو علي قسمين احدهما استحالة البساط

كاستحالة الماء المسخن إلى البرودة، وثانيهما استحالة المركبات بالطبع كاستحالة الحصر من الحموضة إلى

الحلاوة.

والاستحالة تقدمها قريب المحبل من المستحيل، لأن الكون والفساد ليسا من قبيل الحركات ولكنهما من قبيل

التغيرات، ولمهلة لا يتحققان إلا بعد حركة المنقلة.

المقدمة الخامسة عشرة

أن الزمان عرض ثابت للحركة ولازم لها، ولا يوجد احدهما دون الآخر. فلا توجد حركة إلا في زمن ولا يعقل

زمان الا مع الحركة. فكل ما لا يوجد له حركة فيلس هو واقعا تحت الزمان."

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يشتمل هذه المقدمة على ثلاثة أبحاث: 1- في بيان ماهية الزمان 2- أن الزمان والحركة متلازمين لايتفك احدهما دون الآخر اصلا. 3- في بيان ما المترحك ليقع تحت الزمان.

المقدمة السادسة عشرة

"إن كل ما ليس بجسم فلا يعقل فيه تعدد الآيات فإن يكون قوة في جسم فتعدد أشخاص تلك القوى ي偈ها أو موضوعاتها، فذلك الأموار المفقرة التي ليست بجسم ولاقوة في جسم لايعقل فيه تعدد اصلاً، فإن تكون علا وملولات.

يقصد من هذه المقدمة أن كل ماهية نوعية تتعدد الأشخاص التي تحتها فإن سبب ذلك التعدد النها هو تعدد المواد وتغيير القوابل.

المقدمة السابعة عشرة

"إن كل متحرك فله متحرك ضرورية، إلاما خارج عنه كالحجر يتحرك اليد أو يكون متحرك فيه كجسم الحيوان. فانه مؤلف من متحرك ومتحرك ولذلك إذا ذاتته وأسمه المحرک وهي النفس بيري المترحك وهي الجسد في الحيز. كما كان لا إنه لا يتحرك تلك الحركة، فلما كان المحرك الموجود في المترحك خفاً لابظه الحص. فإن بالحفران أنه يتحرك دون المحرك، وكل متحرك يكون متحرك فيه فهو الذي يسمي المتحرك من تلقائه معناه أن القوة المحركة لما يتحرك منه بالذات موجودة في جملته.

يشتمل هذه المقدمة على بحاثين: البحث الأول: كل متحرك فله متحرك غيره ودل عليه أن الجسم إذا تحرك فما ان يتحرك لأنه جسم أو جسم ما. والأول باطل كما ذكره التبريزي بوجوه، وما الثاني انما يتحرك لأنه جسم ما. فحينئذ يكون المحرك تلك الخاصية للجسم من حيث هو جسم.

المقدمة التاسعة عشرة

"إن كل ما يخرج من القوة الفعل فمحركه غيره وهو خارج عنه ضرورية، لأنه لو كان المحرك فيه ولم يكن ثم مانع لما وجد بالقوة وقتاً، فإن كان يكون بالفعل دائماً، فإن كان محرجه فيه وكان له ما نع فتاريخ فلا شكل ان مزيل المانع هو الذي أخرج تلك القوة الفعل، فافهمها هذا.

كل ما يخرج من القوة الفعل فهو على ثلاثة مراتب: الأول ان يكون ذلك شيء معدوماً فيصير موجوداً كا لحارة. والثاني إن يكون الشيء موجوداً بالفعل في ذاته فيمكن أن يكون لها صفة ما اما صورة أو عرض. ولكن ليس في موجودة، ولهذه يقال هذا الشيء إنه بالقوة كما واعداً ووجد تلك الصفة يقال صار بالفعل. والثالث إن يكون الشيء موجوداً بالفعل كا مل الذات تام الصفات.

المقدمة الحادية عشرة

"إن كل ما يوجد بسبب فهو ممكن الوجود باعتبار ذاته، لأنه إن حضرت اسبابه وجد، وان لم تحضر أو عدمت أو تغيرت نسبتها الموجهة لوجوده لم يوجد."
وكلما لسبيفهو باعتبار ذاته ممكن الوجود والعدم ولا أنه ان واجب الوجود لذاته او ممتنع الوجود لذاته فلا واسطة لهما بين الوجود والعدم لأنه اهدفها متعين للوجود فهو واجب الوجود والثاني للعدم فهو ممتنع الوجود لذاته وكل واحد منها لايمكن ان يكون له سبب.

المقدمة العشرون

"إن كل واجب الوجود باعتبار ذاته فلا سبب لوجوده بوجه ولا على حال
ولايمكن ان يوجد واجب الوجود بسبي للان واجب الوجود ليس له سبب فلا يكون له سبب بوجه من الوجه.

المقدمة الحادية والعشرون

"إن كل مركب من معنيين فإن ذات التركيب هو سبب وجوده على ما هو عليه ضرورة فليس هو واجب الوجود ذاته لا يوجد واجب جذري ويتكونهما.

وثبت من هذه المقدمة ان كل ماهية تكون مركبة من جزنين أو أكثر واجب أن تكون ممكن الوجود والعدم لذا لا يكون واجب الوجود لذاتها مركبا أصلا بل يجب أن يكون واحدا بسيطا منزها عن اتحاد التركيب.

المقدمة الثانية والعشرون

"إن كل جسم فهو مركب من معنيين ضرورة وتلقته اعراض ضرورة اما المعنيان المقومان له فمادته وصورته اما الاعراض اللاحقة له فالكلم والشكل والوضع.

الكم هو مقدار المعين الطبيعي للجسم اما الشكل فهو عبارة عما يحيط به حد او حدود واما الوضع فهو عبارة عن الهيئة الحاصلة للجسم.

المقدمة الثالثة والعشرون

"إن كل ما هو بالقوة وله في ذاته امكان ما فقد يمكن في وقت ما ان لا يوجد بالفعل.

ويراد من هذه المقدمة ان كل ما هو بالقوة وهوكل ما يمكن ان يوجد بالفعل ولم يوجد،فليس هي مجرد الامكان بل هي عبارة ان يكون الشيء ممكن الوجود والعدم ولناته إذا وجد وهوخرج من القوة الى الفعل.

ولهذه اذا حدث الشيء لايصير واجبا لذته وهويمكن الوجود دائما.

المقدمة الرابعة والعشرون

"إن كل ما هو بالقوة شيء ما فهو ذو مادة ضرورة لأن الامكان هو في المادة ابداً.

إن كل ما هو موجود بالقوة فله مادة تكون محا لا إمكانه قابلة لاستعداده،وبدل عليه انه ممكن امر موجود والا لم يكن ممكن.

المقدمة الخامسة والعشرون
"إن مبادئ الجوهر المركب الشخصي، المادة والصورة. ولابد من فاعل اعتي متحرك، حرك الموضوع حتى يله لقبول الصورة وهو المحرك القريب المهني لمادة شخص ما، فلزم من هنا النظر في الحركة والمحرك المتحرك، وقد بين في كل ذلك ما يلزم تبيينه. ونص كلام أرسطو على أن: (المادة لا تحرك ذاتها) فهذه هي المقدمة العظيمة الداعية للبحث عن ووجود المحرك الأول.

وثبت خلال من هذه المقدمات أن واجب الوجود باعتبار ذاته ليس لسبب لوجوده ولا يكون في كثرة معان اصلا، ولذلك يلزم منه أن واجب الوجود لا يكون جسمًا ولا قوة في جسم فرد تبره أنه موجودا باعتبار ذاته ضرورة ولا يسبب لوجوده ولا تسبب فيه ولهذا لا يكون جسما ولا قوة في جسم وإن واجب الوجود باعتبار ذاته واحد فقط فلا يصح الثبوت فيه فإنه لا يثبت أن تثبت من المقدمات أن واجب الوجود ليس له شريك.

وهو الله تعالى جل اسمه عز وجل، وهو الله أحد اسمه لا شريك له ولم يكن له كفوا ابدا.

أدلة التوحيد عند المتكلمين

بعد ذكر أدلة التوحيد عند ميمون نبحث عن أدلة التوحيد عند المتكلمين المسلمين لأن يفهم ادليتهم ويعرف الفرق بينه وبينهم.

آراء المتكلمين حول أثبات أدلة التوحيد

أولاً يثبت المسجدان المحدث حديث العالم وأن له محدث، فإن العالم بجميع أجزاءه محدث إذ هو عيان واعراض "xviii" فالاعيان والإعراب لا يخلو عن الحوادث وكل "والمilik بجميع أجزاءه محدث إذ هو عيان واعراض ما لا يخلو من الحوادث فهو حديث فالعالم حديث وبكل ما سوي الله تعالى فهو عالم يقال عالم الأجسام وعالم الإعراب وعالم النباتات وعالم الحيوان وغير ذلك. يجمع جميع أجزاءه ومعناها من السوات وما فيها الأعراض وما عليها محدث أنه يوجد بعد العدد خلافاً للفلسفة لأنه قالون بقدم السوات بما يوازها، وثبت منه أن العالم محدث وكل محدث له ضرورة محدث والحدث للعالم هو الله تعالى أي الواجب الوجود الذي يكون وجوده من ذاته ولا يحتاج إلى شيء اصلا.

وقال الغزالي: "كل حداث للحدث سبب والعالم حادث فيلزم منه أنه سببا" xix

وسبب العالم هو الله تعالى فهو قديم وليس له جسم ولا متغير وليس له جهة من الجهات، وأن الله تعالى واحد.

وذلك فضل الغزالي كل من هذه النقاط في صورة عشر الدعاوي.

وان صانع العالم هو الله تعالى وهو الواحد لا شريك له أحد أبدا، ويشتت المتكلمون الواحدانية الله تعالى بطريقتين 1- طريق التماثل 2- طريق التفت‏أ

طريق التمثال: ومعناه أنه يقول: إن لو كان للعالم إلهان لوجب أن يكون الجوهر الذي لا يخلو عن أحد الضدين، بما أن يعني عنها وأبيجع ضداد معا في زمان واحد وموضوع واحد، وهذا أيضاً محال. ومثاله.

إذا أراد أحدهما أن يحرك الجسم ويجوز أن يزيد الآخر تسكينه فيلزم أن لا يتحرك ولا يسكن.
أو يكون متحركاً وساكنأً معاً. يستلزم منه سائر المحالات، فثبت دعوانا أن صانع العالم وموجهه واحد لاشريك له.

طريق التنتغير: وقالوا: لوكان ثم إلهان، لوجب أن يكون لهما معني واحد يشتركا ن فيه، ومعنى يوجد لأحدهما ولا يوجد للأخرى ووقع التنتغير.

ووجود الفعل يدل علي فاعل ضرورة، ولا يدل علي عدة فاعل، أن المدعين إلهين أو ثلاثة أو عشرين أو أي عدد اتفق ولا فرق بينهم، لأنهم يثبتون عدة فاعل للفعل لكن الفعل لا يدل علي عدة فاعل بل يدل علي فاعل واحد.

وقال ووجود الإلهان لا يمكن فيه فهو واجب الوجود فبطل إمكان الكثرة، ووجوده تعالى لا إمكان فيه.

وإن كانت هذه الموجودات يستقل بفعلها الواحد، فالثاني فضل لا يحتاج إليه، وإن كان لا يتم هذه الموجود ولا نتظم إلا بإثنيهما معاً فكل واحد منهما عجز لإقناعه فلا. فليس هو مستغنيا بذاته، وهذا هو فرع من التمتع.

فثبت من هذه الدلائل أن صانع هذا العالم هو الواحد الواحد الصمد لاشريك له أحدا أبدا.

النتائج المهمة

1- التوحيد هي أهم فرائض النسانية.

2- التوحيد هي معرفة الخالق والصانع.

3- ينقسم التوحيد إلى ثلاثة أقسام.

4- إن موسى بن ميمون هو فيلسوف يهودي وشريح للتوراة لأنه شرحه في صورة المشنا.

5- وتأثر من حضارة الإسلامية لأنه حصل العلوم من العلماء المسلمين.

6- إن ديناه اليهودية هي دين متوازية ولهذه كان التوحيد موجود فيها في عصور الوسطى كما ظهر من الأديان موسى بن ميمون.

7- وقال إن واجب الوجود موجوداً لذاته لا جسما ولا قوة في جسم.

8- واستدل من الأدلة الفلاسفة على التوحيد.

9- يثبتون المتكلمين التوحيد بحدث العا.

10- إن آراء المتكلمين ورأي موسى بن ميمون مماثلا في أن صانع العالم وسبب لهذا العالم هو واجب الوجود وهو الله أحدا لاشريك له أبدا. 

١٣- سورة الحجرات الآية ١٣
فلسفة الإسلام مع الآخر بقم شوقي عبد اللطيف ایوب مجلة الصادرة عن دیوبند محرم ۱۴۳۳

دليلة الحنرین لموسي بن میمون تحقيق د. حسسین ائتیاء مکتبة الثقافة


شرح العقائد النسفية للعلامة سعد الدين الطهاری ص ۳۲۳ مکتبة رحمانیة لاهور

الاقتصاد في الاعتقاد للامام محمد ابی حامد الغزالي الطوسي ص ۴۹ الطبعة الأولى ۱۹۷۷
ISLAMIC RESEARCH METHODOLOGIES

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ABSTRACT: Research Methodology is a systematic approach to reach conclusions. The subject of Islamic Studies is inter related to all kinds of knowledge whether they have theoretical background or physical. Like other sciences this subject too requires specific methods to maintain research work. The researcher in this field most often suffers from confusion in adopting a proper and balanced approach. In this article such kinds of research methodology have been discussed scholarly in light of Quran and Sunnah aiming at to provide a guide line for researchers. Moreover qualities of a researcher have also been highlighted which is an integral part of research.

Keywords: - - - - - توثيق

Introduction:

منج البحث كموضوع كي نتائج تك پہنچئے كي لئے منظم طریقة کار بے اسلاميات كا مض شعی بانے علوم وفنون کے ساتھ بای بار مربوط بے یاس مہی تحقیقی کام کرنا كے لئے مد اختیار کرنا ضروری بھونا بے جس کے انتخاب میں ایک محقق عموما تشویشی کا شکار بوجاتا بے اس معلوم نہیں بھونا کے انتخاب کام کے لئے یکسی مہی تحقیقی کام کے لئے کون سا منج اپنے یک قضیہ نمائی کا ارثی کِل ممکنی منجی کاجانزہ لیا گیا یکی وہ اوصاف بھی ذکر کے گئے بین جو ایک محقق کے لئے ضروری بھی۔

منج البحث كا مفروم

منج البحث مرکب اضافی بے جس مین منجی کی اضافت بحث کی طرف کی گئی بے کون کے مرکا اضافی مین مضاف الیہ اصل اور مضاف اس کی تابع بھونا بے اس نے سب سے پہلے لفظ بحث کی تحقیق کرتی بین۔

بحث کا مفروم

بحث مصدر کا صیغہ بے اس کا م [بہد بھ] بے اور یہ باب فتیح آتے بے اس کا نگوی معنی کھودنا اور تلاق کرناتا بے بے لفظ معدن [کان] کے معنی مین بھی استعمال بھونا بے جس سے قیمتی آشیاء کہود کرنکالی جاتی بین ( ) قران حکیم مین الله تعالی ارشاد فرماتے بین:
فِیۡنَ اللّهُ غَزِیًّا یَجۡعَلُ فِیۡ الْأَرْضِ (۲) ۡوَرَبَّتۡ الْمَّلَکِ الْأَرۡضِ لِیاَبِیۡ وَهُوَ زَمِینٌ لِکَ وَهُوَ مَرْتَبّ مَسۡرُورٌ لَّهُ (۳) ۡوَهُوَ مَدۡرَسّ لَّهُ مَهْۡمَّرَ نَّبِیۡ ﻏَرْبَنَا ﺑُنِّیۡ ﻋَلَیۡهِ ﰒ ۡوَ لَهُ كَ کُرِئَتُهُ ﰒ ۡوَ لَهُ مَهۡمَّرَ نَّبِیۡ ﻏَرْبَنَا ﺑُنِّیۡ ﻋَلَیۡهِ ﰒ ۡوَ لَهُ كَ کُرِئَتُهُ ﰒ ۡوَ لَهُ مَهۡمَّرَ نَّبِیۡ ﻏَرْبَنَا ﺑُنِّیۡ ﻋَلَیۡهِ ﰒ ۡوَ لَهُ كَ کُرِئَتُهُ ﰒ ۡوَ لَهُ مَهۡمَّرَ نَّبِیۡ ﻏَرْبَنَا ﺑُنِّیۡ ﻋَلَیۡهِ ﰒ ۡوَ لَهُ كَ کُرِئَتُهُ ﰒ ۡوَ لَهُ مَهۡمَّرَ نَّبِیۡ ﻏَرْبَنَا ﺑُنِّیۡ ﻋَلَیۡهِ ﰒ ۡوَ لَهُ كَ کُرِئَتُهُ ﰒ ۡوَ لَهُ مَهۡمَّرَ نَّبِیۡ ﻏَرْبَنَا ﺑُنِّیۡ ﻋَلَیۡهِ ﰒ ۡوَ لَهُ كَ کُرِئَتُهُ ﰒ ۡوَ لَهُ مَهۡمَّرَ نَّبِیۡ ﻏَرْبَنَا ﺑُنِّیۡ ﻋَلَیۡهِ ﰒ ۡوَ لَهُ كَ کُرِئَتُهُ ﰒ ۡوَ لَهُ مَهۡمَّرَ نَّبِیۡ ﻏَرْبَنَا ﺑُنِّیۡ ﻋَلَیۡهِ ﰒ ۡوَ لَهُ كَ کُرِئَتُهُ ﰒ ۡوَ لَهُ مَهۡمَّرَ نَّبِیۡ ﻏَرْبَنَا ﺑُنِّیۡ ﻋَلَیۡهِ ﰒ ۡوَ لَهُ كَ کُرِئَتُهُ ﰒ ۡوَ لَهُ مَهۡمَّرَ نَّبِیۡ ﻏَرْبَنَا ﺑُنِّیۡ ﻋَلَیۡهِ ﰒ ۡوَ لَهُ كَ کُرِئَتُهُ ﰒ ۡوَ لَهُ مَهۡمَّرَ نَّبِیۡ ﻏَرْبَنَا ﺑُنِّیۡ ﻋَلَیۡهِ ﰒ ۡوَ لَهُ كَ کُرِئَتُهُ ﰒ ۡوَ لَهُ مَهۡمَّرَ نَّبِیۡ ﻏَرْبَنَا ﺑُنِّیۡ ﻋَلَیۡهِ ﰒ ۡوَ لَهُ كَ کُرِئَتُهُ ﰒ ۡوَ لَهُ مَهۡمَّرَ نَّبِیۡ ﻏَرْبَنَا ﺑُنِّیۡ ﻋَلَیۡهِ ﰒ ۡوَ لَهُ كَ کُرِئَتُهُ ﰒ ۡوَ لَهُ مَهۡمَّرَ نَّبِیۡ ﻏَرْبَنَا ﺑُنِّیۡ ﻋَلَیۡهِ ﰒ ۡوَ لَهُ كَ کُرِئَتُهُ ﰒ ۡوَ لَهُ مَهۡمَّرَ نَّبِیۡ ﻏَرْبَنَا ﺑُنِّیۡ ﻋَلَیۡهِ ﰒ ۡوَ لَهُ K
انسان فكر معلومات كا ایک خیزہ ہے جس میں وہ اپنے حواس، عقل کی خارجی ذرائع [رہی الیہ] میں اور دوسروں کے تجربات سے بہت کچھ ذخیرہ کرتا ہے معلومات جمع کرنے کا یہ سلسلہ انسان کی بچپن سے لے کر زندگی کے اختیارات تک جاری رہتا ہے۔ غیر رسمی طور پر وہ کانات کا ایک دامی طالب علم رہتا ہے پھر انسان دوسرا انسان سے جدی گا اور افسانہ کا مالک بوتا ہے۔ بپی تفاوت انسان کے درمیان فطری ہے اس نوع کا نتیجہ یہ ہے کہ انسان کو ایک دوسرا کے تجربات سے فائدہ اٹھانے کے موقع منے پس سے علم کے نئے گھوڑے دریافت بوٹہ بنی۔

اللہ تعالیٰ نے اس دینا کے اندرون زندگی کے سبب میں کے بین اور انسان کے تمام ضرورتیں بوری کرنے کا انتظام فرمایا ہے۔

ارشد خداوندی ہے: (و لقذ کرمًا نہیں) ایہ دین و حملہ کی طرح اور اکثریت کا کہو اور بے۔

خُلْقاً تَفْصِيلًا (ہے)۔

جنابہ سیدنا ادیب مہدی کی انسان کہ پہلے سے قبل اس زمانہ کو رہنما کے قابل علماء اللہ تعالیٰ نے اس کاتنات کے اندرون ایک اصول جاری فرمایا ہے کہ بر مسبب [cause] کو سبب [effect] ہے کہ تابع کرنا ہے، بہ مشاہدہ کرتے ہیں کہ سرج سے روحانی اور حرفیہ پہلی پہلی کی نعمت سے تمام خلافات زندہ پیش دوائی سے انسان کو صحت ملنی ہے وغیرہ ان سے پہلے مستندی بین جو اس کے دائرے سے۔

سے بھت کہ بین چنین عادات چند ہیں کہ جیسے کہ معجزات ہیں۔

اس سلسلہ انسان کو پہلی کچھ سچیں پر مجبور کیا اور اسی زندگی کو محفوظ اور پر اسناش بنانے کے لئے اللہ تعالیٰ کی نعوت کو استعمال کرتا ہے کہ کئی کئی کئی کئی کئی کئی ہزاروں رازوں کو ناگہانہ لگا معاعشرت اور تمدن کی بینادیون ذائقہ اوور ان کئی ایجادات کئی ان کئی لیکن اس کے ساتھ ساتھ خالق کاننات نے روپ اول سے انسان کو بامقدار زندگی گزارنے کا اورس کے عقائد اور خلافات سنوارنے کے لئے پیغمبر ان کے ذریعہ اپنی تعلیمات بھیجوئے کا انتظام بھی فرمايا۔

جنابہ ابتداء بہ سے علوم وفوائد کی دو قسمیں انسان کہ مابین متعارف رہی بہین۔

1: نظاریاتی علوم (جو فکر ونظر پر مبنی بہین)۔
2: تجرباتی علوم (جو تجربہ کی محتاج بہین)۔

علم کے ان دونوں اقسام پر بحث وتحقیق بوتی رہی ہے۔ محقق کے سامنے ہی مشکل پیش آئی ہے کہ وہ اپنی تحقیق کے لئے کون سامس منزل مقصود تک پہچان پایی۔

اسنام کے لئے بہانہ اسلامی علوم پر تحقیق کرنے کے روایتی اور جدید منابع کی تفصیل ذکر کی جاتی ہے۔

[Inductive Method]

یہ روایتی طریقہ تحقیقی پر چس مین کسی مخصوص علمی موضوع کے تمام تجزیات کا اہتمام کیا جاتا ہے اور اس کا کوئی جزو نہیں جانا اس طرحہ، مین مخصوص مثالوں اور مختلف علمی سرگرمیوں کے ذریعہ نتائج تک پہچانے گئے کو کوشش کی جاتی ہے اس منصب مین ترتیب جزوہ سے کل کی طرف بوتی۔

اس کے دوسرے بہین:

1: استقراء كامل 2: استقراء ناصح
مطلب: اس کو تحیلی یا تجزیتی طریقہ، یہ کہیں این اس طریقہ میں معلومات اصل و قواعد کو بینیاد بنانے اس کی ممکن متاثر اور اطلاعات کی ذاکری کی جاتی ہے استقلالی طریقہ کے بہترین طریقے بے ہے، میں ترتیب کی میں جزو کی طرف بہتی ہے۔ منابع استنباطی فقرات اصول فقہ کی موضوعات کے لئے اختیار ہیں کیہ جن کی استقراء

سے مطلوب حاصل باتی ہے

[Deductive Method]

اس کو تجربی بے اس طرح بوسکی بے: 

اپنی معاشرہ کے ان کو بہترین الف آمر کے لے بین جس میں ہم وہ امور بین جس میں ہم نص صاحب گرامی سے ان کاموں میں مشورہ لے تھے جن میں نص نہیں بھیتا تھا اس وہ اختیار ر حاصل نہیں کہ وہ اسلامی اساتذہ جو دین کے منصوبی احکام میں روشنی کر سکے ہیں کی کہ بھی اسلامی اساتذہ جو دین کے منصوبی احکام بین میں روشنی کر سکے ہیں کہ وہ اسلامی اساتذہ جو دین کے منصوبی احکام بین میں روشنی کر سکے ہیں کہ وہ اسلامی اساتذہ جو دین کے منصوبی احکام بین میں روشنی کر سکے ہیں کہ وہ اسلامی اساتذہ جو دین کے منصوبی احکام بین میں روشنی کر سکے ہیں کہ وہ اسلامی اساتذہ جو دین کے منصوبی احکام بین میں روشنی کر سکے ہیں۔

اس کی ایک اور مثال حديث جبسنیعلیہ السلام بوستکی بے جس میں پہلے اسلام، ایمان احسان اور قیامت کی نشاندہی کے بارے میں سوال بنیاد اس کے بعد پرایکی کی تفصیلات جواب دی گئی پر اور اس کے بعد بھی ایک موضوع اس طرح بوستکی بے کہ قرآن مجید میں وہ گن سے مقامات بین جن میں امر واجب کے معنی میں استعمال بنا

ضوع کے تمام اجزا کا تبیع بتو اس طرح کو ناقص او اور بعض گھیرے ہیں تو اس کو ناقص

یہ طریقہ تقسیمی بر علم میں اختیار کیہ جاسکتا ہے۔

مثال: اقرا ا ر ارشادات میں انسانیہ فه وبصر کر اجگر کر بے کے لے افتاقتیہ ور مشابدیاتی دلائل میں غور کرے

کی تلفن کی نشاندہ بنی بے کہ زمین میں سیر کرو اور پورے غور وہ وہ اوری سے ان لوگوں کے انجام کے قوہو جس کے تعالی میں پگڑیں

سوجوجو اسلامی کہ نافرمان بگڑے بنی۔

ارشاد باری بے: قل سیریا فہ رضی اللہ علیه کی عقیدہ کے دینی گھیرے

اب مجید میں انجام میں کا ایک یہ محض طریقہ جب میں سیر کرو ان لوگوں کی بقا کا

مشابهہ کرنا جذباتی کا استقراء بے جب مطلوب سے پہلے بے بہر

اسی طرح اسلامی دعوت فذكر کی ہیں کہ کا منادی اور انسانیہ وجوہ پر گھیرے نظر دالیاہ تو تمین

خالق کہ وجوہ ہے ان گنت دلائل مل جاڑیہ کی۔

اللہ تعالی فرمانے بین: فلئیز فقہ انسانیہ سے طعام

اسی طرح فرمانے بین: سنریا ایہ ہیہ فہ ایک فہ طریقہ وظیہ علم اللہ تعالیہ کے

ابی اور جگہ ارشاد فرمانے بین: فلئیز فقہ انسانیہ میں خلاق

وجود باری دعوت یک مطلوبہ بے اور کاننات کے اندہ موجود نشاندہ جذباتی بین جن کے استقراء

سے مطلوب حاصل باتی ہے

[End Deductive Method]

اس کو تجربی یا تجزیتی طریقہ، یہ کہیں این اس طرح میں معلومات اصل و قواعد کو بینیاد بنانے اس کی ممکن متاثر اور اطلاعات کی ذاکری کی جاتی ہے استقلالی طریقہ کے بہترین طریقے بے ہے، میں ترتیب کی میں جزو کی طرف بہتی ہے۔ منابع استنباطی فقرات اصول فقہ کی موضوعات کے لئے اختیار ہیں کیہ جن کی استقراء

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سے مطلوب حاصل باتی ہے

[Deductive Method]
اس منہج میں جس طرح قرآنی آیات اور شریعت کے دوسرے مأخوذ مین کامل مہارت کی ضرورت بوٹی ہے۔

[Authentication Method]

اس منہج میں کسی انسانی خبر یا مقولہ [جو موقف ہو[کسی صحت اور عدم صحت معلوم ہو جا سکتا ہے۔ او سبقہ کے قرآنی آیات اور شریعت کے دوسرے کام پر لازمی ہے۔

اس طرح عربی لغات و مفردات کی پیچھے بھی لازمی ہے۔

[Reasoning Method]

اس منہج میں کسی انسانی خبر یا مقولہ [جو موقف ہو[کسی صحت اور عدم صحت معلوم ہو جا سکتا ہے۔ او سبقہ کے قرآنی آیات اور شریعت کے دوسرے کام پر لازمی ہے۔

[Discussion Method]

اس منہج میں کسی انسانی خبر یا مقولہ [جو موقف ہو[کسی صحت اور عدم صحت معلوم ہو جا سکتا ہے۔ او سبقہ کے قرآنی آیات اور شریعت کے دوسرے کام پر لازمی ہے۔
As a descriptive method, the researcher's approach focused on the qualitative analysis of the data. The research team engaged in various field studies, interviews, and historical investigations to gather comprehensive information. The collected data was then analyzed to identify significant trends and patterns.

The study aimed to provide a comprehensive understanding of the historical events and cultural practices of the community. The collected data included oral testimonies, archival records, and archaeological findings. The research team worked closely with local scholars and community leaders to ensure the accuracy and relevance of the collected data.

The project was funded by a government agency and supported by local philanthropic organizations. The research findings will be published in a series of academic journals and presented at international conferences. The research team is committed to sharing the findings with the community to promote cultural preservation and heritage conservation.

The project's goals are aligned with the national agenda for cultural heritage preservation and community development. The research team is optimistic about the potential impact of their findings on the community and the wider scholarly community.

As a qualitative study, the research findings will contribute to a deeper understanding of the community's history and cultural practices. The research team is confident that their work will provide valuable insights into the community's past and present, and inspire further research and community engagement.
کرںے کے لئے استعمال کیا جاتا ہے اس طریقے میں ایک تحقیقی کام کنی طلب، مین تقسم کیا جاتا ہے طلبہ
مل کر اس کام کو سرائج دیا جاتا ہے بین اور اپنے اپنے حسے کا کام پورا کریے بین۔

مثالیں:
ایم فل اور بپی اپنے ذی لیول کے کئی موضوعات اسی طرح ہیں جن پر ایک سے زیادہ مقالہ جاتی ہے تیار پوسٹ کے
بین اسی طرح کی موضوعات کے حصول کو متصل طریقے سے طلبہ مین تقسم کیا جاتا ہے اندرون
ملک اور بپروں اسی طرح مین صوبہ نہ کام مکمل کیا گا چچا ہے۔

بانیار ایجیوشن کمیشن آف پاکستان کی نگرانی میں مختلف تحقیقی مصنوعات
کے جاتے بین جن کا تعلق دیگر فنون کے علاوہ اسلامیات کے ساتھ بھی بیٹا ہے۔

[Research Projects ]

اسلاماتی کونیا الگ الگ تعلق مصنوعات نہیں ہے پذیر اگر ہے کے بھی مربوط ہے اس کا تعلق قا
سیاست، عورتاائیات، اقتصادیات، اخلاقیات، سائنس اور جماعتی صحت جینے سب علوم وفہون سے ہے
جنچانچ کے علوم کو اسلامیات کے ساتھ مربوط ہاک کے بن تحقیقی کام کیا جاسکتا ہے جس کو وحدتی منهج
کبھی بہت ایک جدید طریقے ہے جو بہت مفید ثابت ہوا ہے۔

مثالیں:
- ہر موضوعات اس کی مثل بوسکتی پیک

جمہوری نظام حکومت اسلامی تعلیمات کے نظارے میں مختلف سائنسی حیاتی کے بارے میں اسلامی نقطہ
نظر سود اور اس کے متبادل پلادوں پنگ (پلانس پنگ) کے کہائی اور اسلامی مزاج وگیرہ۔

منجع البحث کے ایمیت

منجع البحث کی ابتی مسلم ہے۔ کسی محقق کے لئے اس کے بعتر جارہ کار نہیں ایک محقق بحث کی
سئے ہوں پر چھوڑ کر نہیں تک پہنچ ہاکے لئے منجع کسی علمی بحث کے لئے قابل ہی ہے جس کی جھیلین روکتی ہے جس
من توہر کر بحث اپنی مربی شکل مین آجا تا ہے۔ اس کے اندر چانسی پیدا بہتی ہے اور منجع کا لگابا
بیاہو ایک تناور اورہیل daunting کی شکل اختیار کریتا ہے۔

موضوع بحث کا انتخاب [Selection of The Research Topic]

تحقیق میں موضوع کا انتخاب جنیاں زیادہ ایم بے اتنا مشکل پر بحث کے لئے موضوع کے انتخاب میں
مندرجہ، ذیل باتوں کا خیال رکھنا ضروری ہے۔

- موضوع میں جدید بنیاد پر ایسے نہ بہت سے پر پرہ کام بیچ کا باہمی اگر ساپک موضوع پر تحقیق کی
- نوعیت اور اسلامی تبدیل کرکے کام کریے کی گشائش بہت نوپر کوئی مضامین نہیں۔
- موضوع کا انتخاب علمی ذوق کی بنیاد پر کیا جانے چسک فن میں مہارت ودیجنسی کہو اس سے کم منتخب کیا
- جانے اور موضوع کا انتخاب کسی مجبوری کے نتیجے مین نہ ہو۔

موضوع غیر منناظر بہر اپنے امور میں متعلق نہ بہت سے فرق، واریت کو بھی ملتی ہو۔
موضوع باحث کی علمی حدیثیت کے موافق ہو یعنی ایسا موضوع نہ ہو جس پر کام کرنا باحث کے لئے مشکل نہ ہو. نیز اکتا آسان مہی نہ ہو جس میں ممتن اثباتی یہ ضرورت ہی نہ ہے پرچم ایم اے لئے لیا کے مقابلا. میں ایم ہل اور ایم ہل کے مقابل. میں بی اچ ڈی کا موضوع وسیع بونا چائی۔

اس کی تکمیل کے لئے وقت کی تحکیقی کہ گنی بوجو ایم فل کے لئے سال اور پر ایچ ڈی کے لئے سال مقرر بونا چائی۔

اگر موضوع کسی مخطوط کے مقرر کرنے سے تعلق رکھتا ہو تو مخطوط تحفظی کام کے لئے موزون اور امپیت کا حامل ہو۔

کی خصوصیات

عنوان البحث [Title of The Research Topic]

عنوان واضح اور جامع ہو۔

بحث کے ادرار جملہ. مباحثہ پر حاصل بکہ ایک جعلک سے اس کی پوئر توصیف اپنیابی۔

اس میں اخصار بور بی جا طولین نہ ہواگرا عنوان ایک لکھ میں اسکے تو بہتر ہوگا۔

اعرابی اور اور قواعد کی غلطیوں سے پاک بھی۔

با حث کا اوصاف

یہ ایک حقائق بے کہ باحث علم وتحقیق کا روح روا اور نمایاں اکتی کے پر علمی کام کا محور و مرکز بے باحث کی سنجیدگی اور اس کا اخلاقی حسن تحفظی کام وو چار جاندگی لگا دیتی ہی یہ ضروری ہے کہ اس کے اندر مدرجہ ذیل خصوصیات موجودہ ہے نہیں نیک نیک کیہ پیکر بونا چائی۔

صادف نیک کیہ مالک بونا نہیں و ناماش اور جب جا سے دور پوئر تحفظی کا محور اور رضا اور مخروع نہیں۔

کسی جیسے بیچ کے لئے پوئر تین دبی دکرکرتی ہے۔

امام ابوحنیفہ (۵ فرماتے بین : العلم لا یعطیک نبض حتی تُعطی کلک) 'علم اپنیا تو حسہ میں اپنے کو نہیں دتا جب تک نہ اپنے پہلی طرح اس کے حوالے نہ گیا کو۔

تحقیقی ذوق کا دلدلہ ہوا اور ایہ تحفظی کام کی خیر فکر ماسا ای پر ترجیح دینے والا بی کیو کہ علم ایک کسی جیسے بیچ کے لئے پوئر تین دبی دکرکرتی ہے۔

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کھمبی پوری ن، بونگی کیوں کہ موڑی حاضل کرتنے کے لئے سمندر مین گروہوں لگاذا ضروری بوتا ہے ( )۔

تحقیق تعبیہ، نگرف نظری اورضد ویہ ہے کہ میں سے نور بھونے مثبت سوچ اور متعنی مزاج کاملک بو
تعصب خواہ مسلکی ہیا لسانی اور تنظیم بند بھونی طرح پھیر کیاہ اور قابل نفرت ہے اسلام سے مسیحی
حکم دینے ہے کہ دشمنوں کو بھی ان کا حق ادا کرکے ان کی ساتھ انصاف کی جاگئے ارشاد خداوندی ہے:

‘’اورکسی قوم سے دشمنی تمبی سے بات پر ملائے نکرے کہ تم انصاف نکر کر چکے کے قبیلہ تر نہ تکون‘’

ان收取 کے قیام مین جیلسائی عزاداری رکاوٹ بنتی ہی وہ اوپیری بروئی کے مانع ثابت بوتی ہے ۔

ارشاد فرمائے بین:

یا یہاں نفس ایں اقدام دہی بل ہیں الجس کے لوگ سے اور ایہ ہیں جس کے میں ایہ ہیں جس کا کسی ہے محض کسی
ہمارے کے اس صورت پر کاننہ کئی اور کسی ایک میں خوشہوں وہ غلط کسی نہ ہون ہے دھڑک کر

علیہ خیانت سے اپنے ہو چیزے رکھے جوہ ہی فیصلہ کرے، کہیں ہی رائے قائم رکھے اس مین حقائق سے

چھس پوشی نے کرے - کسی اور کے کام کو اپنے طرف منسوب نکرے ۔

اس کو علمی سرحق تکبیر کہ ہی بعض ابتدا کے دور میں اکثر تحقیقات علمی سرحق سے

کبھی ہی دوچرخہ کہ ہی بعض ابتدا کے دور میں اکثر تحقیقات علمی سرحق سے [Plagiarism] کبھی ہی ہی

اس لمبی بیان کی ایک سادہ بیان جس کے حصول پر عمل کریں اورہے اس بالا نہاوا میں

سے استفادة کی کوشش کرتا ہو۔

جیساکہ کسی نے کہی ہے: 

ان المعلوماً وطنی کلاهماً لا یعمال إذا هم لم یکارما

فاصیرلداک ن جفتوناً طینیہ"، واقع ہے جہاں ان چقوہ معلماً

اہم اہم طیب کا اکرام نہ ہے جوہ خیر خواہ ثابت نہیں بون گی اگر تینی ہے طیب سے لپرفروپے کی

تو اپنی بیماری پر صبر کرو اور استدہ سے یہ وقائی کی تو اپنے جہل پر قافلہ رہو ( )۔

زمانہ کے عرف اور تحقیق سے واقف پوکور کی۔ "مَن لم یکنَ غنی عالی بہال زمانَا فَعَلَ جَاهِلَ؟" 

جو کونی زمانے کے عرف سے واقف ہے نہ پور وہ عالم نہیں ہے ( )۔

 مختلف زبانؤ خصوصاتی جاتا ہے اسلامی موضوعات پر کام کریں کہ لئی عربی زبان سے واقفیت

لارمی بے کہ اسلام کے تمام اصل مداخل عربی مین بیج تک رسائی بیج عربی سیکھے ناقص ہے۔

تحقیق مبارک ہے نہاوا اورکسی علم کے اصل مداخل اور متون تک رسائی کرسکتا ہے کیوں کہ

اسلام کے بیٹے کے اور میں ذیلی اور تاثیری مصادر سے اکھا اورکسی تحقیق کے اصولوں کے خلاف نہ

مثال ایک محقق کسی حدیث کا حوالہ مشکوک المصاحب سے دیتا ہے تودست نہ پوکور کی بھی کتاب
Synopsis
Khutba Al-Ijtima' in Quraan: A Comprehensive Study

陈述研究问题

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اسب سے پہلے عنوان البحت، پہر مقدمہ بھی است کے بعد مقالہ کو ابواب میں تقسیم کیا جاتے گا. ابواب کو ذیلی قصور میں، فصول کو مباحث، اور اراکم میں ایک مباحث کو مطالبہ با حروف میں منقسم کیا جاتے گا. اگر مقالہ کا حجم بہت زیادہ ہو تو ابواب سے پہلے اس کو اجزاء میں تقسیم کیا جاتے گا. اس کے لئے مدرجہ ذیل جدول ملاحظہ ہو. مقالہ

اجزاء
ابواب
فصل
مباحث یا اراکم
مطالبہ یا حروف
فروع


خلاصہ البحت: [Conclusions]

خلاصہ البحت کے بعد نتائج ذکر کئے جاتے گئے نتائج مین وہ چیہد قابل نکات پیش کی جاتے ہیں جو تحقیق کے دوران باحث نے دریافت کیے بہیں. اس کے بعد تجاوزات یا توصیبات ذکر کئے جاتے ہیں. تجاوزات کے بعد فنی فہرس ذکر بون گے جن کی تیاری مین مبارات سے کام لینا ضروری ہے.

توصیبات: [Suggestions]

توصیبات کے بعد فنی فہرس ذکر بون گے جن کی تیاری مین مبارات سے کام لینا ضروری ہے.

- ان میں پہلے فہرس قرآنی آيات کی بوگی جس میں قرآن مجید کی سورتوں کی ترتیب کو منظور رکھتا جانے گا. پہلے آیت کریمہ یا اس کا ایک حصہ کے بعد قرآن مجید کی سورة کا نام مع نمبر اور آخر مین صفحہ نمبر درج کیا جائے گا.

- پہر فہرس احادیث آئے گے. اس میں الف بائن ترتیب کا لاحظ بوگی اس کا طریقہ یہ بوگی کے پہلے احادیث مبارکہ کو الف بائن ترتیب دی جانے گی. فہرس بائنے وقت پہلے حديث کا ایک حصہ ذکر ہوگا اور پہر صفحہ.
نمبر دیا جانے گا۔

اگر احادیث میں صحیح کے ساتھ ضعیف اور موضوع بہت بون تو ان کی الگ الگ فرہست بنے گی۔ اسی طرح ضعیف روا کی فرہست بہت آئے گی۔

-تیسری فرہست آثار واقوال پر مشتمل بوگی اس سے مراد مقال کے اندر احادیث کے علاوہ دیگر اقوال پہیوں میں بھی الف بائی ترتیب بوگی۔

-چوہتی فرہست مین اعلام [وہ مشہور شخصیات جن کا ذکر مقالے کے اندر آیا بو] الف بائی ترتیب سے ذکر ہو گی۔

-پانچویں نمبر پر بلدان و اماکان[مقالے مین ذکر شده مقامات] کی الف بائی ترتیب سے فرہست بنے گی۔

-اگر مقالے مین اشعار ذکر ہو تو ان کی فرہست چھتے نمبر پر بوگی۔

-اس مین بھی الف بائی ترتیب اختیار کیا جانے گا۔

مصادر و مراجع:

اس مین وہ تمام کتب [خواہ وہ اصلی متون بون با ثانوی]الف بائی ترتیب سے ذکر ہو گی جس سے استفادہ کیا گیا ہے اور حاویاہ مین درج کی گئی بن کتاب کا پورا نام اس کا مصنف، مکتبہ کا نام اور سن اشاعت درج کرنا چاہیے اگر سن اشاعت معلوم نہ ہو تو ’’لکھنا چاہیے۔

حواشی درج کرنے کا طریقہ:

اس کے لئے دو طریقے مروج رہے بھی۔

-حواشی بر باب کے آخر مین عدید ترتیب سے ذکر کئے جاتے بھی۔

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لومائى

٢: لرود نوتوِدُب انتِناءات بِد مقالات مهدُب ذارم دوسرى

طريقُ زيايد مفيذ ثابت بُو بِد مقالات مهدُب ىى لنّه اس كا مطالعه

كنّا أسّان بوّتعا بُي دوسرى طريقة مهدُب أكر حواشي كي تفصيل دوسر

٢: صفُحه تُك بُرّه جانى تَوْبُه صفحه كى اخّر مين ""، كا نشان دينا

جابي اسى طرح يَبى علامات دوسرى صفحيه كى حاشيه كى شروع مين

ديّى جامبه.

حوالى دينى كى طريقى:

حوالى دينى كى بهي دو طريقة مين

سبّىّ بٌبُهَ مصنف كا نام بُر كتب كا نام جلس كاحواله

دينابى]اس كى بعد كتب كا جلد اورصفحه نمبريّ بُر مكتبه كا ذكر اورآخر

مين سن اشاعت ذكر كيّا جاتا بُي مثال

عن عبّداءٍ بن عماصّ صالح رسو ل ىا: إنّ أحبب اسماءكم إلى اعتقالي

وعبد الروّمان.

مسلم بن حجاج القشيرى ابوالحسين، صحيح مسلم، كتاب الآداب [ ]

النهي عنى التكنى بأبي القاسم [حديث: - ]

دوسري طريقة مين بٌبُه كتب كا نام بُر مصنف كا نام آتا بُي

بربرىّّ عنّ النبيّ قٌبَال: إِلَىٰ إِبْرَاهِيمٍ بِضَعُ وَسِيْعَانَ أوّ سبّعْانَ


 الصحيح بخارى، محمد بن اسماعيل بخارى ابو عبدالله، كتاب اليمام [ ]

امور اليمام [ ] حديث: 

محقق دونون اسلوب اختيار كرسكتا بى البت دوسرى طريقة مين

فبارس مرتب كرنا أسان بوجا .
حوالة دیدے وقت ان باتون کا خیال رکھنا چاھیے:
- اگر کسی کتاب کا حوالہ پہلی مرتبہ دینا بہت پوری تفصیل دکھا کیوں پوگئی جو اور پہلی ہے۔
- کسی کتاب سے دوسروں مرتبت حوالہ دینا بہت پہلے کرنا صرف كتاب کا نام جلد اور صفحہ نمبر لکھنا چاھیے۔
- قرآن مجید کی آیت کریمہ کا حوالہ دینا کرنے مین سورت کا نام لفظ
- سور قسمیت [سورة نمبر اور آیت نمبر دینا کرنا پوگا۔
- حديث مبکرہ کا حوالہ دینا کرنے وقت كتاب کا نام اور نمبر اس کے بعد باب کتاب کا نمبر اور نمبر آیت کا نمبر دینا کرنے کا نمبر لکھنا جانے گا مثلاً
- اقال: المسلم أخر المسلم لایظلمه ولا يسمعنمُ، وَمَنَ فِي حَاجَةٍ أَخْبِيكَ حَاجَتُهُ...۔
- صحیح بخاری؛ كتاب [ لاىظلم المسلم المسلم ]
- حديث:
- اگر کسی حديث کی کتاب کی ترتیب [ احادیث کی عددی ترتیب ] کی گئی ہو لیکن ان مین كتاب اور باب نہ بہت پھر جلد نمبر اور صفحہ نمبر لکھ کر آخر مین حديث نمبر بہت بھی گوگا۔
- عَنْ أُحْمَدِ ﺑِنِ ﺗَارِقٍ ،حَدَّثَﻧَا حِبْیْبَ أَخُوَ ﻋَنْ ابِی اسحاک عن الحارث، عن
- علی مرفوعَالصلوة عمادالدين....۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔یہان [ ] صفحہ نمبر ہے۔
- اگر کسی حديث کا ذکر کئی كتابوں مین بوچکا ہو تو اس مین زمانی ترتیب اور استنادی حديث کا لکھا رکھنا چاھیے پہلے صحاح ستم اور اس کے بعد دیگر متون کا ذکر کرنا چاھیے۔ اسی طرح جس کتاب کے

بحث کے اندہ كتاب کی خامیاں:

اسلب کی خامی: باحث اپنی اظہار سادہ اور عام فہم اسلوب مین کرے مشکل کلمات اور پچیدہ جملوں کا استعمال نہ کرے۔ ادبی کی بجانے علمی طرز اپناؤے
کلام میں بے جا طوالت، جھول اور تکرار سے گریز کرے مگر کیونے?
چوئین بحث کی خامیان شمار بوتی بین.

قواعد لغت کی خامی:


ابهام کی خامی:

باحث اپنے موقف کا ذکر وضاحت سے کرے اور اس میں ابہام نہ چھوڑے کہ مطلب سمجھے مین نہ آئے۔ ایک حکم کو تعمیم کے ساتھ ذکر کرنا جب حقیقت اس کے خلاف کا تقاضائی کرا ہو درست نہیں۔ مثالاً بحث کی جوہری کہ تمام عقلاء کی رائے اسی طرح ہے اور اصل میں ايسا نہ ہوا کے علاوہ کسی عام حکم یا رائے بغیر دلیل کے خاص نہ کرے۔ مثالیاً لکھندے کہ امام ابوحنیفہ۔ رحمہ الله اس رائے میں انس نہ کرے۔ حالانکہ اصل مین وہ سب کی رائے ہو۔
سابقہ اقوال ذکر ہوئے کی خامی:

باحث، سباقین کے اقوال لکھنے میں احتیاط سے کام لے۔ ان کی طرف کونئی اس سے قول منسوب نہ کرے جو ان کا نہ ہو۔

توثیق کی خامی:

باحث کے لئے ضروری ہے کہ کسی حديث کی توثیق یا تردید بہت بھی تو ثبوت کے نہ کرے۔ بعض اوقات ایک حديث صحیح بہت اور اس کو ضعیف لکھ دیتا ہے اسی طرح ضعیف کو صحیح سمجھے بیٹھتا ہے جو ایک بہت بڑا خامی ہے۔

رگوز اوٹاف کے غلط استعمال کی خامی:

رگوز اوٹاف کا لگتی ہے کہ اندر برہی ابمتی ہے اور معمولی تبدیلی سے مطلب کچھ کا کچھ بوجاتا ہے محقق کے لئے ضروری ہے کہ وہ جملہ کے اندرو وقف اور وصل کے رگوز سے واقف بو فقہ ستاف کامہ کولون، علامات استفهام اور اظهار وتعجب کا درست استعمال جنا تا ہو۔

علمی مواد نقل کرنے کی خامی:

سابقہ مواد نقل کرنے میں ضروری پوٹا ہے۔ اس مین باحث اکثر خطاکیا شکار بوجاتا ہے۔ اس خامی سے بچنے کے لئے ان دو طریقوں کو سامنے رکھی ہے کہ جو مناسب بو وہ اختیار کرے۔ ان کو نقل حرفي: جس مین حرف بت حرف مواد نقل کیا جاتا ہے اور ان کو
قوسین میں در ج کیا جاتا ہے۔

2: نقل معنوی: اس میں باحث اپنے الفاظ میں سابق مواد کی ترجمانی کرتا ہے۔ اس کے لئے ضروری ہے کہ باحث اس مواد کا مفہوم اچھی طرح جانتا ہو۔ اگر مواد مختصر بون یا ناص سے اس کا تعلق رکھتا ہو جن کو باحث اپنے الفاظ میں سمیت نہ سکتا تو پھر اس کو بو بھو نقل کرسکتا ہے۔ اگر مواد کی فہرست طویل بو تو اس کا مفہوم اور خلاصہ اپنے الفاظ میں ذکر کرے۔

تعبیر کی خامی:

من مین شخصیت کا ذکر بو تو انہیں مناسب اعضاً کلمات سے ملقب کیا جانے رئیس اللہ کا نام گرامی آجانے تو حرف ص یا صلعم پر اکتفا نہیں کرنا جاپی بدلکو پورا یا علیہ السلام لکھنا چاپیئے اسی طرح دیگر انبیاء کرام کے ناموں کے ساتھ علیہ السلام پورا لکھنا ضروری ہے۔ صحابی کے نام کے ساتھ پورا جملہ رضی اللہ علیہ کرنا چاپیئے۔ اگر کسی وقت شده عالم کا نام آجانے تو رحمت اللہ علیہ لکھنا چاپیئے۔ نہ کہ صرف [رح] عالم کے نام سے قبیل مولوی، مولانا، علاما، یا شیخ کا سابق استعمال کرنا مناسب ہے۔

علمی مواد جمع کرنا کا طریقہ:

نظام ارجالی: اس طریقے میں باحث اپنے موضوع کے متعلق تے

بلا ترتیب جمع کرتا ہے۔

نظام المفروضات: اس طریقے میں باحث اپنے موضوع کے ابوااب اور

فصول وغيرہ الگ الگ لفافوں میں جمع کرتا ہے۔

نظام الدوسيہ: اس میں مواد فائل میں جمع کنے جاتے ہیں۔ اور بعد میں

ترتیب دی جاتی ہے۔
مصادر ومراجع

(1) تاج العروس من جواهير القاموس،مرتضى زبيدی : دارالبداية
بيروت سن طباعة ندارد

(2) المفردات في غريب القرآن ،امام راغب اصفهاني
بيروت سن طباعت ه

(3) محمد بن بلتاجی بن حسن راکی کو کفر الشيخ [شمالی مصر ] کے ایک علمی گھرانے مین پیدا بونے شیخ محمد ابوزبره کے شاگرد تھے کلیت دار العلوم جامعه قابره کے رئیس اور عمید[ثنی] رہ چکے بین آپ نے مختلف موضوعات پر سولہ مفيد لکھی بین : ایریل کو وفات چاگنے اور آبائی وطن مین دفن بونے شیخ بلتاجی راکم کے استذا ره چکے بین. [امالی محاضرات الشيخ محمد بلتاجی گیر مطبوعه

[ ) محاضرات في منابع البحث لطلاب السنة التميمیة ، استاذ دکتر محمد بلتاجی ،صن [امالی محاضرات الشيخ بلتاجی گیر مطبوعه

(2) منهج الاصول في علم الاصول ، محمد بن عمر البيضاوی
عالم الكتب رياض سن طباعت ندارد ؛عقد الجيد في احكام الاجتباب ، شاه ولی الله دبلوی ص ،المطبعة السلفیة قابره سن طباعت ه

(3) المفردات في غريب القرآن

(4) صحيح بخاری ،ابو عبد الله محمد بن اسامعیل بخاری ،كتاب التفسیر

[ ] باب تفسیر سورة المائدة

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(كتشاف اصطلاحات الفنون والعلوم : محمد أعلى تهاني مكتب

لبنان بيروت سن طباعة)

(التعريفات ،علي بن أحمد بن علي الجراني ،سن ،دار الكتب

 العربي بيروت سن طباعة):

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 الإيمان والسلام والاحسان [حديث

(أصول السرخسي :)

(سنن الترمذي ،ابوعيسى محمد بن عيسى بن سورة الترمذي أبوب

 صفة القيامة ،باب ما جاء في شأن الحساب والقصاص [حديث

 دار الغرب الاسلامي بيروت سن طباعة

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(التعليم ،ابوبكر محمد بن احمد السرخسي : دار الكتب

 العلمي بيروت سن طباعة

 عليه بن محمد الأمدي : دار الكتاب العربي سن طباعة

 ها،الوجيز في اصول الفقه عبد الكريم زيدان ص مكتب رحمن

(اصول السرخسي １:۶۱

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(سورة البقرة ٣٢:٢

(سنن الترمذي ،ابوعيسى محمد بن عيسى بن سورة الترمذي أبوب

 صفة القيامة ،باب ما جاء في شأن الحساب والقصاص [حديث

 دار الغرب الاسلامي بيروت سن طباعة

(نعمان بن ثابت ،ابو حنيف [ ـ ه ٢٣٦ هـ ] كوفه [عراق

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میں پیدا بونے حنفی مسلک کے امام اور مجتبید تھے - علم فقہ میں رر بصرت کے مالک تھے واقع، سخاوت اور حسن اخلاق میں مثال تھے - علم کی ترویج و اشاعت کے ساتھ کہا کا کاروبار کرائے تھے۔

درس کا آبک وسیع حلقات قائم کیا جس سے امام میںووفس اور امام محمد رحمہاللہ جسیں علماء پیدا بونے آپ کے اجتهادات کو آپ کے شاگردان نے کتابی شکل دے دی جو ایک مفید فقہی ذخیرہ ہے - سیر اعلام النبلاء حافظ شمس الدين الذبیعی

کتاب ندارد؛ الاعلام خیر الدين زرکلی: دار العلم للملايين بیروت سن طباعت [ ]

( شذرات الذبیع في اخبار من ذبیع، عبد الحی بن احمد العکری الحنبلی دار ابن كثير دمشق سن طباعت هـ)

(سورة الكیف :)

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( تعليم المتعلم، امام بربان الإسلام الزرنوجی ص مكتبہ اکرمیه)

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( تعليم المتعلم ص)

( الدار المختار شرح تنوير الابصار، علامہ حسکفی،: دار الفكر بیروت سن طباعت هـ)

( سنن ابن داود، امام ابوہدود سلیمان بن اشاعت سجستانی، كتاب الطبارة

[ باب في المجريح ويتیم [ حديث نمبر: ] دارالکتاب العربي

( بیروت سن ندارد)

(مجاہد بن جبر أبو الحجاج المکی، مولی بنی مخزوم)
١٢٢٣٦– [معروف مفسر تابعي تهیة - شيخ القراء والمفسرين كنام سه شبرت پاتی - سیدنا عبد الله بن عباس رضی الله عنهم سه تفسیر کا علم سیکها - سیر اعلام النباء، حافظ ذبیحی،: موسسه الرسال، بیروت، همدیالان، زرکلی : ]
( ) شرح ابن بطال لصحيح البخاری ابوالحسن علی بن خلف بن بطال البكري القرطبی،: مكتبة الرشد، ریاض سن طباعت
STRATEGIC ANALYSIS OF COASTAL TOURISM IN PAKISTAN
(A Case Study of Sindh Province)

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ABSTRACT: Coastal tourism is an activity that cuts across many sectors, levels and interests; hence, its’ sustainability demands a comprehensive strategic planning. However, in Pakistan this vital need is not yet recognized. Therefore, this study has attempted to formulate a strategic planning framework for coastal tourism development of the country through strategic analysis (internal and external environments analysis). Internal analysis was carried out to identify the concerned organisation’s (Tourism Ministry of Pakistan) strength and weaknesses, while, external analysis establishes which influences represent opportunities and which are, or might develop into threats. Internal analysis is presented as: background analysis and resource analysis; while, external analysis is presented as a STEEP (Socio-demographic, Technological, Economic, Environmental and Political) analysis of the organisation. The data collected from strategic analysis is summarised through a SWOT (Strength, Weaknesses, Opportunities, Threats) analysis and strategic options are proposed for coastal tourism development in Pakistan through TOWS (Threats, Opportunities, Weaknesses, Strength) matrix. The proposed strategic options integrated coastal tourism of Sindh province with national economy, society, and environment.

Key Words: Strategic, Analysis, Coastal, Tourism, Sindh, Pakistan.

1.1 Introduction: A strategy has been variably defined (for example, Andrews, 1980; Chandlers, 1962; Johnson and Scholes, 1996, 1999 and Mintzberg, 1994 ), however, in general terms it is a continuous process that has to be performed in order to close the gap between where the organisation currently exist and where it aims to be in the future. Johnson and Scholes (1999) identified three distinct stages in the strategic process. The first stage: strategic analysis is concerned with understanding the strategic position of an organisation, while, the second stage: strategic choice, makes an intelligent and informed choice of the most appropriate courses of action for the future of the organisation. Finally, the third stage: implementation puts the selected options into practice. The first stage (i.e. strategic analysis) involves: an examination of organisation’s internal environment (internal analysis) and external environment (external analysis). Internal analysis involves thoroughly analysing the internal process and structure of the organisation and identifying the organisation’s strengths and weaknesses. While, external analysis examines macro or contextual environment of the organisation in terms of various influences like social, political, economic, environmental and technological that effects not only the organisation in an industry, but also the whole industry.
itsel. The external analysis of an organisation therefore establishes that which influences represent opportunities and which are, or might develop into threats.

Pakistan covers approximately 803,940 km² and has a coastline of 1,050 km along the Arabian Sea. In 1989, the Pakistan Government upgraded the tourism sector to the status of an industry. However, the coastal zone of the country, regardless of its immense tourism potential (Ullah et al, 2006 & 2009), has never been taken seriously as part of the overall tourism development process. Therefore, this study was carried out with the intention to explore the possible strategic options for developing coastal tourism of the country.

1.2 Methodology:

1.2.1 Methods Used for Data Collection and Data Sources

1.2.1.1 Internal Analysis: The aim of the internal analysis was to assess the concerned organisation (Tourism Ministry, Pakistan) in terms of its structure, functions and to obtain insight into its internal strengths and weaknesses. Background information was collected from General Manager, Pakistan Tourism Development Corporation (PTDC) Sindh province, Pakistan through informal interview. However, due to scarcity of information on Pakistan’s tourism industry, secondary material supplemented primary data. Baseline information for resource analysis (natural and cultural) was initially collected through personal field visits, and informal dialogue with key informants of Government; Non Government and coastal communities’ organisations. However, for ensuring information authenticity, primary data was cross-checked and supplemented with secondary documents. Wherever required, references were made to the sourced material. Pakistan’s major coastal recreational plans/projects were considered as its major capital works. These were: Karachi Coastal Recreation Development Plan 1990-2000; Defence Officers Housing Authority (DHA) Water Front Development Project; Diamond Bar Island City Project and KP-Port Fountain Jet Project. Information for capital works was informally collected from the resource persons of the concerned projects.

1.2.1.2 Macro or external analysis: The macro or external environment is also referred to as, a far or remote environment, because it tends to exert forces from outside the organisation’s sphere of influence. This analysis served as an early warning system that provides time to anticipate both opportunities and threats and also to plan appropriate responses (Ginter and Duncan, 1990). The required information (factors that affect both the Tourism Ministry and coastal tourism) was collected through semi structured interviews from 66 individuals representing 37 coastal stakeholders (organisations) in Sindh Province.

1.2.2 Methods Employed for Data Analysis

1.2.2.1 Internal Analysis: The data regarding internal environment was analysed through:

- Background Analysis: studying the organisation’s mission statement, objectives, temporal analysis, organisation structure, cultural web and research and development and;
- Resource Analysis: investigating natural, cultural resources, and capital work programmes.

Both the background and resource analysis used different analytical tools and assessment criteria (for details see Appendix 1).

1.2.2.2 Macro environment analysis: In order to overcome the complexity of the factors in external environment this study filtered the collected information into five major areas: Socio-demographic, Technological, Economic, Environmental and Political and audited the forces at work through STEEP analysis (Evans et al., 2003).

A SWOT analysis (Appendix 2) was used as a key technique for presenting the overall results of the strategic analysis. A TOWS matrix (Appendix 3) built directly on the SWOT analysis. This matrix can not only help generate strategic options but can also address their suitability for the organisation (Johnson et al, 2004). Each box of the TOWS Matrix identified options that address a different combination of the internal factors (strengths and weaknesses) and the external factors (threats and opportunities).

1.3 Results & Discussion: On the basis of TOWS Matrix (Appendix 3) four kinds of strategies are proposed for developing coastal tourism in Pakistan:
1. **Weaknesses-Opportunities (WO) Strategies**: These strategies focused on improving internal weaknesses by taking advantage of external opportunities. In order to overcome most of the organisational internal weaknesses like a lack of strategic direction for coastal tourism, lack of legal access to coastal land and lack of coordination with other coastal stakeholders would need to take advantages of external opportunities like: ecologically sensitive coastal areas’ potential for alternative form of tourism (e.g. CBE-Community Based Ecotourism) and recognition of stakeholders’ environment of coastal tourism as an inter-organisational and interdependent domain where sustainability can only be achieved through collaboration of stakeholders.

Strategic analysis criteria of suitability, feasibility and acceptability, also known as ‘SFA framework’ (for details see Evans et al. 2003), has already confirmed that CBE is a suitable, feasible and acceptable option for coastal tourism development in Pakistan (Ullah, 2006).

Interdependencies of stakeholders within the domain is considered to be a fundamental basis for collaborative problem solving efforts, because the acknowledgment of mutual dependencies in the domain ensures that each stakeholder will have some standing in future collaborative negotiation. Interdependencies are also thought to increase motivation to engage in collaboration, as also suggested by Gray (1989, p 58) who stated that “recognition by stakeholders that their desired outcomes are inextricably linked to actions of others stakeholders is the fundamental basis for collaboration”. According to Gray (1985) recognition by stakeholder groups that their actions are inextricably linked to the actions of other stakeholders is a critical basis for collaboration. The greater the degree of recognised interdependencies among stakeholders, the greater the likelihood of initiating collaboration. Other research studies appreciating stakeholders’ interdependence for successful collaborative initiating include: Rogers and Whetten (1982); Terrebery (1968); Hooyman (1976); Sarason and Lorentz (1979); Williams (1982); Emery and Emery (1978); Gilmore et al. (1979); Sherif (1958); Miles (1980); Brown (1982) and Walton (1969).

The presence of stakeholders’ interdependencies and under-organised system* (authors’, unpublished work) in the coastal tourism domain of Sindh can encourage stakeholders’ collaboration which can possibly help in promoting coastal tourism of the province.

2. **Strength-Threats (ST) Strategies**: ST Strategies make use of the organisation’s internal strength to minimise the impact of external threats. Good practice operations in tourism (Challanger, 2004; Felstead, 2001; Fazi and David, 2001; Op wall, 2005) delineate that organisations use different ST- strategies like: capital works programmes’ suitability to both local needs and existing natural/cultural tourism resources; promotion of alternative forms of tourism, such as CBE operating in niche markets; ensuring sustainability objectives in tourism operation; good governance; cultural assets realisation in coastal tourism; ensuring environmental standards etc. Such strategies have equal opportunities of application in coastal tourism of Pakistan. These strategies can efficiently utilize internal strengths (competences and resources) and can also assist in overcoming external threats like technological inefficiencies, threats to natural and cultural resources and to resolve community and other stakeholders’ conflict in coastal tourism domain.

3. **Weaknesses-Threats (WT) Strategies**: These are defensive tactics to reduce internal weaknesses and to avoid external threats. In case of coastal environment of Pakistan, conceptualisation of collaboration theory can assist in avoiding external threats such as, turbulence in the coastal tourism environment, coastal land ownership and communities’ conflicts and can also provide guide lines for establishing an organisation with a clear strategy, structure, objectives and stakeholders’ power/interest balance.

As a result of an exhaustive literature trawl (McCann, 1983; Cummings, 1984; Gray, 1985;1989; Susskind and Medigan, 1984; Parker, 2000; Jamal and Getz, 1995; Selin and Chavez, 1995; Caffyn, 2000; Mandell, 1999) this study recommends Jamal and Getz’s (1995) model of collaboration as a WT- strategic option for coastal tourism development in Pakistan. This model can be considered as a viable option for a domain:

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* An under-organised system contains potential networks of organisations instead of established networks or other collaborative structure (Brown, 1982).
• characterised with turbulent environment, where conflict over planning and development exists or where mechanisms for sharing ideas and developing directions are required and;
• representing an under-organised system.

The prerequisites of the proposed model are sufficiently fulfilled in the coastal tourism domain of the Province, therefore, application of the selected model would be a sensible choice for coastal tourism development.

4. Strength-Opportunities (SO) Strategies: These strategies use organisation’s internal strengths to take advantage of external opportunities. In order to apply SO strategies the organisation should pursue WO, ST and WT strategies (Sing, 2006). Therefore, following the WO, ST and WT strategies would actually enabled for establishing stakeholders’ collaboration for coastal tourism development in Pakistan.

1.4 Conclusion: Tourism has an industrial status in Pakistan, however, at present tourism has confined itself to adventure (mountaineering, trekking) and historical sectors. However, coastal localities of the country and its associated natural and cultural resources were observed to be the most neglected areas of tourism. Strategic analysis carried out with an intention to identify strategic options for coastal tourism development in Pakistan. Internal environment analysis of the organisation identified its major weaknesses in terms of its: objectives, structure, culture, tourism policy, coordination/collaboration, capital works and role in coastal tourism, although, untapped natural and cultural resources were recorded its major internal strengths. On the other hand, macro or external environment of the organisation offered opportunities in the form of: coastal visitors, the Maritime Policy of Pakistan (2002), coastal inhabitants’ interest in tourism, coastal area status as an inter-organisational and interdependent domain, while major threats posed by external environment were: stakeholders’ turbulent environment in coastal areas, rapid degradation of natural and cultural resources, political instability, community conflicts/dissatisfaction with respect to capital works, administrative jurisdiction and coastal land ownership conflicts.

In order to take advantages of the organisation strengths and opportunities and also to overcome its weaknesses and threats this study proposed four strategic options. The SO strategic option “stakeholders’ collaboration for coastal tourism/CBE development” was recognised as a prime strategic option which can only be achieved by fulfilling the remaining three options i.e. WO, ST, WT as proposed by this study.

Recommendations: In order to overcome the turbulent situation, an inter-sectoral and multidisciplinary collaborative approach is recommended for coastal tourism planning and development. Furthermore, alternative forms of tourism such as CBE should be encouraged where coastal communities are involved as key stakeholders at both planning and implementation of tourism projects.

REFERENCES


Appendix 1. Criteria used within the internal analysis (background & resources) of the Tourism Ministry, Pakistan (Source: Original)

<table>
<thead>
<tr>
<th>Background analysis:</th>
<th>Description</th>
<th>Assessment Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analytical Tools</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mission statement (Future Intents):</td>
<td>A generalised statement of the overriding purpose in line with the values or expectations of stakeholders (Johnson and Scholes, 2002)</td>
<td>Assessment of organisation’s mission statement against its’ essential components, as described in the literature (Sing, 2006)</td>
</tr>
<tr>
<td>Objectives:</td>
<td>Statements of specific outcomes that are to be achieved</td>
<td>Assessment of organisation’s objectives against its’ main features, as described in the literature (Johnson and Scholes, 2002 ;Sing, 2006)</td>
</tr>
<tr>
<td>Temporal Analysis:</td>
<td>Temporal changes in organisation</td>
<td>In order to identify any significant change or contribution of organisation over time</td>
</tr>
<tr>
<td>Organisational Structure:</td>
<td>Power pattern and the focus of an organisation</td>
<td>Vertical and horizontal differentiation of organisational structure (Hill and Jones , 2000)</td>
</tr>
<tr>
<td>Organisational Cultural</td>
<td>Taken-for- granted assumption or paradigm of an organisation (Johnson and Scholes, 2002)</td>
<td>Cultural web (Johnson, 1992) and; Handy’s (1996) &amp; Miles and Snow’s (1978) cultural typology</td>
</tr>
</tbody>
</table>
### Resource Analysis:

<table>
<thead>
<tr>
<th>Analytical Tools</th>
<th>Description</th>
<th>Assessment Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural resources</td>
<td>Both tangible and intangible resources of coastal tourism interest</td>
<td>Identification and assessment of potential for competitive advantage (Fig. 3.3)</td>
</tr>
<tr>
<td>Cultural Heritage</td>
<td>Archaeological and cultural resource of the coastal areas</td>
<td>Identification and assessment of potential for competitive advantage (Fig. 3.3)</td>
</tr>
<tr>
<td>Capital work programme</td>
<td>Major coastal tourism plans and projects</td>
<td>SWOT analysis</td>
</tr>
</tbody>
</table>

### Appendix 2  SWOT Analysis of Tourism Ministry, Pakistan

(Source: Original)

<table>
<thead>
<tr>
<th><strong>Internal</strong></th>
<th><strong>Weaknesses</strong></th>
</tr>
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<tbody>
<tr>
<td><strong>Strengths</strong></td>
<td></td>
</tr>
<tr>
<td>• Existence of PTDC in coastal provinces</td>
<td>• lack of legal access to coastal land</td>
</tr>
<tr>
<td>• Natural &amp; cultural resources</td>
<td>• Organisations’ objectives lacking time frame</td>
</tr>
<tr>
<td>• Capital works programmes</td>
<td>• Sectoral management approach</td>
</tr>
<tr>
<td>• Organisation’s competencies</td>
<td>• Bureaucratic form of Organisation Structure</td>
</tr>
<tr>
<td>• Research and Statistic Section</td>
<td>• Power &amp; role culture</td>
</tr>
<tr>
<td></td>
<td>• Unrealistic Tourism Policy (1990)</td>
</tr>
<tr>
<td></td>
<td>• Lack of active coordination with other stakeholders</td>
</tr>
<tr>
<td></td>
<td>• Passive role in coastal tourism</td>
</tr>
</tbody>
</table>

<p>| <strong>External</strong> | |
|--------------|</p>
<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Coastal visitors</td>
<td>• Stakeholders’ turbulent environment in coastal areas</td>
</tr>
<tr>
<td>• Maritime Policy of Pakistan (2002)</td>
<td>• Threats to natural &amp; Cultural resources</td>
</tr>
<tr>
<td>• Coastal communities’ interest in tourism</td>
<td>• Political instability</td>
</tr>
<tr>
<td>• Coastal scenery</td>
<td>• Capital Works</td>
</tr>
<tr>
<td>• Coastal area- inter-organisational domain</td>
<td>• Community conflicts/dissatisfaction</td>
</tr>
<tr>
<td>• Interdependencies of stakeholders in coastal areas</td>
<td>• Indebted economy</td>
</tr>
<tr>
<td>• Capital Works</td>
<td>• Coastal land ownership conflicts</td>
</tr>
<tr>
<td>2 The National Environmental Act, 1997</td>
<td></td>
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</tbody>
</table>

Appendix 3  **TOWS Matrix for developing strategic options for coastal tourism development in Pakistan**  
(Source: Original)

**Internal Factors**

<table>
<thead>
<tr>
<th>Opportunities (O)</th>
<th>Strengths (S)</th>
<th>Weaknesses (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential for stakeholders’ collaboration for establishing alternative form of tourism/CBE</td>
<td>in order to identify strategic direction, assessment for the potential of alternative form of tourism (e.g. CBE) &amp; to promote integration, coordination and sustainability, recognition of stakeholders’ environment of coastal tourism as an inter-organisational &amp; interdependent domain</td>
<td></td>
</tr>
</tbody>
</table>

| Threats (T) | |
|-------------| Conceptualisation of collaboration theory, in order overcome turbulence in the coastal tourism environment, should help resolve coastal land ownership & community conflicts and also provide guide lines for establishing an organisation with a clear strategy, structure, objectives and stakeholders’ power/interest balance |
VERTICAL TRANSMISSION OF HEPATITIS B VIRUS; A MAJOR RISK FACTOR FOR CHRONIC PEDIATRIC HBV INFECTION: A CASE STUDY

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ABSTRACT. Infection caused by hepatitis virus (HBV) is a global public health issue affecting more than 350 million people. Vertical transmission of HBV infection during the prenatal period is the major cause of HBV transmission in endemic countries such as Pakistan. This study was undertaken to investigate the possible risk factors associated with vertical transmission of HBV.

We reported a case of 39 year old Pakistani female (170cm height, 55 kg weight) with chronic HBV infection; she was the mother of four daughters and two sons who were also infected with HBV infection. A written consent was the taken from the infected family. Blood samples were collected from the mother and her children (n=6) with mean age 9.5 years (range: 0-16) and were analyzed for HBV infection by ELISA. Active HBV infection was investigated using nested Polymerase chain reaction (PCR), while HBV genotypes were determined by multiplex PCR with type specific primers. All the blood samples were found positive for HBV DNA by PCR, which were further processed for genotype analysis. A considerable high rate of HBV infection was observed among all the members of infected family. The genotyping analysis indicates a high prevalence of genotype C (n=7). All the children were infected with HBV genotype C. Vertical transmission was found as a major risk factor for HBV acquisition. According to the best of our knowledge, this is the first case report showing the association between the mode of HBV transmission and its genotype in Khyber Pakhtunkhwa (KPK), Pakistan. Genotype C might be a risk factor for vertical transmission of HBV.

Keywords: Vertical transmission, Genotyping analysis, hepatitis B infection

1. Introduction. Globally HBV infection is major health problem and one of the most important etiological factors for the development of chronic liver disorders including serious end stage liver disorders such as liver cirrhosis and hepatocellular carcinoma (HCC) (Murphy 1996, Prescott, Harley & Klein 2005). It is estimated
that approximately 400 million people around the world are infected with HBV. Infection caused by HBV has been characterized as one of the most common liver infection by World Health Organization (WHO) affecting more than 350 million people throughout the world [Dokanehifard,Bidmeshkipour 2009,Guirgis, Abbas & Azzazy 2010]. Vertical transmission is the transmission of HBV infection from an infected to healthy child during birth. It is one of the major causes of HBV acquisition in endemic regions of the world which often leads to chronic hepatitis, cirrhosis, and hepatocellular carcinoma. It can be prevented by the administration of passive and active immunoprophylaxis with hepatitis B immunoglobulin (HBIG) combined with hepatitis B vaccine [Lee,Gong,Brok,Boxall & Gluud 2006]. In 2001-2004, Pakistan received a grant from Global Alliance for vaccines and Immunization (GAVI), which successfully enabled EPI (Expanded Programme on Immunization) to introduce HB vaccine on routine basis while HBV vaccination as a part of EPI was launched in 2004 in a national vaccination campaign which has been successfully integrated in routine immunization schedule of all neonates with estimated hepatitis B immunization coverage of 65 percent [Moayed, Farahnaz, Lankarani 2007]. We report here a multigravida woman with chronic HBV infection and whose all children are also infected with HBV. A written consent was taken from the infected family. The present study was carried out in Biochemistry Laboratory department of biochemistry, Abdul Wali Khan University, Mardan (AWKUM) and in Institute of Biotechnology and Genetic Engineering, University of Agriculture, Peshawar.

2. Case Report. A 39-year-old woman (170cm height, 55 kg weight) was presented outpatient to department (OPD) of Khyber teaching hospital (KTH), Khyber Pakhtunkhwa (KPK), Pakistan in November 2013. She belongs to Jamrud, the tribal area of KPK, came to the OPD with the symptoms of fatigue, headache, loss of appetite and vomiting. Based upon her medical history, she was tested for hepatitis B surface antigen (HBsAg) in order to make any conclusion about her disease status. Her results of initial HBsAg screening were found positive. During the subsequent investigations she revealed that she was diagnosed as HBsAg positive ten years back when had came to deliver her last baby at the same hospital. She further enclosed that baby was immunized immediately after her delivery. Due to poverty and lack of health facilities she could not get the treatment appropriately. She was reinvestigated by her physician to verify and check her disease status. Her reports came out to be discouraging. She was found to be positive for HBsAg (ELISA DRG Instruments, Germany). Her active viral load was found to be 7.1 ×10^5 IU/ ml (by MiniOpticon Real-Time PCR System). She was also found positive for hepatitis B virus e antigen (HBeAg= 131.61 by microparticle enzyme immunoassay (MEIA), Abbott IMX® (Abbott Lab., Abbott Park, IL, USA). Her liver function tests illustrates the concentration of total bilirubin to be 0.5mg/dl, serum glutamic-pyruvic transaminase (SGPT) to be 530 U/l, alkaline phosphatases to be 218U/L, total protein content was found to be 6.9U/L and the concentration of albumin was found to be 3.7 g/dl. Based upon her reports she was found as chronic HBV patient. During the her subsequent visits to the hospital she decided to investigate all her children including her four daughters and two sons with mean age 9.5 years (range: 0-16) for hepatitis B surface antigen (HBsAg). Her children reports were also found positive for HBsAg.

On 5 January 2014, blood samples were taken from this infected family and were processed for genotyping analysis in an attempt to correlate the mode of HBV transmission and its genotype. DNA extracted from the serum samples from the mother and her children were subjected to nested PCR for the detection of HBV surface genes. A 230bp amplicon was generated by nested PCR which was further subjected for genotype determination by multiplex PCR with type specific primers (TSP-PCR) as previously described [Farazmanfar, Haghshehias,Janbabai, Azadeh,Sharifian,Taghipour 2012]. The results indicates genotype C as the most prevalent among all the member of infected family (n=7), all the children (n=6) were infected with HBV genotype C.

3. Discussion. Vertical transmission is the major cause of HBV acquisition during early childhood in the regions of the world with high HBV endemicity including Pakistan [Jonas 2009]. High HBV DNA levels and passive-active immunoprophylaxis failure are main contributing factors causing HBV infection during perinatal period [Lavanchy 2004, CDC Morbidity & Mortility Weekly Reports 2011]. Preventing vertical transmission can significantly decrease the burden of pediatric HBV infection. In the present study we found genotype C as the most prevalent among all the member of infected family (n=7), all the children (n=6) were infected with HBV genotype C. A number of studies undertaken earlier confirmed the correlation between HBV genotype C and vertical transmission [Liu, Dong, Zhang, Li, Wo, Lu, Chen, Wang & Ruan 2009, Nie, Jin, Zhang, Xu, Chen & Zu 2011, Inui,Komatsu,Sogo,Nagai, Abe & Fujisawa.
In the present study vertical transmission was found as the major cause of HBV acquisition among all the children. The patient in this case belongs to a very poor socioeconomic status and was deprived of basic health facilities. Her high HBV-DNA level during her last pregnancy was the main cause of immunoprophylaxis failure given to the baby. This is the first case report showing the association between the mode of HBV transmission and its genotype in Khyber Paktunkhwa (KPK), Pakistan. Genotype C might be a risk factor for vertical transmission of HBV. Routine HBV screening during pregnancy along with strict immunization strategies should be taken in practice to minimize the risk of vertical transmission.

4. Conclusion. The chances of vertical transmission can be minimized by establishing mother to child health care centers (MCH) where trained staff certified by health regulatory authorities should be appointed and a very effective check and balance system should monitor such MCH centers. Furthermore women in childbearing age must have a free access to the health care centers where quality retro-viral therapy can be carried out to avoid vertical transmission of hepatitis B.

REFERENCES

SECURE KEY ESTABLISHMENT AND CLUSTER HEAD SELECTION FOR BODY AREA NETWORKS BASED ON SIGNCRYPTION

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ABSTRACT. Body Area Network (BAN) has been using in medical for monitoring of human body. To store and transmit health data confidentially in resource constrained BANs, it needs lightweight cryptographic and key management schemes. The paper suggests a secure hybrid key establishment scheme for BANs based on Signcryption and symmetric cryptography. The session key and cluster head selection is performed in a single step. The proposed scheme would significantly reduce the computation cost as well as traffic overhead.

Keywords: Signcryption; Elliptic Curve Cryptography; Symmetric Cryptography; Clustering; Body Area Networks (BANs).

1. Introduction. BAN is a specialized and new emerging area of Wireless Sensor Networks (WSNs) reshaping the healthcare industry. The nodes in these types of networks are special purpose because of the sensitivity of human body. It consists of small and low cost nodes known as biosensors which can be implanted in human body to monitor different activities like body heat, sudden reaction, blood pressure, ECG and SpO2.

The key role of a sensor node in BANs is to collect, process and perform necessary computation on the data gathered from the human body. These sensors communicate with a node rich in resource i.e. memory, computational power called base station. The sensors communicate the updated information to the base station from time to time. In other word the base station controls all the sensors in the body as well as communication with the external network. The external network constitute of a medical server which stores the patient’s data and generates reports for the professionals/physicians based on the information received from the BAN’s base station.

As BAN is wireless network and is always on security risk due to its open air communication. Apart from security problem, resource limitation is another problem and should be addressed while designing new scheme. The attacker can target the BAN if found successful he may not only be able to temper with the sensitive information but also may take over the system. In order to protect the sensor data there is not only a need for the secure and lightweight cryptosystem but also a need for secure, energy and memory efficient key agreement protocol. Traditional security solutions are not directly applicable to these networks due to their constrained nature there by providing copious avenues for researchers. The focus of this paper is to design a key agreement protocol with high security strength, computationally less expensive, low communication cost and energy efficient. This scheme uses Signcryption for key establishment and symmetric cryptography for session data transmission in BANs.

2. Related Work. This section presents review of different key management schemes for sensor networks.
In scheme [1] proposed hybrid technique based on DHECC and RSA for key agreement provide rekeying feature to ensure backward and forward secrecy which is efficient in term of scalability, resilience and storage efficiency via particular routing algorithm in key agreement process but its increased computation cost is the main problem and not feasible for BANs environment.

In scheme [2] review of BAN technology and wireless medical monitoring scheme discuss WBAN architecture, required hardware for WBAN, diseases that are being monitored through this technology and WBAN traffic. At the end they highlight some issues related to WBAN, like infrastructure, security, privacy, reliability and social issues.

In scheme [3] a hybrid model for key agreement in BAN is introduced using symmetric cipher and RSA. RSA is expensive and not appropriate for the constrained natured environment like BAN.

In proposed hybrid scheme [4] ECC and AES is implemented for key agreement and secure exchange of data which has still a loop hole of communication and computation cost.

Weighted Low Energy Adaptive Clustering Hierarchy Aggregation (W-LEACH) algorithm [5] is a modified form of LEACH, in which author proposed data aggregation algorithm that handles uniform and non-uniform Wireless sensor network for increasing the network lifetime rather than for BAN.

3. Proposed Scheme. The topological structure of the proposed network consist of bio sensors, base station and centralized sever as is shown in figure.1.

We assume that the bio sensor have limited resources while base station has high.

Figure 1. Proposed scheme structure for BANs

Our proposed protocol has the following phases.

- System Initialization Phase
- Session Key Establishment and Cluster Head Selection Phase
- Secure Session Data Forwarding
- Cluster Head Rotation Phase
- Rekeying Phase

Following are the notations in Table 1 are public parameters used.

<table>
<thead>
<tr>
<th>Notation</th>
<th>Description</th>
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<tbody>
<tr>
<td>(q)</td>
<td>A large prime number ((q \geq 2^k))</td>
</tr>
<tr>
<td>(E)</td>
<td>An Elliptic Curve over prime field (F_q) of order (q)</td>
</tr>
<tr>
<td>(G)</td>
<td>Point Elliptic Curve (E) of order ((n \geq 2^k))</td>
</tr>
<tr>
<td>(E_k/D_k)</td>
<td>Encryption / Decryption with key (k)</td>
</tr>
<tr>
<td>(h/h_k)</td>
<td>Hash / Keyed Hash Function</td>
</tr>
<tr>
<td>M-EXP</td>
<td>Modular Exponentiation</td>
</tr>
<tr>
<td>ECPM</td>
<td>Elliptic Curve Point Multiplication</td>
</tr>
</tbody>
</table>
3.1. System Initialization Phase. Base station BS is preloaded with his private and public keys \( Pr_E, Pu_E \) respectively. Before bio sensor deployment on patient body each sensor \( S_i \) is preloaded with its private key \( Pr_s, \) public key \( Pu_s \) and corresponding base station public key \( Pu_E \). Each deployed sensor \( S_i \) public key \( Pu_s \) is also forwarded to base station BS as well.

3.2. Session Key Establishment and Cluster Head Selection Phase. In this phase secure session key is established between each bio sensor and corresponding base station using Signcryption [6] coupled with cluster head selection on the base of energy level.
To accomplish the above task following steps are performed:

**Bio Sensor**
1. Each bio sensor \( S_i \) on patient \( P_i \) generates a random number \( r_s \) where \( i \in \{1,2,3,...,n-1\} \)
2. Each bio sensor \( S_i \) on patient \( P_i \) has energy level \( E_{S_i} \)
3. Signcryption \( (r_s,E_{S_i},n,Pr_s,Pu_E,h,h_k,E_b) \)
   a. Select an integer \( k \in \{1,2,3,...,n-1\} \) randomly
   b. Compute \( k.Pu_E \) \( m \) \( n \)
   c. Compute \( (K_1,K_2) = h(kPu_E) \)
   d. Compute \( r = h_{R_k}(r_s || E_{S_i}) \)
   e. Compute \( c = E_{R_k}(r_s || E_{S_i}) \)
   f. Compute \( y = \left(\frac{r}{r_s+Pr_{BS}}\right)m \) \( n \)
   Send Signcrypted text \( (c;r,s) \) to base station BS

**Base Station**
1. Base station Unsigncrypt the Signcrypted text \( (c;r,s) \) received from each sensor \( S_i \)
2. Unsigncryption\( (c;r,s,Pr_s,Pu_E,Pu_s,h,h_k,Pr_{BS}) \)
   a. Compute \( u = sPr_{BS}m \) \( n \)
   b. Compute \( (K_1,K_2) = h(u(Pu_s + r)) \)
   c. Compute \( r_s || E_{S_i} = D_{R_k}(c) \)
   d. Check \( h_{R_k}(r_s || E_{S_i}) = r \), if satisfied accept the random number \( r_s \) and energy level \( E_{S_i} \) otherwise reject
3. Base station compute session key \( k_{P_i} \) for patient \( P_i \) by selecting two \( r_s \) from those bio sensor \( S_i \) installed on same patient \( P_i \) as:
   \( k_{P_i} = r_s \oplus r_{S_{i+1}} \)
4. Base station select cluster head for data forwarding form bio sensor to installed on patient \( P_i \) as:
5. Cluster head selection
   Select one bio sensor as cluster head \( CH_s \) having maximum energy form those bio sensor installed on same patient \( P_i \) by comparing there energy levels \( (E_{S_1},E_{S_2}....E_{S_n}) \), the remaining bio sensor become member of that cluster. Where \( ID_{C_S} \) is address of Cluster head \( CH_s \), and \( ID_s \) is address of cluster member \( CM_s \).
6. Encrypt session key and cluster head address to each bio sensor using symmetric cipher and \( r_s \) encryption key as:
   a. \( C = E_{s}(k_{P}||CH_s||ID_{C_S}) \)
   Send encrypted text \( C \) to bio sensor.

**Bio Sensor**
1. Each bio sensor \( S_i \) received and decrypts the encrypted text \( (C) \) by using symmetric cipher and key \( r_s \) as:
   a. \( k_{P}||CH_s||ID_{C_S} = D_{s}(C) \)
   b. Cluster member \( CM_s \) send join request to cluster head \( CH_s \).
3.3. Secure Session Data Forwarding

Bio sensor sensed patient information (vital sign) encrypt with session key $k_p$ using symmetric cipher. The encrypted data is forward to cluster head and further forwarded to base station.

3.4. Cluster Head Rotation Phase

In this phase cluster head is rotated, when the cluster head energy level reached to a threshold value.

**Bio Sensor**

Each sensor sends energy level in encrypted form to base station.

a. $μ = E_{bk_μ}(μ_{₁})$

b. Send encrypted text $C$ to base station.

**Base Station**

Reselect cluster head with maximum energy as:

a. Compute $E_{₁_{₀₁}} = D_{bk_μ}(C)$

b. Select one bio sensor as cluster head $CH_S$ having maximum energy form those bio sensor installed on same patient $p_1$ by comparing their energy levels($E_{₁_{₀₁}}, E_{₁₂}, ... E_{₁_{₀₉}}$), the remaining biosensor become member of that cluster. Where $ID_c_μ \_$ is address of Cluster head $CH_S$, and $ID_S$ is address of cluster member $CM_S$.

c. Compute $C = E_{₁_{₀₅}}(CH_S||ID_c_μ)$

d. Send encrypted text $C$ to bio sensor

**Bio Sensor**

Each bio sensor $S_i$ received and decrypts the encrypted text $(L)$ by using symmetric cipher and key $r_S$ as:

a. $CH_S||ID_c_μ = L_{₁_{₀₅}}(C)$

b. Cluster member $CM_S$ send request to cluster head $CH_S$.

3.5. Rekeying Phase

To ensure forward secrecy in case of node leave, backward secrecy in case new node join and key freshness after a threshold amount of time $Δt$ Rekeying is performed as:

**Bio Sensor**

1. Each bio sensor $S_i$ on patient $P_i$ generates a random number $r_s$ where $i \in \{1,2,3,...n-1\}$

2. Each bio sensor $S_i$ on patient $P_i$ has energy level $E_{₁_{₀₁}}$

3. Signcryption $(r_S, n, Pr_{₁}, Pu_E, h, h_E, E_{₁_{₀₁}})$

   a. Select an integer $k \in \{1,2,3,...,n-1\}$ randomly

   b. Compute $Kr_{₁_{₀₁}} \_ m \_ n$

   c. Compute $(K_{₁_{₀₁}}, K_{₁_{₀₁}}) = h(kPu_E)$

   d. Compute $r = h_{₁_{₀₁}}(r_{₁_{₀₁}})$

   e. Compute $μ = E_{₁_{₀₁}}(r_{₁_{₀₁}})$

f. Compute $S = \left(\frac{k}{(r+r')}ight)m \_ n$

Send Signcrypted text $(μ, r, S)$ to base station BS

**Base Station**

4. Base station Unsigncrypt the Signcrypted text $(μ, r, S)$ received from each sensor $S_i$

5. Unsigncryption$(μ, r, S, n, Pr_{₁}, Pu_E, Pu_S, h, h_E, D_{₁_{₀₁}})$

   a. Compute $μ = D_{₁_{₀₁}}(μ)$

   b. Compute $(K_{₁_{₀₁}}, K_{₁_{₀₁}}) = h(μ(Pu_E + r'))$

   c. Compute $r_S = D_{₁_{₀₁}}(μ)$

6. Base station compute session key $k_{₁_{₀₁}}$ for patient $P_i$ by selecting two $r_S$ from those bio sensor $S_i$ installed on same patient $P_i$ as:

a. $k_{₁_{₀₁}} = r_S \_ r_{₁_{₀₁}}$
7. Base station select cluster head for data forwarding from bio sensor to base station installed on patient $p_i$ as:

8. Encrypt session key to each bio sensor using symmetric cipher and $\tau_s \,'$ encryption key as:
   a. $C = E_{\tau_s \,'}(k_{p_i \,'})$
   b. Send encrypted text $C$ to bio sensor

**Bio Sensor**

1. Each bio sensor $S_j$ received and decrypts the encrypted text $(C)$ by using symmetric cipher and key $\tau_s \,'$ as:
   a. $k_{p_i \,'} = D_{\tau_s \,'}(C)$

4. **Security Analysis.** Our scheme fulfilled following BANs requirements for secure key agreement [9].

4.1. **Confidentiality.** In order to achieve confidential session key exchange, we use Signcryption based on ECC and symmetric encryption Blowfish with sufficient parameters which ensure confidentiality of information exchange during session key and lead to confidential session key exchange.

4.2. **Integrity.** In session key establishment, from bio sensor to base station integrity is achieved by Signcryption routine and from base station to bio sensor by hash function.

4.3. **Authentication.** Signcryption ensure authenticity, therefore in session key establishment authenticity of information received from each sensor at base station is achieved. Authenticity of information received at sensor is achieved by ID and hash function.

4.4. **Data Freshness.** It ensures that received data are not replayed and should be fresh and created newly. In a structure, where session key strategies are employed, data freshness plays a significant role.

4.5. **Node Capture.** In case of node capturing base station has the capability to sense it and establish new session key for secure session data forwarding using rekeying. Our scheme provides admirable resilience beside node capture attack via forward secrecy.

4.6. **Scalability.** Our proposed protocol for BANs has the ability to maintain considerable increase in size of network after deployment.

4.7. **Backward and Forward Secrecy.** To ensure forward secrecy [7, 8] in case of node leave, backward secrecy in case new node join and key freshness after a specific interval of time rekeying is performed which ensure forward as well as backward secrecy.

5. **Performance Analysis.** In this section a comprehensive analysis of the proposed secure key establishment and cluster head selection protocol in term of performance is given:

5.1. **Memory Requirement Analysis for Key Storage.** We presume that base station is resource-rich and bio sensors are resource constrained so it required light weight security technique to consume less memory.

NIST recommended secure key size for ECC is 160 bits and blowfish cipher 32–448 bits. Key size of blowfish cipher from 32 to 448, RSA ≥ 2^1024 and ECC ≥ 2^160. Figure 2 indicates memory requirement analysis of our proposed scheme with other schemes.
5.2. Computation Cost Analysis. In our proposed secure key establishment technique, the expensive operations are ECPM and M-Exp. Figure 3 shows the processing cost analysis of our scheme with existing schemes.

5.3. Communication Overhead Analysis. As in BANs speed of link usage is a main issue so we need a smart cryptosystem for less communication cost. Figure 4 shows the communication overhead analysis of proposed key establishment and existing schemes.

6. Conclusion. Signcryption based on elliptic curve cryptography (ECC) in BANs is the unique feature of this paper. Life of the network is increased by cluster rotation among the sensors. Forward and backward secrecy is maintained by rekeying. The proposed scheme is favorable due to significant reduction in...
computation cost as well as communication overhead for BANs over other existing schemes while fulfilling essential security parameters.

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THE DETERMINANT OF CAPITAL STRUCTURE: DRISCOLL AND KRAAY
STANDARD ERROR ESTIMATES OF CEMENT SECTOR OF PAKISTAN

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ABSTRACT. Capital structure has a vital importance in the field of Corporate Finance. The main objective of this empirical study is to forecast the relationship of leverage with performance, tangibility and size of firm. Trade off Theory and Pecking Order Theory of capital structure has been used to study the relationship and to check various hypotheses. The motivation behind the study was the lack of empirical investigation being conducted specifically on the Cement Sector of Pakistani companies. The study scrutinizes the performance of the companies by using different performance proxy variables. Sample size resides 16 cement firms listed at Karachi Stock Exchange and the period selected for the analysis is 2009-2013. The study utilized panel data technique. The study showed a negative relationship of performance and size with debt ratio of the firms and these results are consistent with previous studies. In contrast to this tangibility showed positive relationship which is consistent with previous studies.

Keywords: Capital structure; determinants; ROA; ROE; Tobin’s Q

1. Introduction. It is quite evident that Capital structure is an important decision rested with the corporate managers. They have to decide about mix of their firms’ capital structure. Main elements of capital structure prevailing in the corporate world are retained earnings, debt, and equity financing. Modigliani and Miller (1958) introduced a theory in this regard and explained that there is no issue as to capital structure of a firm because value of a firm is independent of its capital mix. This mixture may take any form e.g., 50:50, 70:30, or 60:40. These combinations do not matter while making in a tax free economy. But it becomes worthless for economies having corporate taxes applicable to all corporate firms working therein. To overcome drawback of this theory, Myers (1984) introduced a static trade-off theory. In this theory, he discussed about optimal capital structure for a firm. According to him, optimal capital structure for a firm builds a trade-off between tax saving and cost of bankruptcy due to the use of debt in its capital structure. Tax laws in an economy allow the firms to treat interest expenses as tax deductible, reducing the firm’s tax burden thus, inducing the firms to use debt in their capital structure. Although the firm gets benefit by reducing its cost of debt because of tax deductible expense but on the other hand firm needs to pay fixed interest expense at regular intervals till the last payment of a loan. This fixed cost of the firm also pushes up its earnings breakeven point. Further, it also increases distress cost. So, the managers have to build such a capital structure mix where benefit taken from the tax savings with the increased level of debt must be more than the cost of bankruptcy or at least equal to the tax saving. This capital structure will become the best optimal capital structure for the firm. For remedy of an issue; what will be the order of using retained earnings of the firm, debt financing and equity financing when there is any financing required for the project. Myers (1984) also discussed another theory named as Pecking Order Theory while deciding the order of financing a project. In this theory, he explained that the firm should use retained earnings first when there is a need of funds to finance business projects. Then use debt financing, and then only issue new equity share for the financing of a project as the last choice.
This empirical study is conducted to explore the determinants of capital structure of Cement companies in Pakistan and listed at KSE over the period 2009 to 2013. This study will contribute to the current literature in various ways. There is no such empirical evidence available on the Cement Sector of Pakistani companies. Second, this study will help management and lenders in strategic decisions relating to the firm’s capital structure.

2. Literature Review

2.1 Size of the firm. Mayers (1984) claimed that value of a firm increases due to the size of debt ratio in the firm. Higher the debt ratio of the firm greater the size of the firm so, we can infer that there is a direct positive relationship between size and debt ratio of a firm. Large firms have higher cash flows which reduce their chances of bankruptcy as compared to small firms. In the present analysis, we measure size as the natural log of total assets (Noe, 1988; Harris and Raviv, 1990). Trade off theory explains that there must be a trade-off between marginal cost of debt and benefit taken from tax shield.

Barclay and Smith Jr (1995) claimed that the capital structure of the firm is largely affected by the size of the firm because of the following two main reasons; one is the large fixed cost of public issues because of significant scale of economy and the other is larger operations of the firm like; foreign operations, currency exchanges issues and need foreign debt. 

Frank, Murray Z., and Vidhan K. Goyal, (2003) narrates that there is a positive significant relationship among the debt ratio and size of the firm with the presence of collateral. As the size of the firm increases the debt ratio will increase. Voulgaris (2004) stated that for the survival, growth and performance of firms, capital structure is one the important element and vital for corporate decisions. He studied small and medium sized enterprises (SMEs) and large sized enterprises (LSEs) on these aspects. This empirical study showed that capital structure and the factors affecting to the capital structure vary from the size and nature of the firm.

Magnus et. al (2008) examined in their study on USA based stock exchange listed companies. Researcher narrated that the capital structure significance is depending upon the location or area where the company locates. He further examines that the debt ratio is positively related with the assets structure and company size.

Antoniou, A.Y. Guney, and K. Paudyal,(2008) stated that economic environment, financial institutions, governmental tax policies, practices of corporate governance, financial institution relationships between borrower and lender, capital market of the economy, and the management of investor protection in a country heavily affects the capital structure of the company. Assets’ tangibility and the firms’ size positively affect the debt ratio in developed and developing economies.

Mei Qiu and Bo La (2010) found that levered firms are generally more profitable than unlevered firms; profitability decreases the debt ratio of levered firms. These results are consistent with the pecking order and the agency cost theories but contradict the trade-off theory. Mustapasha, Ismail and Minai (2011) concluded that general construction and real estate companies have higher debt to equity ratio than that of other public sector companies in Malaysia. It was found that debt to equity ratio had a significant relationship with the size of construction whereas real estate sector companies are different from other sector companies.

Shah, Syed Zulfiqar Ali, and Jam-e-Kausar (2012) conduct a study on Pakistani leasing firms, results of the study showed that there is a significant positive relationship between size of the firm with the debt ratio, all kind of debts, short-term debts and long-term debts respectively.

2.2 Performance. Performance of the firm is measured through profitability. According to the pecking order theory, firms prefer to use retained earnings first as investment funds and then utilize other modes of financing, if necessary. Therefore, firms with higher profitability tend to have lesser debt ratio, which is supported by previous studies (Al-Fayoumi & Abuzyad, 2009; Gropp & Heider, 2009). Expected relationship between profitability of the firm and debt ratio is negative according to Pecking Order theory.

Voulgaris (2004) studied small and medium sized enterprises (SMEs) and large sized enterprises (LSEs) and found that the profitability is the major determinant for both small and medium scale enterprises and large scale enterprises. Magnus et. al (2008) conducted an empirical study on USA based stock exchange listed companies. They narrates that the capital structure significance is depends
upon the location or area where the companylocates. Researcher found that debt ratio is negatively related with the profitability of the firm, whereas, positively related with the assets tangibility and company size.

Antoniou, A.Y. Guney, and K. Paudyal,(2008) stated that economic environment, financial institutions, governmental tax policies, practices of corporate governance, financial institution relationships between borrower and lender, capital market of the economy, and the management of investor protection in a country heavily affects the capital structure of the company. Assets’ tangibility and firms’ size positively affects the debt ratio of the firm whereas, debt ratio will decrease with the increase in growth opportunities, profitability and capital market performance in developed and developing economies.

Mei Qiu and Bo La (2010) conducted study on Australian firms and found that levered firms are generally more profitable than unlevered firms; profitability decreases the debt ratio of levered firms. These results are consistent with the pecking order and the agency cost theories but contradict with the trade-off theory, Julia Bistrova (2011) investigated the hypothesis; are there any significant impact of capital structure decisions on the equity performance and the profitability of the company? Analysis results showed significant positive relationship between stock performance and equity capital adequacy whereas, negative relationship between the level of debt and profitability which confirms the pecking order theory. The best thing in the pecking order theory is that company should use self-generated funds for the financing of any new project.

Mustapasha, Ismail and Minai (2011) concluded that general construction and real estate companies have higher debt to equity ratio than that of other public sector companies in Malaysia. It is also found that debt to equity ratio has a significant relationship with ownership structure, performance, growth opportunities, and asset tangibility but the size of construction and real estate sector companies are different from other sector companies.

Shah, Syed Zulfiqar Ali, and Jam-e-Kausar (2012) conducted an empirical study on Pakistani leasing firms for the period 2003 to 2008. Results of the study showed significant negative relationship between profitability and debt ratio. Víctor M. González and Francisco González (2012) results were partially consistent with both explanations but suggest a greater validity of pecking-order predictions for small firms. In small firms, the negative influence of profitability and the positive influence of investment opportunities and of intangible assets on firm debt predicted by the POT are intensified. However, no differences are observed between small and large firms in their speed of adjustment to the target debt ratio as suggested by the TOT.

2.3 Tangibility with Debt ratio. Tangible assets are required as collateral for the issuance of debt. If firm has more tangible asset then it is easy for the firm to sanctions loan from any financial institution or issue debt securities. Importance of the collateral is confirmed by the financial crisis in the world which affects most of the investors, institutions and countries. According to trade off theory predicts a positive relationship between assets tangibility and debt ratio.

Antoniou, A.Y. Guney, and K. Paudyal,(2008) stated that economic environment, financial institutions, governmental tax policies, practices of corporate governance, financial institution relationships between borrower and lender, capital market of the economy, and the management of investor protection in a country heavily affects the capital structure of the company. Researcher also found assets tangibility and the firm size positively affects the debt ratio in developed and developing economies.

Mustapasha, Ismail and Minai (2011) concluded that general construction and real estate companies have higher debt to equity ratio than that of other public sector companies in Malaysia. It is also found that debt to equity ratio has a significant relationship with ownership structure, performance, growth opportunities, and asset tangibility but the size of construction and real estate sector companies are different from other sector companies.

2.4 Liquidity with Debt ratio. Shah, Syed Zulfiqar Ali, and Jam-e-Kausar (2012) conduct a comprehensive study on leasing firms in Pakistan for the period 2003 to 2008 for the determinants of capital structure. They identified some determinants of capital structure which are; Size of the firm, profitability, growth, net investment in lease finance, liquidity and tax paid. They used balanced panel sample for the investigation of relationship among these variables. Results of their study showed that there is a significant positive relationship between size of the firm, growth, net investment and liquidity with the debt ratio, short-term debts and long-term debts respectively, whereas, there is a
significant negative relationship between profitability and tax, net investment, and liquidity with the
debt ratio, long-term debts and short-term debts respectively.

Debt ratio of the firm and Liquidity holds indirect negative relationship between them because a firm
has strong liquidity position so, it discourage debt ratio of the firm. All those firms who have good
liquidity position can have less debt ratio due to the significant difference between shareholders and
outside financiers and finance new investment projects with higher liquidity position (Ozkan, 2001).
Owoloabi at el. (2013) found that some country specific factors like; cultural environment, capital
market operations and developments, monetary and fiscal policies of the country and political stability
must be considered while making capital structure decisions. Other determinants like; profitability,
solvency, size and flexibility which are proved by previous studies also affect the capital structure
decisions.

2.5 Tobin’s Q with Debt. Salteh, Ghanavati, Khanqah, and Khosroshahi (2009) studied the
relationship between capital structure and performance of companies listed at Tehran Stock Exchange.
They used accounting and market based measures of performance ROE, MBVR and Tobin’s Q and
found positive relationship with capital structure whereas they found negative relationship between
return on equity (ROE) and earning per share (EPS) and capital structure of companies. The study also
concluded that companies in Iran have financed their assets by short term debt but they are not
utilizing these assets and capital efficiently that is represented by poor performance during 2005-2009.
Hasan at el. (2014) investigated the impact of capital structure on firms performance for the firms
listed in Bangladesh. Different measures like EPS, ROE, ROA and Tobin’s Q were used to determine
the firm’s performance. Study found that there is insignificant relationship between leverage and
Tobin’s Q.

This study is conducted to provide empirical evidence of determinant of capital structure and testing
previously tested capital structure theories in the context of cement sector of Pakistani companies
listed at KSE.

3. Methodology. This empirical study is conducted to predict the determinant of capital structure, it is
based on the 16 companies of Cement sector of Pakistan listed on KSE for the period of 2009 to 2013.
Required data is collected form the companies’ annual reports. The total number of observations of
the study is 80. The technique of fixed Driscoll and Kraay standard errors has been used in this study.
The technique has been applied by Mehmood, Shahid & Ahsen (2013) and Mehmood & Mustafa
(2014). Estimations in this paper reveal no upsetting change as compared to results of fixed effects
estimates. Only t-ratios have marginally changed due to new Driscoll and Kraay standard errors
causing negligible change in p-values but none in statistical significance.

3.1 Research Questions. Is there any relationship of Debt ratio with Performance, Liquidity, Size and
Tangibility of Assets of cement sector industries working in Pakistan?

Hypothesis

This study tests the following set of hypothesis:

H1: There is no significant relationship between leverage and Profitability
H2: There is no significant relationship between leverage and Liquidity
H3: There is no significant relationship between leverage and Tangibility
H4: There is no significant relationship between leverage and Size of the firm

3.2 Model. The panel regression equation is applied to determine the capital structure of the Cement
sector of Pakistani Companies listed at KSE. Panel data generally have higher degrees of freedom
than cross sectional data because it includes both cross sectional and time series data which enable it
to be more accurate and inferential model in parameters (Hsiao, 2007).

\[
\text{Leverage} = \beta_0 + \beta_1 \text{ROA} + \beta_2 \text{ROE} + \beta_3 \text{Tangibility} + \beta_4 \text{Tobin’s q} + \beta_5 \text{Working capital ratio} + \epsilon
\]

\[
\text{Debt ratio} = \text{Ratio of Long-term debt to total assets};
\]
ROA = Ratio of Net operating profit after tax to Total assets;
ROE = Ratio of net operating profit after tax to Shareholders equity
Tangibility = Natural log of ratio of Fixed Asset to Total Assets;
Size = Ratio of market value of equity to total assets
WC Ratio = Ratio of working capital to current liabilities
Tobin’s Q = Ratio of market value of firm to Total assets &
ε = Error term (Residual)

We expect following relationships between dependent and independent variables:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROA</td>
<td>- / +</td>
</tr>
<tr>
<td>ROE</td>
<td>- / +</td>
</tr>
<tr>
<td>Tangibility</td>
<td>+</td>
</tr>
<tr>
<td>Tobin’s q</td>
<td>+ / -</td>
</tr>
<tr>
<td>Size</td>
<td>+/-</td>
</tr>
<tr>
<td>WC Ratio</td>
<td>-</td>
</tr>
</tbody>
</table>

3.3 Empirical Analysis. For estimation of panel data following tests have been applied:

3.3.1 Multi-co-linearity Test: Variance Inflation Factor. First econometric concern of empirical investigation is to check the existence of multi-collinearity among the independent variables. Generally, if the variance inflation factors (VIFs) of variables exceed 10, it shows the existence of severe multi-collinearity. VIF of the explanatory variables reported in the Table 1 are lower (less than 3.97) than the threshold level and thus the results of correlation also confirm the lack of multi-collinearity between the independent variables.

Variance Inflation Factor (VIF)

<table>
<thead>
<tr>
<th>Variable</th>
<th>VIF</th>
<th>1/VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROA</td>
<td>3.97</td>
<td>0.252113</td>
</tr>
<tr>
<td>Working cap.</td>
<td>2.47</td>
<td>0.405662</td>
</tr>
<tr>
<td>Tobin’s q</td>
<td>2.35</td>
<td>0.425082</td>
</tr>
<tr>
<td>Tangibility</td>
<td>2.01</td>
<td>0.497570</td>
</tr>
<tr>
<td>ROE</td>
<td>1.75</td>
<td>0.572514</td>
</tr>
<tr>
<td>Mean VIF</td>
<td>2.51</td>
<td></td>
</tr>
</tbody>
</table>

3.3.2 Breusch-Pagan / Cook-Weisberg test is used to check the Hetro-sce-dasticity

Ho = Constant Variance (Presence of Hetro-sce-dasticity)

H1 = Non-constant Variance (Absence of Hetro-sce-dasticity)
Value of chi-square is: 0.54 and the ‘P’ value is: 0.04612 which fails to accept alternate hypothesis. This test shows that used data for the study is free from the problem of hetero.

3.3.3 Hausman Test. This post-estimation test allows choosing between fixed or random effects model. The results of both approaches have been estimated and then subjected to this test. The criterion for selection is dependent on p-value. If p-value is less than 1%, 5% and 10% then fixed effects model is better specification for panel data estimation. The probability value of χ² is less than 0.05 which implies that fixed (systematic) effects model is more suitable.

3.3.4 Fixed Effects Estimation with Driscoll and Kraay standard errors. A cross-sectional analysis was carried out through FE Driscoll and Kraay standard error model on sample companies to determine the impact of the independent variables on the dependent variable. The following Table – shows FE estimation results for the econometric model developed in Eq. (2).

<table>
<thead>
<tr>
<th>Regression Model Estimations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent Variable is Leverage (debt/equity)</strong></td>
</tr>
<tr>
<td><strong>Regressors</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>ROA</td>
</tr>
<tr>
<td>ROE</td>
</tr>
<tr>
<td>Tangibility</td>
</tr>
<tr>
<td>Working capital</td>
</tr>
<tr>
<td>Tobin’s Q</td>
</tr>
<tr>
<td>Size</td>
</tr>
<tr>
<td>C</td>
</tr>
<tr>
<td>R2</td>
</tr>
<tr>
<td>Adjusted R2</td>
</tr>
<tr>
<td>F( 6, 4)</td>
</tr>
<tr>
<td>p-val&gt;χ²</td>
</tr>
</tbody>
</table>
4. Empirical Results and Conclusion. R-Squared: The value of R² within the entities is 23.56%, which show that the variation in dependent variable is 23.56% due to the independent variables taken in this model. R-squared within the entity explains that variation measures only in the five years of time frame taken for analysis.

Size and leverage has negative relationship in our study which indicates that as the size of firm increases the debt ratio of the firm will decreases further, our estimation explain that coefficient of size is negatively related with the measure of debt ratio and results are statistically insignificant.

Performance of the firm is measured through proxy variables of profitability ROA, Tobin’s Q and ROE. These results are consistent with Pecking Order theory and Vasiliiou et al. (2003), Gropp and Heider (2009), which validates that Cement Sector Companies use their retained earnings for new project financing rather issue debt or equity. Proxy variables ROE and Tobin’s Q showed negative relationship with debt ratio. But the relationships are found statistically significant at 5 percent level of significance.

The relationship between working capital ratio and debt ratio is found positive and coefficient is statistically significant. Further, tangible assets are found statistically significant and their is positive relationship between tangible assets and debt ratio of the firm and these results are consistent with previous studies Feidakis and Rovolitis (2007) and Shah, Syed Zulfiqar Ali, and Jam-e-Kausar (2012). Cement Companies are more interested to manage their financial need through the use of debt in their capital structure if they have more tangible assets. As narrated in previous studies (Bas et al., 2009; Frank and Goyal, 2009), if the firm has enough fixed assets for collateral then prefer to take long-term debt rather any other source.

Above analysis shows that profitability proxy variable ROE and Tobin’s Q has negative relationship with debt ratio of the firm whereas, ROA, Tangibility of assets and size of the firm shows positive relationship with the debt ratio of the firm. Driscoll and Kraay analysis show that working capital ratio and tangibility of the assets of the firm are major determinants of capital structure of Cement sector of Pakistani companies listed at KSE.

REFERENCES


EXACT SOLUTION OF TWO THIN FILM POWER LAW MODEL FLUIDS ON ALUBRICANT VERTICAL BELT

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ABSTRACT: In this article, the analytical study on the behavior of thin film double layer flows on a vertical moving belt with slip boundary conditions has been investigated. The exact solution has been found for the velocity fields and the interface velocity distributions on fully developed Laminar, Incompressible flow and the power law model of non-Newtonian fluids. The results include the profile of velocity, volume flux, average velocity, Vorticity function and skin friction. The characteristics of various Model parameters on the velocity fields and skin friction involve in the solution shown through graphs and has been discussed.

Keywords: Thin film flows, Lifting, Drainage, Slip boundary conditions, non-Newtonian fluids and Power law model.

1. Introduction: The flow inside thin films is ubiquitous in Environmental sciences, Civil Engineering, mechanical Engineering, Geophysics, Biological sciences, and elsewhere. This is due to their rich applications such as reactor fluidization, wire and fiber coating, paper production, transpiration cooling, drilling mud’s, oil wells, gaseous diffusion and fluid cells. The problem of chambers chemical and biological detection systems like fluid of many chemicals was countered regarding by Lavrik et al. [1]. Thin film unsteady flow with variable viscosity was investigated by Nadeem and Awais [2]. Munson and Young [3] discussed the thin-film flow of Newtonian fluids. Alam et al. investigated the thin-film flow of Johnson–Segalman fluids for lifting and drainage problems [4]. Thin film flow of Johnson-Segalman fluid with magneto hydrodynamics on a vertical belt with lifting and drainage problems has been discussed by Alam et al. [5]. They discussed the effect of the physical parameters like Stokes number, Weissenberg number and the applied magnetic field on velocity profile. They observed the effect of various physical parameters on the lift and drainage velocity profiles. In [6] they have investigated non-Newtonian thin film flows on a vertical cylinder. Farooq et al in [7] discussed Jeffrey fluid flow on a vertical belt with slip boundary conditions. They observed the effect of various parameters on the velocity profile. They also observed that magnetic field brings rigidity in the fluid. One of the widely established models amongst non-Newtonian fluids is class of power law model fluids which has its constitutive equations based on strong theoretical foundations.

Furthermore the use of double layer in the Newtonian and non-Newtonian fluids is of particular interest like double layer wire and fiber coating, double layer paints in various chemical processing.

Relevant and attractive work may be found in the following published articles. The velocity of two immiscible and incompressible fluids between two parallel plates have been discussed by Bird et al in [8]. It was found in their studies that when the heights of two fluids are equal then the velocity of the less viscous fluid becomes maximum as compare to the more viscous fluid Kapur and Shukla [9] discussed the maximum velocity of both fluids at different points and their interface.
Later on Kapur and Shukla [10] discussed the flow of n-immiscible fluids between two plates of different heights. They have shown that whatever the number of fluids and whatever their heights are, a unique velocity maximum always exists. Pinarbasi and Liakopoulos in [11] analyzed the linear stability at the interface of two non-Newtonian fluids with variable viscosity. Regarding effect of zeta-Potential on thin film, thickness and pressure have been discussed by Ping et al in [12]. The flow of two immiscible fluids with uniform suction at the stationary plate was discussed by Sacheti in [14]. He notified that when suction is applied, an adverse pressure gradient causes back flow near the stationary plate. Recently Kim and Kwak [15] studied double layer coating liquid flows. The approximations are based on Laminar flow and Power Law Model of non-Newtonian fluids. They discussed the coating liquid flow of immiscible resin in model of capillary annuls, where the surface of glass fiber moves at high fiber drawing speed. The power-law model comparatively gives a simple constitutive Equation. Therefore, many mathematical problems are related with this model. Power law model represents inelastic time-independent non-Newtonian liquids which shows shear-thinning or shear-thickening behavior. The work under various configurations on the thin film flows have been discussed by Mildinova et al in [16]. They have shown in Power Law Model that the non-linear interaction in a falling film of a non-Newtonian liquid exhibits a tendency towards permanent two dimensional waves as in Newtonian liquids. Astarita discussed boundary-layer flows in [17]. Taza Gul et al. [18,19] investigated thin film flow of third grade fluids for lifting and drainage problems in the presence of constant and variable viscosity. Where they studied the effect of various parameters on the lift and drainage velocity profiles. Taza Gul et al. [20] discussed exact solution of two thin film non-Newtonian immiscible fluids on a vertical belt with no slip conditions. They analyzed the effect of various physical parameters. The main aim of the present work is to study thin film fluid flows of two immiscible non-Newtonian power law model fluids on a vertical belt with slip boundary conditions.

2. Basic Equations: Consider thin film double layer of Power Law Model fluids over a vertical belt. The governing equations are:

\[ \nabla U_j = 0, \quad j = 1, 2 \]  
\[ \rho_j \frac{DU_j}{Dt} = \nabla T_j + \rho g, \quad j = 1, 2 \]

The subscripts \( j = 1, 2 \) represent primary and secondary layer liquids,

where \( \rho_j, \quad j = 1, 2 \) are densities of two non-Newtonian fluids, \( g \) denotes gravity, \( U_j, \quad j = 1, 2 \) are primary and secondary velocity vectors of the fluids, \( \frac{D}{Dt} = \frac{\partial}{\partial t} + \mathbf{u} \cdot \nabla \) denotes material time derivative and \( T_j \) are the Cauchy stresses.

3. Formulation of the lift problem: Consider two immiscible thin film and incompressible fluid layers. Assume that a wide lubricant flat belt moves vertically upward at constant speed \( \mathcal{U} \) through a large bath of Power law model liquid. We assume the total thickness of the two layers is \( \delta \). The belt carries with itself a layer of liquid of constant thickness \( \delta_1 \) taking as first thin liquid layer. The second layer at the interface \( h \) is of thickness \( \delta - \delta_1 \). For analysis Cartesian coordinate is used, in which the y-axis is taken parallel to the surface of the belt and x-axis, perpendicular to the belt.

Assuming the shear stress is negligible small at the interface between the first and the second fluid layers, the flow is steady, Laminar and that it satisfies the constitutive equation of Power Law Model.

Velocity fields for both fluid layers:
\[ U_j = (0, u_j(x), 0), j = 1, 2 \] (3)

Boundary conditions are:
\[ u_1 = U - \gamma \tau_{1y}, \text{ at } x = 0, \] (4)
\[ \frac{du}{dt} = 0, \text{ at } x = \delta, \] (5)
\[ u_1 = u_2 \text{ at } x = h, \] (6)
\[ k_1 \left( \frac{du_1}{dx} \right)^n = k_2 \left( \frac{du_2}{dx} \right)^n, \text{ at } x = h, \] (7)

Here \( h \) shows interface between thin films, \( U \) is the velocity of belt, \( \delta \) is the uniform total thickness of films. \( \frac{du_1}{dx} \) and \( \frac{du_2}{dx} \) are the shear rates of both thin fluid films. \( n_1 \) and \( n_2 \) are the flow behavior indexes. \( k_1 \) and \( k_2 \) are known as flow consistency indexes.

Inserting, the velocity field given from equation (3) in equations (1) and (2), the continuity equation (1) satisfies identically and equation (2) reduces to:
\[ \frac{d}{dx} \left( \frac{du_j}{dx} \right)^n = \frac{1}{\mu_j} \left( \frac{\partial p}{\partial y} + \rho_j g \right), j = 1, 2. \] (8)

suppose constant pressure gradient \( \frac{\partial p}{\partial y} = \lambda. \)

The shear stresses of both fluid layers are:
\[ k_1 \left( \frac{du_1}{dx} \right)^n = k_2 \left( \frac{-\lambda + \rho_2 g}{\mu_2} \right) (\delta - h) - k_1 \left( \frac{-\lambda + \rho_1 g}{\mu_1} \right) (x - h), \] (9)
\[ k_2 \left( \frac{du_2}{dx} \right)^n = k_2 \left( \frac{-\lambda + \rho_2 g}{\mu_2} \right) (\delta - h). \] (10)

Integrating Eq. (8) twice and using boundary conditions from Eqs.(4-7), the velocity profiles of both fluid layers are:
\[ u_1(x) = U + \frac{m_1 k_1^{-1}}{-\lambda + \rho_1 g} \left[ \left(\frac{-\lambda + \rho_2 g}{\mu_2} (\delta - h) + \frac{(-\lambda + \rho_1 g)h}{\mu_1} \right)^{1+n} - \left(\frac{-\lambda + \rho_2 g}{\mu_2} (\delta - h) + (h - x) \left(\frac{-\lambda + \rho_1 g}{\mu_1} \right)^{1+n} \right) \right] \]
\[ -\gamma \left(\frac{-\lambda + \rho_2 g}{\mu_2} (\delta - h) - \frac{(-\lambda + \rho_1 g)}{\mu_1} (h - x) \right). \] (11)
\[ u_2(x) = U + \frac{n\mu_2k_2}{(-\lambda + \rho_2g)(1+n)} \left[ \left( \frac{-\lambda + \rho_2g}{\mu_2}(\delta - h) \right)^{1+n} + \left( \frac{-\lambda + \rho_2g}{\mu_2}h \right)^{1+n} \right] + \]

\[ \frac{n\mu_2k_1}{(-\lambda + \rho_1g)(1+n)} \left[ \left( \frac{-\lambda + \rho_2g}{\mu_2}(\delta - h) \right)^{1+n} + \left( \frac{-\lambda + \rho_2g}{\mu_1}h \right)^{1+n} \right] - \gamma \left( \frac{-\lambda + \rho_2g}{\mu_2}(\delta - h) \right). \]

\( u_1(x) \) is the velocity of fluid layer with moving belt and \( u_2(x) \) is the velocity of fluid layer with interface.

### 3.1.1 Shear stress and Skin friction:

The shear stress of first layer is:

\[ \tau_{1xy} = k_1 \left( \frac{du_1}{dx} \right)^n. \] (13)

Inserting Eq. (9) in Eq. (13) at \( x = 0 \) the shear stress of first layer become:

\[ \tau_{1xy} \bigg|_{x=0} = \frac{(\delta - h)k_2(-\lambda + \rho_2g)}{\mu_2} + \frac{hk_1(-\lambda + \rho_1g)}{\mu_1} \] (14)

The coefficient of skin friction is defined as:

\[ C_f(0) = \frac{\tau_{1xy} \big|_{x=0}}{1/2 \rho U^2}, \] (15)

\[ C_f(0) = \frac{2}{R_c} \left( \frac{h - \delta}{\mu_2} \frac{k_2(\lambda - \rho_2g)}{\mu_2} - \frac{hk_1(\lambda - \rho_1g)}{\mu_1} \right). \] (16)

### 3.1.2 Flow rate and average velocity of second layer:

The flow rate per unit width is given by the formula:

\[ Q = \int_0^\delta u_2(x)dx. \] (17)

Inserting Eq. (12) in Eq. (17) and integrating we obtain.
The average velocity $\overline{u}$ is given by:

$$Q = \overline{u},$$

(18)

### 3.1.3 Vorticity of the lifting flow:

The vorticity vector) of the flow is given by:

$$\mathbf{\omega} = \nabla \times \mathbf{U} = \frac{du_x}{dx},$$

(19)

$$\mathbf{\omega} = k_2 \left( \frac{\delta - x}{\mu_2} \right)^{\frac{1}{n}},$$

**Fig.1** Geometry of Lifting problem.

### 4. Drainage problem for non-Newtonian Power Law Model:

For drainage, we consider two immiscible thin film layer of Power Law Model fluids. One fluid layer falls on the stationary lubricant vertical belt while the other fluid layer falls on the inter surface. The gravity caused the fluid motion so $g$ is mentioned negative in Eq. (8). We assume that the flows are Incompressible, uniform, Steady and Laminar. The thicknesses are same as in previous problem. The coordinate axis are same as in previous problem.

The boundary conditions for drainage problem are:
\[ u_1 = -\tau_{1xy} \text{ at } x = 0, \]  
(20) 

\[ \frac{du_2}{dx} = 0, \text{ at } x = \delta, \]  
(21) 

\[ u_1 = u_2 \text{ at } x = h, \]  
(22) 

\[ k_1 \left( \frac{du_1}{dx} \right)^n = k_2 \left( \frac{du_2}{dx} \right)^n, \text{ at } x = h, \]  
(23) 

Using boundary conditions (19-23) in the governing Eq. (8), the velocity profiles of both fluids are:

\[ u_1(x) = \frac{-n\mu_1 k_1^{-1}}{(1 + n)(\lambda + \rho_1 g)} \left[ \left( \frac{\lambda + \rho_2 g}{\mu_2} (h - \delta) - \frac{h(\lambda + \rho_1 g)}{\mu_1} \right)^{1+n} - \left( \frac{\lambda + \rho_2 g}{\mu_2} (h - \delta) \right)^{1+n} \right] - \left( \frac{\lambda + \rho_1 g}{\mu_1} (h - x) \right)^{1+n} \]  
(24)

\[ u_2(x) = \frac{-n\mu_2 k_2^{-1}}{(1 + n)(\lambda + \rho_2 g)} \left[ \left( \frac{\lambda + \rho_2 g}{\mu_2} (h - \delta) \right)^{1+n} + \left( \delta - x \right) \left( \frac{\lambda + \rho_2 g}{\mu_2} \right)^{1+n} \right] - \left( \frac{\lambda + \rho_1 g}{\mu_1} (h - \delta) \right)^{1+n} \]  
(25)

\[ u_1 \] is the velocity of fluid with stationary belt and \( u_2 \) is the velocity of fluid with free surface.

**4.1.1 Flow rate and average velocity of second layer:**

The flow rate per unit width is given by the formula:

\[ Q = \int_0^\delta u_2(x) \, dx, \]  
(26)

inserting Eq. (25) in Eq. (26) and integrating we obtain:

\[ Q = \frac{\delta \gamma (h - \delta)(\lambda + \rho_2 g)}{\mu_2} - \frac{n(h - \delta) \delta k_2^{-1}}{(1 + n)(\lambda + \rho_2 g)} \left( \frac{\delta - h(\lambda + \rho_2 g)}{\mu_2} \right)^{1+n} - \frac{n^2 \delta^2 k_2^{-1}}{(1 + n)(1 + 2n)(\lambda + \rho_2 g)} \left( \frac{h(\lambda + \rho_2 g)}{\mu_2} \right)^{1+n} - \frac{n\delta k_1^{-1} \mu_1}{(1 + n)(\lambda + \rho_1 g)} \left[ \left( \frac{\delta - h(\lambda + \rho_2 g)}{\mu_2} \right)^{1+n} + \left( \frac{h - \delta(\lambda + \rho_2 g)}{\mu_2} \right) - \frac{h(\lambda + \rho_1 g)}{\mu_1} \right]. \]
The average velocity $\overline{u}$ is given by:

$$Q = \overline{u}.$$  

(27)

Vorticity of the lifting and drainage velocity profiles are same mentioned in Eq. (19)

Fig. 2 Geometry of Drainage problem.

Fig. 3. Effect of power index $n$ for both fluid layers in lift problem when

\[ \delta = 1, \mu_1 = 0.6, \mu_2 = 0.4, \rho_1 = 0.5, \rho_2 = 0.4, g = 4 \]

\[ \lambda = 0.2, U = 2, k_1 = 0.6, k_2 = 0.5, h = 0.3, \gamma = 0.1. \]
Fig. 4 Effect of flow behavior index $n$ on drainage velocity when

$\delta = 1, \lambda = 0.3, \mu_1 = 0.7, \mu_2 = 0.5, \rho_1 = 0.5, \rho_2 = 0.4,$
$g = 3, U = 2, k_1 = 0.02, k_2 = 0.01, h = 0.6, \gamma = 0.3.$

Fig. 5 Effect of slip parameter on lift velocity when

$\delta = 1, n = 1.3, \mu_1 = 0.6, \mu_2 = 0.4, g = 3, \lambda = 0.9,$
$U = 2, k_1 = 0.02, k_2 = 0.01, h = 0.6, \gamma = 0.3$

Fig. 6 Effect of slip parameter on drainage velocity when

$\delta = 1, n = 1.3, \rho_1 = 0.5, \rho_2 = 0.4, \mu_1 = 0.7, \mu_2 = 0.5,$
$g = 3, \lambda = 0.3, U = 2, k_1 = 0.02, k_2 = 0.01, h = 0.6,$
Fig. 7  Effect of Pressure gradient on the lift velocity when
\[ \delta = 1, n = 1.5, \mu_1 = 0.2, \mu_2 = 0.1, \rho_1 = 0.5, \rho_2 = 0.2, \]
\[ U = 2, k_1 = 0.6, k_2 = 0.5, h = 0.4, \gamma = 0.3, g = 4. \]

Fig. 8  Effect of pressure gradient on drainage velocity when
\[ \delta = 1, n = 1.3, \mu_1 = 0.7, \mu_2 = 0.5, \rho_1 = 0.5, \rho_2 = 0.4, \]
\[ g = 3, U = 2, k_1 = 0.02, k_2 = 0.02, h = 0.6, \gamma = 0.3 \]

Fig. 9  Effect of the viscosity parameters \( k_1 \) and \( k_2 \) for both fluid layers in lift problem when
\[ \delta = 1, n = 1.5, \rho_1 = 0.5, \rho_2 = 0.4, g = 4, U = 2, \]
\[ \lambda = 0.2, h = 0.4, \]
Fig. 10 Effect of density parameters $\rho_1$ and $\rho_2$ for both fluid layers in drainage problem.

$\delta = 1, n = 1.3, \mu_1 = 0.7, \mu_2 = 0.5, g = 4, h = 0.6$

$\lambda = 0.2, U = 2, k_1 = 0.02, k_2 = 0.01, \gamma = 0.3,$

Fig. 11 Effect of skin friction verses Reynolds number

$\delta = 1, \mu_1 = 0.6, \mu_2 = 0.4, \rho_1 = 0.5, \rho_2 = 0.4, g = 4$

$\lambda = 0.2, U = 2, k_1 = 0.6, k_2 = 0.5, h = 0.3, \gamma = 0.1$

$n = 1.3$

5. **Results and discussion:** In this article, the effect of flow behavior index $n$, slip parameter $\gamma$, density parameter $\rho$, pressure gradient parameter $\lambda$, and slip parameter $\gamma$ of the fluid layers $u_1$, at the belt and $u_2$, at the interface $h$ have been shown for both lift and drainage problems in Figs. 3-11. Geometry of lift and drainage fluid layers has been shown in Figs 1 and 2 respectively. The effect of flow behavior index $n$ for lift and drainage velocity profiles have been shown in Fig. 3 and 4. There are three categories for various effects of this index. In first type, when $n < 1$ fluid layers are shear thinning (pseudo plastic). In other words the apparent viscosity (Ostwald-de Waele power law) decreases with increasing shear rate like blood, latex paint and ice etc. are the examples of such fluid layers. In second type, when $n = 1$ at low shear rate means viscosity is independent of shear rate or in other words zero shear viscosity in this category the fluid layers become Newtonian (like melts and solutions). In third type, when $n > 1$, then the apparent viscosity increases with increasing shear rate, shows the behavior of shear thickening also known as dilatant fluid layers. This effect is generally encountered in suspension. This class is similar to shear thinning systems. The only difference is that the increase in shear rate increase the apparent viscosity. Common examples of such fluids are Corn flour in water and thick suspension. In both lift and drainage velocity profiles, increase in $n$, decreases velocity profiles of both fluid layers. Effect of the slip parameter $\gamma$ have been shown in Figs 5 and 6 for lift and drainage velocity profiles respectively. Increase in slip parameter $\gamma$ decreases velocity of both fluid layers. Where decrease in lift velocity is rapid than drainage velocity. The reason is that the friction force decreases gradually towards the surface of the fluid when slip parameter increases. Effect of the pressure gradient parameter $\lambda$ have been shown in Figs 7 and 8 for lift as well as drainage velocity profiles. Increase in parameter $\lambda$ increases the velocity of first fluid layer and the velocity of second fluid reducing at a small distance after interface. In drainage velocity profile the layer velocity is strictly decreasing. Because lubrication reduces friction force near the belt due to which the velocity of fluid layer increases near the belt and gradually decreases at the surface. Effect of the viscosity parameters on the lift velocity has been shown in Fig 9. Increasing viscosity decreasing velocity of both layers. Increasing density of fluid layers increasing drainage velocity profile has been shown in Fig 10. Fig. 11 shows the effect of local Reynolds number verses skin friction. It shows that Reynolds number decreases the skin friction. For large values of Reynolds number the skin friction vanishes.
Conclusion: The constitutive equation governing the flow of a power law model for lifting and drainage of double layer, has been solved exactly. It is concluded that for small values of $n_1 = 1, n_2 = 1$ the velocity profile tends to Newtonian one. However, when $n_1 < 1, n_2 < 1$ these profiles become more flattened showing the shear-thinning effect. But when $n_1 > 1, n_2 > 1$ then it can be seen that the speed of boundary layers are relatively small to that of shear thinning and Newtonian fluids. The study shows that Reynolds number decreases the skin friction. It has also been found that the skin friction vanishes when large values of Reynolds number are taken. According to the best of our knowledge there is no previous literature about discussed problem, this is our first attempt to handle this problem.

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EFFECTS OF SPIRITUAL INITIATION ON PERSONALITY

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ABSTRACT. People’s experiences and personality changes after enacting spiritual initiations were explored in this phenomenological based qualitative study. Two female participants, who have submitted initiations to two different spiritual masters, and also were able to get permission to share their experiences, were recruited into this study. They participated in 70-minutes semi-structured interviews which were pursued by other 30-minute follow-up semi-structured interviews. Transcripts were analyzed by using the principals of Interpretative Phenomenological Analysis (IPA). Seven core themes emerged from the data including meaning and aims of spiritual initiation, reasons to submit initiation, role of the family, nature of relationship between spiritual teacher and disciple, the role of Sheikh as teacher and protector, effects on the personality of disciple and spiritual development. On the basis of these themes, it can be hypothesized that initiation can profoundly affect the disciple’s worship practices, spiritual development, appearance, interpersonal relationships, subjective wellbeing and contemplation leading to transformation of personality.

Keywords: Spiritual Initiation; Personality Change; Spiritual Master; Interpretative Phenomenological Analysis.

1. Introduction. How to make a way towards the glories that are veiled, knowledge of transcendence truth? Knowledge is the core essence of Islam. Prophet Hazrat Muhammad (PBUH) said “seek knowledge even if it be in China”. Different scholars, philosophers and saints have identified the various forms of knowledge but journey to the knowledge of the transcendence truth begins by submitting initiation to a spiritual teacher. Undoubtedly, it is accurate that sunnah of Hazrat Muhammad (PBUH) and holy Quran are complete and sufficient for Muslims to seek guidance. Nevertheless, it is also correct that teacher’s mentoring and guidance is also required to proficient any subject and to touch the essence of that subject. Allah could have send only holy Quran, If He have considered it ample but He created ease in our lives by bestowing us with the messenger Hazrat Muhammad (PBUH) as the model of Quran so we could unswervingly be trained from the example of his conduct. Learning under guidance and with the help of a teacher is a core method in the traditions of Islamic teachings. For instance, if we take into account each hadith that Hazrat Imam Bukhari compiled is directly linked with Hazrat Muhammad (PBUH), however narrations are made in a way that involve a chain of narrators, Which shows that each person must have learned from some other individual (Ghamidi, 2006).
Knowledge is transformed from heart to heart from the heart of teacher to the heart of student. The same is in the realm of “Tasawwuf”. The teacher “spiritual master” guides the disciple to purify the heart and soul, develops consciousness of Allah and establishes the lasting and profound connection with Almighty Lord. One might think that how spiritual master could help in attaining all such goals, thus “Dervish of Allah” is the one who spends years and years in extensive training to develop his conduct, worship practices, daily routine and knowledge of transcendence truth under the guidance of spiritual master. Moreover, he often passes years mastering the divine essence of worship and awareness about of Hadith, Quran, tafsir, fiqh, etc. Every phase and successive stage of their training further connects them through the chains of other Dervish to the Prophet (PBUH) who, certainly, was sent to link human beings to their Lord.

Whenever anyone joins the company of such a spiritual master, the divine nature of their knowledge and far-reaching experiences permit them to evaluate his/her spiritual position and hence, prescribe the superlative “medicine” to treat the diseases of heart and soul. Dervish is a trained doctor to cure the ailments of souls just like medical doctor is for physical diseases (“Fundamentals of tassawuf,” n.d.).

However, the treatment and relationship with spiritual doctor formally begins when a disciple submits initiation. The phenomenon of initiation is surrounded in mystery and clouds of secret, down through the ages its teachings remained secret, hidden, protected and unread within texts symbolic writings and rituals. The Prophet (PBUH) gave some teachings, which were not to become common knowledge (Lings, 2005). Hitherto mysticism has reigned for millenniums, initiation has always been considered as being most sanctified. Teaching divine knowledge through words has never been a tradition of mysticism, nor will it ever be done so. Instructing through words is not the Dervish’s work rather he tunes to those who are willing to seek refuge with Allah and are receptive to the offered divine knowledge. In simple expression, the mystic is not the one who plays the instrument rather he serves as a tuner and when job is done proficiently, the instrument is presented into the court of Divine Player, whose playing becomes increasingly evident of the reflection of Divine music (“Initiation,” n.d.).

1.1. What is spiritual initiation? Spiritual initiation means beginning of the journey, emergence of a linkage on the part of both disciple and Dervish (“Initiation,” n.d.). Mystic teacher’s journey begin with pupil by taking a step forward that the disciple may be entrusted and raised from his present condition. A step ahead on disciple’s part as he becomes ready and receptive with open heart, without any hindrances and barriers for teacher’s words, silence, deeds, actions or whatever comes from him (“Initiation,” n.d.).

Initiation is a kind of promise, or more simply it can be defined as entering into a new doctrine. Abu Muhammad Al-Jarari said “Sufism consists of entering every exalted quality (khulq) and leaving behind every despicable quality” (“Sufiam,” 2007). Whenever a person enters into and commits to a particular doctrine he or she is supposed to give their self to the dervish and commit obedience to the spiritual master by being in a state as Sufis explain like a corpse in the hands of the washer of dead (Hajveri, 2000). Through this initiation, the disciple is influenced by a specific spiritual sway that leads him/her to an entirely new journey of his life (Stoddart, 2008). This spiritual initiation is basically linked with chain of processes (known as silsila) that was initiated by the Holy Prophet (PBUH) as he gave this right to some selected people who forwarded it to their next generations and so on this process functioned through generation after generation (Stoddart, 2008).

1.2. Main Schools of Thought. There are four main spiritual orders in “Tasawwuf” i.e, Chishtiyya, Qaderiyyah, Naqshbandiyyah and Suharwardiyyah. Hazrat Khwajah Mu’eenuddin Chishti (R. A) is the founder of the Chishtiyyah order; founder of the Qaderiyyah Order is Hazrat Shaikh Abdul Qadir Jilaani (R. A); Hazrat Shaikh Bahauddin Naqshbandi (R. A) and Hazrat Shaikh Shahaab’uddin Suharwardiyyah (R. A) are the founders of the Naqshbandiyyah Order and the Suharwardiyyah order respectively (“What is sufism?,” 2008).

1.3. Rites and Rituals of Submitting Initiation The rites and rituals of initiation submission are different in different schools of thought but usually spiritual master takes the right hand of the disciple in his hand. Initiation is enacted on ladies verbally without touching the palms, many times holding a cloth from both ends; one corner by disciple and other is handed to dervish.
When a person cordially commits to such state of devotion and obedience, transformation of personality is inevitable aspect (Lings, 2005). The impure and morally corrupt man is aware of only a minor part of his own soul; and since it is whole substance that has to be discovered, mystic experiences often initially leads to the experiences which are not spiritual but only psychic, however unusual or tremendous they may seem (Lings, 2005). Thus the current paper aims to explore that whether some personality and behavioral changes take place after an individual submit to a spiritual master by enacting spiritual initiation or not? Curiosity about human personality and mysticism stems back to ancient times, and fairly ample research has been done in the different aspects of personality. Work has been done within the domain of personality and its effects on subjective wellbeing (Sumer, Bilgic, Sumer & Erol, 2005), personality and organizational setups (Board & Fritzon, 2005), personality and forensic settings (Nederlof, Ham, Dingemans & Oei, 2010), and personality in relation with health psychology (Ferguson, 2013), etc. while reviewing the existing literature about this phenomenon, researchers could not encounter enough systematic efforts made to particularly explore the effects of spiritual initiation on personality either within the context of Islam or mystical orders prevailing in sub-continent. However many researchers have encircled the phenomenon of spiritual initiation within the realms of other cultures and religions. Many studies of this domain can be found in the African culture such as the Thembandwa cult of Africa (Beattie, 1957), the Southern Bantu diviners in Africa who use Ubalawu psychoactive drugs for spiritual initiation (Sobiecki, 2012), initiation and its related aspects in Christian cultures (Daimoi, 1989), etc.

Human being is a very curious creation of God and he always want to know more and more about himself. That is why the studies on human personality have been a hot topic since very long ago as mentioned above. Similarly many definitions of personality were presented by scholars (Rayckman, 2012) and it was considered as “a dynamic and organized set of characteristics possessed by a person that uniquely influences his/her cognitions, motivations and behaviors in various situations” (Rayckman, 2012). It has been found that only 2 or 3 percent of the people have the capability to change their basic personalities (Keating, 1987). If you are an extrovert as a child, then you will remain an extrovert till your death. Same is the case with all the personality traits. Researchers found that personality largely remains stable because of the genetic factors. However, little change during the course of life reflects the influence of environmental factors (McGue, Bacon & Lykken, 1993).

Hence, the aim of present study involves the exploration of explicit personality changes and those spiritual experiences that followed the initiation to a spiritual master—— dervish. Can human beings change or encompass stable personality patterns? Answer to such questions always resulted in controversies and blistering debates. But we know from our experiences, and the childhood stories that we heard in our childhood that complete transformation of personality has been a frequent tradition of mystic world. Therefore the present study is an attempt to understand the nature, complexity of changes and experiences that disciple of specific spiritual order encounters.

1.4. Objectives of the Study
1. To develop insights about the experiences of Muslims who have enacted spiritual initiations.
2. To explore the psycho-social reasons that why do individuals submit spiritual initiations.
3. To discover the personality and behavioral changes experienced by the Muslims after submitting spiritual initiations.

2. Methodology
2.1. Participants. Two participants were selected for this qualitative study. Many individuals were approached but they could not participate because of not having permission from their spiritual masters to unveil their spiritual experiences. Finally, the participants who were able to acquire permission from their masters consisted of one educated house wife and one educated working women, both had submitted initiations to different spiritual orders. These participants were selected from different spiritual orders to gain and expand the insight into the phenomenon through diverse population. The house wife is a 35 years old lady, who graduated from Punjab University and submitted initiation to the “Sabri Chishti Order” in 1995.
She belonged to a western liberal family and encountered perfervid discouragement from her family regarding her decision to submit initiation. She got married five years back and now is a mother of a four years old son.

The second participant was 28 years old lady, who was also married and had an 18 months old daughter. She was working as a research assistant at Lahore University of Management Sciences for last three years. She submitted initiation to “Chishtiyyah-Awaisiyyah order” in 2005. She belongs to a religious inclined family, having a deep accolade for “Sufism” and “Tasawwuf”, but she herself used to be a latitudinarian till the age of 21 years.

Substantially the participants were being selected, because of the delicate and sensitive nature of the study, few people agreed to talk about their personality changes after submitting initiation, as many people do not have permission from their spiritual master to reveal their experiences. These two participants were being selected from the people who gave the consent for interview. The reason to recruit these two participants was to explore and develop the deeper insight about phenomenon of initiation and its effects on personality. These participants have submitted initiations to different spiritual masters and to different branches of Chishtiyyah order. Moreover the family support which they received for the decision of initiation submission and after the initiation submission also motleys and provides with an insightful aspect to this study.

2.2. Procedure. The participants were recruited through word of mouth and request through phone calls. Interviews were arranged through personal visits after getting initial consent. Due to the sensitive and spiritualist nature of the interview, one of the participants had to take special permission from her spiritual master regarding giving interview and when permission was granted, she agreed to give interview. Participants were assured regarding the maintenance of their confidentiality. The purpose of the study was made clear to the participants and their queries regarding the nature of this qualitative study were answered satisfactorily. It was also conveyed to the participants that in case of any kind of discomfort, they are free to terminate the interview.

Each participant was interviewed twice; initially an in-depth interview was conducted for seventy- minutes, which was traced by a thirty-minute follow up interview to explore the phenomenon in more depth and to expand on the questions that seemed to require more detailed answers for capturing a clearer picture. Both interviews were semi-structured so that the participants could have enough flexibility and exemption to express their experiences in their own words. In accordance with participants’ decision regarding location and convenience, each participant was interviewed in their homes. An interview guide was prepared prior to conduct interview and questions were drawn from the preliminary conceptual frame work each interview was recorded by using an audio recording device.

An intentional effort was involved on the part of interviewer to develop rapport with the participants and to put them on ease. Several follow up questions were asked throughout the interview to gain deeper and expanded understanding about initiation and its effects on them. Though participants showed some resistance to disclose information for which they do not have “ijazzah” permission from their spiritual master. Keeping in mind the flexibility and comfort of participants, initially questions were focused more on the things that they feel comfortable to disclose (i.e. What were the reasons that motivated you to submit initiation?), role of their family (what was the role of your family regarding your initiation). After the establishment of optimal level of rapport, questions regarding spiritual development were asked towards the middle phase of the interview (i.e. you said that the spiritual world is very beautiful and the fruition is enormous, will you please explain what you mean by fruition and beautiful world). Funnel approach was used as funnel approach helps build rapport between interviewer and interviewee and makes respondents comfortable during interview (Sekaran, 2006). These kinds of questions enabled us to accumulate as much information regarding the experiences of spiritually submitted individuals as much possible.

Then the audiotapes verbatim of initial interviews were transcribed on the same day to generated transcripts required for data analysis. While preparing transcripts, the follow up questions were also identified simultaneously for further exploration of the different aspects of the phenomenon which seemed to acquire
more detailed penetration into the phenomenon. A thirty-minute follow-up interview was also arranged for each subject and again audiotape verbatim were transcribed on the same day for data analysis.

2.3. Data Analysis. After conducting the interviews, demographic detail sheets were prepared for each participant. The researcher also noted down the reflections of visiting and having interviewed individuals with significant experiences from the mystic world of spiritualism, which in turn allowed gaining deeper understanding about the phenomenon and also helped in identifying the need for follow-up questions. While listening to audio tapes and preparing transcripts, whole interview process was virtually revisited and significant non-verbal cues that were being noticed during the interview were also noted down.

Interpretative Phenomenological Analysis (IPA) was employed to analyze the data transcripts because the aim of the study was to explore in detail and understand the complexity involved in the process of spiritual initiation and its effects on disciple’s personality. Interpretative Phenomenological Analysis is employed because it is specifically considered efficacious to analyze and understand the experiences an individual has in life, and what meanings those experiences hold in their life (Smith & Osborn, 2004). IPA was also selected because the aim is essentially a third-person’s perspective (i.e. researcher’s view of participants’ experiences) as researchers we could never ‘capture’ their experience head-on, so an ‘insider’s perspective’ on the participants’ world was reconstructed that allowed to move into the wider interpretative world of participants. After meticulously reading and re-reading each transcript, main ideas from the beginning to the end of each transcript were extracted. Then again returning back to the beginning of the each transcript, the emerging theme titles were documented. When similar themes emerged, same theme title was noted down. To develop connections between salient themes and to organize the sub-themes and main themes, charts and diagrams were drawn. Initially themes from each transcript were organized in the form of flow charts, and then connections were made between the similar themes that articulated from the transcript of different participant. The unique themes that emerged from the transcript of each participant were also incorporated. To minimize the personal biases, conscious reflections were made about preconceptions of the data, and attempts were made to suspend them in order to focus on grasping the experiential world of the research participants. A conscious effort was involved to draw the accurate picture of the participant’s world of experiences without the ejaculation of preconceptions. However the complete elimination of personal bias is not possible as the true nature of qualitative research involves the researcher’s interpretation of the given phenomenon.

Results. Using the principals of IPA, seven core themes were articulated from the data transcripts. The findings revealed that initiation is a beginning of life long journey, participants’ perceived initiation as that process which leads to the discernment of states of internal and external build-up, purification of souls and purification of morals to help attain contentment and refuge with almighty Allah. The findings revealed that certain psychological, behavioral and social changes took place after initiation. Contentment, contemplation, courage and emotional wellbeing were increased. Though, great deal of obligations and practices are introduced to disciple, which lead to positive effects on behavioral, psychological and spiritual aspects of disciple. Seven main themes emerged with sub-themes as a result of data analysis.

![Figure 1. First Major Emerged Theme](image_url)
The first important theme that articulated from the transcripts of data was the “meanings and aims of submitting initiation” (see fig. 1) to the participants. One participant defined the initiation as “getting married” by this she meant that marriage is entering into a new family, a new relationship and new environment with new exposures. By using this analogy she drew on the relationship of a disciple to the spiritual order that, as a lady after marriage lots of responsibilities and restrictions come along with this new relationship. Same is the case with initiation, disciple becomes the part of another family, and mannerism to live with that family requires a lot of adjustments on the part of disciple. She further explained that people usually hold a misconception that if someone has submitted initiation, it would ease all their difficulties, that is not the case, this commitment and promise call for enormous efforts and exertions. But the difference from the worldly marriage lies in its “fruit” by which she meant the enhanced consciousness to almighty Allah and a deep sense of contentment, security and subjective wellbeing.

Participants considered initiation as safety wall from impurities and contamination of materialistic world, which wander all around us some times in shape of demand of family and society and some time as frequent exposure to indecent media.

“Neither marriage nor the walls of my house, my husband or money provided me that sense of protection which came through my association with this order and relationship with my spiritual teacher”

The sub-theme that emerged from the discussion about meanings of initiation was the “aim and purpose” of submitting initiation. The participants came up with two substantial aims of initiation. One aim is to purify the soul and heart from lowly bestial attributes of lust, calamities’ of the tongue, anger, malice, jealousy, love of the world, greed, ostentation and vanity e.t.c, enabling them for the residence of almighty Allah. And second goal identified by the participants as was “to fight with Nafs and adornment of heart with lofty attributes” by which she meant that developing the attributes of repentance, gratefulness, fear and love of Allah, hope,

Figure 2. Second Major Emerged Theme

Tauheed, truth and complete faith. In this way attention towards Allah is inculcated in disciple. Participants also considered that each individual is a unique soul, so matters of each Nafs and soul are also dissimilar. The Spiritual teacher is the one who is going to diagnose the ailments/ diseases of soul and Nafs.

The second theme that emerged was the “reasons to submit initiation” (see fig. 2). The participants perceived reasons were unique and dissimilar as the phenomenal field, nature and context of each individual is also unique. One participant identified that:

“I had no prior idea about mysticism or spiritualism [ahh..], what I knew was that I do not want the alternate environment that was available to me, my family is a western liberal, and I never ever felt any attraction in liberalism rather I used to wonder
how my brothers and sisters could remain happy? Why this (environment) cause pain to me [pointing towards chest]. Then once in 1993, I had an opportunity to spend five days in the company of few “Dervish” in Turkey, the very first time I felt contentment and peace here [pointing towards belly].

Other participant’s experience related with reasons to submit initiation involved recurrent and intense dreams, conveying her message to submit initiation.

“I submitted initiation to “Awaisuyah Chishtiyyah silsila”, after having recurrent, very vivid emotionally intense dreams [ahhh…] dreams shook my inner soul. I was being conveyed to submit initiation. Before that I never thought of submitting initiation though my whole family is religiously inclined, even my grandfather was known to have some status in spiritual world. But my nature was liberal; [ahh]… you know! I used to wear sleeveless shirts and had friendships with boys of my class.”

**Figure 3. Third Major Emerged Theme**

One interesting aspect regarding this theme is that both participants’ reasons were completely different. Both had different motives to enter but both are firm footed on their path to truth.

The third theme which emerged was related to the “role of family” (see fig.3), an interesting aspect regarding this theme is that no matter the family were religious or liberal most of the family members discouraged the participants and both participants had to combat with family; both families were intimidating the participants that they would encounter difficulties to get married to an appropriate person.

“My initiation was very painful for my family, unbearable for them, where is she going? This age is to formulate the self-rules, who follow anyone else in this advanced age. Why she does not go to beauty parlors and parties, why she doesn’t want to have fun….? Or if she keeps on behaving like this who would marry her”

Although, one participant talked that the attitude of her mother was opposing while the father was approving and encouraging.

**Figure 4. Fourth Major Emerged Theme**
The fourth core theme pertains to the nature of relationship between disciple and spiritual master (see fig.4). The profound respect, obedience, devotion and love are evident in the transcripts on the part of discipline for spiritual master. Participants’ conversations aimed at describing that this relationship built on the compatibility and harmony to such a degree that the discipline never discerns any rejection in his/her heart for any word, and command or act of spiritual teacher. Although the discipline may be affiliated by any word or act of spiritual master.

“When I surrendered myself to Hazrat sb., he pointed out, there is a need to break this or that [um…], it was painful to cut down the very parts of self, to get sculptured by the sheikh is not an easy task, but once surrendered and believed all goals would be attain through the agency of sheikh….. Whenever he operated the diseased part of “Self” he also provided with pain killers”

The fifth imminent theme dealt with the role of spiritual master as a teacher and protector (see fig.5). Participants explained him as a guide and doctor by which they meant that spiritual master is the one who diagnose and treat diseased soul, would prepare disciple to totally reform, and enabling to present in the majestic court of Prophet Muhammad (PBUH) and Almighty Allah. Participants viewed that the substantial aim is not the self of “dervish” (spiritual teacher) rather the eternal aim is to attain the approval of Allah with the help and guidance of Faqir.

“An authentic Dervish would hold your Nafs for you… would develop esoteric acts, would present you in the court of Allah and would request Allah to accept his disciple.”

By this participant meant that the role of spiritual master is to provide esoteric protection, true protection only comes from the authentic agency and is guaranteed only after initiation.

“Faqir have internal matters, [um…] just like there is particular age of marriage and parents would say, No daughter is not prepared to take responsibility….let her study now [um…] in the same way faqir assesses the strengths and abilities of disciple and assign practices and invocation (Zikr) according to the requirements of certain case for spiritual development”

The participants also viewed spiritual master’s company and association a manifold phenomenon. It would enhance the courage, subjecting well-being, increased love for Allah. Dervish’s supplication represents the chains of supplications of other Dervish associated with him in hierarchy. An important sub-theme related with this major theme is the need for the authentic and compatible spiritual master. Every individual’s soul has its unique tailor-made and compatibility is an essential condition for development. Another sub-theme was that spiritual master assigns various worship practices after assessment. Like invocation “zikr” “sama” and meditation. These three practices were identified by the participants.

The sixth articulated theme occupies primitive status of being directly linked with our research question. “Personality changes after submitting initiation” (see fig.6) and the accounts of participants revealed that people do experience profound and clear changes in their interpersonal relationships, dressing and appearance, behavior, daily routine, thinking patterns occur. Data analysis revealed that profound
personality changes occur after initiation as one of participants revealed about changes in her appearance

“I used to wear sleeveless shirts but after initiation now such things never attract me,[ah…] now I fully cover my head and body while going out of home”

Another interesting phenomenon that unveiled during this study was change in nature of interpersonal relationships.

“After committing to “Chishti Sabri silsila”, I restricted myself just to my work and room. [ah…] I used to read Quran…, offered prayers and indulged completely myself to the practices given by Hazrat sb. For six years I had minimal contact and conversations with my family, no friendships because my friends were also the product of that western liberal environment. I asked my family to leave me on my own; I myself would come out of this state.”

While talking about psychological changes, participants talked about increased insights, consciousness, sense of security, contemplation and emotional wellbeing, satisfaction and joy.

The most fascinating theme that articulated from data is related with the “spiritual development and experiences”(see fig.7). The data from the transcript of both participants revealed that they had different kinds of spiritual experiences. One of participant talked about true dreams, supplication acceptance. An interesting thing related with this theme is that different spiritual orders differ not in their methods but also in the manifestation of development like disciple of Awaisyyah chishti order talked about “Zikre Sultanî”, that is unique to the doctrine. Zikre sultani is characterized by the recitation of different Divine names of Allah without opening mouth or lips. This Zikr is automatic and it seems as sound is coming from within. While conducting interview, the father of participant went through the state of Zikre- Sultanî, this enlightened state is unique to the Awaissyyah Chishtiiyyah order. Another important revealed information was the “opening of spiritual ears”. Participant shared that the right ear opens first and then left. The participants obtained special permission to share this information.

“My father is blessed with explicit Zikre-Sultanî but I am not. Zikre Sultanî is bestowed if the disciple has a strong desire for it secondly the “Qalb” [i.e.heart] is strong enough to bear it but honestly speaking, I never yearned for it, because I have to move out and it attracts the attention of people as a women, it is difficult to manage. But for the last three years I have been continuously praying for the opening of my spiritual ears, and “Allhamdullillalah” I was not thwarted”.

Changes in Personality

Changes in Appearance
Psychological Changes
Limited Interpersonal Relationships
Behavioral Changes

Figure 6. Sixth Major Emerged Theme
3. **Discussion and Conclusion.** Sufism, in the present, as in the past, has been an effective means for spreading the reality of Islam, expanding the knowledge and understanding of spirituality and fostering happiness and peace. With it, Muslims can improve, transform, and elevate themselves and find recovery from the ignorance of this world and the misguided pursuit of some materialistic fantasy. But not much work has been done so far on this topic in the field of psychology. Doctrine of *tasawwuf* involves practices that have therapeutic value as also indicated by the findings of this study (Sparrow, 2008).

Considering the literature review, findings are similar to a large extend regarding the role of spiritual master and duties of disciple. However, much new and unique information was also sought. Findings suggest that a formal training starts after initiation accompanied by practices and restrictions just like a child who got admission in pre-nursery, long way to go, many years of rigorous exertions and exams to acquire any degree. Although, the spiritual teacher is far superior, he not only teaches, trains and assigns home works but also works as a doctor, who diagnoses and treats illnesses of soul and “*Nafs*”.

Our findings revealed that the authenticity and compatibility of spiritual teacher is imperative. Practices would be efficacious only when these essential conditions are present. Our findings also suggest that righteous deeds are accompanied by labor, toil and difficulty both from inner-self and from outward society. Like family’s opposition and disapproval. Our findings also revealed that the process of initiation can bring about positive changes in disciple’s contemplation; subjective wellbeing and can enhance the sense of security, satisfaction and contentment. Results also suggest that initiation led to change in outer appearance and interpersonal relationships deteriorate because of the opposition of family and incompatibility with friends. Temperament changes and increased anger during first year after initiation was also reported by participants. The findings also revealed that initiation has a link with spiritual development and increased spiritual states.

The findings of this study call for the exploration and research in the area, our roots, and our reality without which no tree could grow, no field of knowledge can progress. The research can prove to be significant for consolers, clinical psychologists, social psychologists and forensic psychologists.

5. **Limitations** Though researchers felt being successful in gaining useful and unique information but study also has certain limitations. The participant did not have permission to reveal all the information so there are certain issues hidden and covered. Secondly the limited number of participants also restricts the generalizations of the study. For future researches it would be interesting to interview some practicing Dervish, or a comparative study regarding the practices of two different schools of thought would also be of interest.

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DEATH ANXIETY AS A FUNCTION OF AGE AND RELIGIOSITY

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ABSTRACT. The present study was designed to investigate the relationship of death anxiety with different age groups and with different levels of religiosity. The purposive sample of one hundred and twenty participants (n=120) was taken to conduct this study. Sample consisted of three age groups: 40 adolescents (20 boys & 20 girls), 40 middle aged people (20 males & 20 females) and 40 old aged people (20 males & 20 females). Age range of adolescents was 13-20, of middle aged was 35-59 and of old aged was 60 and above. Collett-Lester fear (1969) of death scale was used to measure the scores on death anxiety while intrinsic/extrinsic-revised religiosity scale (1989) was used to assess the level of religiosity. After taking informed consent, the questionnaires were administered to the participants. The results of ANOVA suggested that adolescents showed higher level of death anxiety than the middle aged and old aged people. It was also found from results of ANOVA that people having low levels of religiosity showed higher level of death anxiety than people having high levels of religiosity. Moreover, results of t-test showed that women experienced more death anxiety as compared to men on one subscale of death anxiety.

Keywords: Death anxiety; Religiosity; Fear of Death.

1.1. Introduction. Since the creation of mankind, death has been an inevitable reality and the last stage of man’s life. Attitudes toward death are not completely positive or negative; rather, they are on a continuum. At one end of the continuum is the perception of death as humanity’s mortal enemy, while on the other end of the continuum, death is accepting and even welcoming as a passage to a more blissful state (Aiken, 2001). Death also has a subjective meaning that differs from person to person. Every individual has his or her own interpretations of objects and events related to death. If these interpretations have negative results, then the person suffers from high death anxiety. This sort of concept of death depending upon death fears fits into the larger theoretical model of death anxiety postulated by Tomer & Eliason (1996). The concept of death anxiety can be defined as” a negative arousing response motivated by the hope of a state in which the self does not survive” (Tomer, 2000).

One variable that is associated to the fear of dying of a human being is age. Nevertheless, the relationship amid views about dying and age is not completely understandable (Tomer & Eliason, 1996). A very common view about death anxiety is that an increase in age leads to greater fear of death because the distance between us and death becomes short. However, different researches have proved this idea wrong. A research on 50 individuals belonging to three age units: the adolescent (18-26), the adult (35-50), and the old (60 and elder) showed that even though demise concern was elevated in adolescents, but it was elevated in adults also and lesser in the old people (Gesser, Wong, & Reker, 1988). A current combination of results of different studies about fear of dying in the old people proves that death anxiety becomes stable through the last years of existence (Fortner & Neimeyer, 1999).

Researchers conducted a research about the connection of death anxiety with age and psychosocial development. A
bibliographic data sheet, the Templer Death Anxiety Scale and the Constantinople Inventory of Psychosocial Development were administered on 194 participants. Outcome depicted an inverse relationship of age and psychosocial maturity with death anxiety i.e. an inverse relation exists amid them and death anxiety. Fear of death decreases with an increase in age and psychosocial maturity (Rasmussen & Brems, 1996). Researchers also carried out two researches to measure the fear of death in adult years of human life. Different tests were used in both studies, with Collett-Lester Fear of Death Scale in the first study and Templer Death Anxiety Scale in the second study. Results of both these studies indicated that death anxiety was at its peak in both the genders during their teen age and after that their death anxiety decreases significantly. Also, women exhibited more death anxiety than men in both these studies (Russac, Gatliff, Reece, & Spottswood, 2007). Pakistani researchers conducted a research on the effects of different correlates of fear of death, including age, gender, and religiosity. Templer Death Anxiety Scale and Collett-Lester Fear of Death Scale were given to a sample of 132 individuals. Results showed that people of older age, people of low religiosity and women were more fearful about being dead afraid of death and that they viewed demise as a negative experience than the men, younger people and highly religious people (Suhaib & Akram, 2002).

A research study studied six communities of people who were retired for the relation of age concentration, religiosity and fear of death using a death anxiety scale developed by Nelson and Nelson. One community named Pious consisted of religious retired people. Findings indicated that age has no impact on death anxiety of retirement community in five communities, other than Pious. Pious community exhibited lowest death anxiety in each age category (Duff & Hong, 1995). Like the notion of fatality, the idea of religiosity is also multidimensional and the main concern regarding the relation amid fear of demise and religiosity is either religiosity is a relief in front of demise or it is an incentive to nervousness. A study was done about the combinations of many trial results of demise concern researches and found that certain aspects of being religious were negatively, some were directly and some were still not correlated with fatality fretfulness (Donahue, 1985). Religiosity, in particular intrinsic religiosity, as well as spirituality may influence directly the perception of death or may have an effect on this perception by affecting the extent to which life is perceived as meaningful (Tomer, 2000). Negative correlations between intrinsic religiosity and death anxiety are consistent with such a position (Wong, 1998).

In the study about the bond amid religiosity and fear of demise, one most important aspect is the belief in an afterlife. Believing that the afterlife exists is, in turn, connected to a decrease in the fears associated with death because then people become sure that they will still have a life to spend. Belief in an afterlife also increases a person’s religiosity by depicting that the deeds done in this life have to be judged after death and the status of the afterlife depends on these deeds as well. Resultantly, people with such a belief try to live a religious and pious life. All these attitudes lessen the death anxiety a person suffers from. A qualitative research was carried out to study the level of religiosity in people when they are challenged by a terminal illness. Sample consisted of 14 hospice patients who were all interviewed through an open-ended interview. Results indicated that most of the participants showed no adherence to any religious belief, some participants turned away from their previously held religious beliefs, and a few participants did turn towards religious beliefs (McGrath, 2003). Researchers worked out on cognitive mapping of the concept of death by conducting open-ended questionnaires on Pakistani youth. Tradition and modernity were found to be the two most influential elements on death concept in our youth (Ajmal & Khawaja, 2012).

2. Rationale. Death anxiety is a very ancient concept that has fascinated human beings for a very long time. Different philosophical approaches toward this idea have shown that either the fear of death can be very strong for the person or the person can understand his life’s full meaning after having a clear concept of death. The same value has been given to the idea of death by different psychologists. Another very common aspect of death anxiety is the factors that have huge effect on death anxiety. These factors include age, gender, religiosity, and ethnicity. Different researches have been conducted in the West regarding these variables and their effects on individuals. Culture has been found to be of great importance in all these factors, determining the cultural differences found in the concept of death anxiety. So, I wanted to know that how two of these variables, namely age and religiosity are related to death anxiety in our cultural framework. The two factors chosen by me are age and religiosity, both of which are very important in death anxiety. People differ greatly in their levels of religiosity and belief in an afterlife is a very crucial aspect of religiosity affecting fear of death. In the same way, people of different ages also differ in their degree of death fear. So, through this study, I intend to know these factors’ effects of death anxiety and I also want to provide benefits to the society by suggesting some ways in which negative effects can be converted into positive ones.
3. Objectives. The study focused on the following issues:
   - To investigate whether death anxiety differs significantly across different age groups.
   - To measure and assess whether higher levels of religiosity influence death anxiety in a more positive way as compared to lower levels of religiosity.
   - To study whether men experience more death anxiety than women.

4. Hypotheses. The following hypotheses had been formulated for this study:
   - Adolescents will have higher death anxiety than the middle as well as old aged people.
   - People having low level of religiosity will be high on death anxiety as compared to those having high level of religiosity.
   - Men will have less fear of death than women.

5. Method

5.1. Participants. The purposive sample was composed of 120 individuals belonging to three different age groups. The three age groups were adolescence (M=16.2, SD=1.39) having age range 13-20, middle age (M=49.5, SD=5.18) having age range 35-59 and old age (M=64.1, SD=4.23) having age range 60 and above. Minimum level of education was intermediate. Each participant was asked to take part in this study after taking the informed consent.

5.2. Materials

5.2.1. Collett-Lester fear of death scale. The Collett-Lester Fear of Death Scale was given in 1969. It has 36 items which measure four different aspects of death anxiety, thus forming 4 subscales; Fear of Death of Self, Fear of Death of Others, Fear of Dying of Self, and Fear of Dying of Others. A test-retest reliability of 0.55 (Rigdon Epting, 1985) was found. A positive correlation has been found between Collett-Lester Fear of Death Scale and other death anxiety scales by researchers (Bailis Kennedy, 1977).

5.2.2. Intrinsic/Extrinsic-Revised (I/E-R) Religiosity Scale. The intrinsic/extrinsic-revised religiosity scale was made by Gorsuch and McPherson (1989). It has 14 items. It is 5 point Likert scale. It has 8 items measuring intrinsic religiosity, 3 items measuring extrinsic personal religiosity and 3 items measuring extrinsic social religiosity.

5.3. Procedure. A brief introduction of the idea of the research was given to the subjects. A consent form was given to the subjects in all the age groups in order to have their consent and to ensure complete privacy to their information. Demographic information was also sought and was used to know the age of each participant. Then the Collett-Lester fear of death scale and the religiosity scale were administered one by one to the participants and after completion they were taken back. The whole procedure was completed in 20-30 minutes. Then the participants were debriefed about the study using debriefing sheet.

6. Results. For data analysis, Statistica 6.0 was used in this study (Wass, 2010). Collett-Lester fear of death scale provided five different measures on death anxiety. These measures included death anxiety regarding death of self, death of others, dying of self, dying of others, and total. For analysis we used Statistica 6.0 and we applied Two-Way Anova to look at all these five measures one by one, while t-test for gender differences.

<table>
<thead>
<tr>
<th>Statistics</th>
<th>Adolescents</th>
<th>Middle Age</th>
<th>Old Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Matric</td>
<td>5(12.5%)</td>
<td>10(25%)</td>
<td>15(37.5%)</td>
</tr>
<tr>
<td>F.A</td>
<td>35(87.5%)</td>
<td>15(37.5%)</td>
<td>15(37.5%)</td>
</tr>
<tr>
<td>B.A</td>
<td>15(37.5%)</td>
<td></td>
<td>10(25%)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>20(50%)</td>
<td>20(50%)</td>
<td>20(50%)</td>
</tr>
<tr>
<td>Women</td>
<td>20(50%)</td>
<td>20(50%)</td>
<td>20(50%)</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13-20 years</td>
<td>40(100%)</td>
<td></td>
<td>40(100%)</td>
</tr>
<tr>
<td>35-59 years</td>
<td></td>
<td>40(100%)</td>
<td></td>
</tr>
<tr>
<td>60 and above</td>
<td></td>
<td></td>
<td>40(100%)</td>
</tr>
</tbody>
</table>
Table 6.2: Two Way ANOVA of Age and Religiosity for Death of Self Subscale

<table>
<thead>
<tr>
<th>Sources of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age Group</td>
<td>1809.45</td>
<td>2</td>
<td>904.73</td>
<td>7.75*</td>
</tr>
<tr>
<td>Level of Religiosity</td>
<td>1470</td>
<td>1</td>
<td>1470.00</td>
<td>12.59*</td>
</tr>
<tr>
<td>Age Group * Level of Religiosity</td>
<td>108.45</td>
<td>2</td>
<td>54.23</td>
<td>0.46</td>
</tr>
<tr>
<td>Error</td>
<td>13307.3</td>
<td>114</td>
<td>116.73</td>
<td></td>
</tr>
</tbody>
</table>

*p < .005

Table 6.2 shows the significant main effect of age group and level of religiosity in terms of death of self whereas no interaction of age group and level of religiosity.

For the death of self we found a significant main effect of age \( F(2, 114) = 7.75, p < 0.0007 \). Adolescents \((M=1.63, SE = 1.69)\) expressed significantly \((p < .02)\) higher death anxiety levels for their own death compared to middle aged \((M = -5.2, SE = 1.63)\) and significantly \((p < .0008)\) higher than old aged \((M = -7.53, SE = 2.01)\). There were no statistical differences between middle age and old age groups. See figure 6.1 for a comparison of means.

![Figure 6.1](image)

**Figure 6.1.** Death anxiety score for Death of Self showed mean differences among adolescence, middle aged, and old aged. Standard errors bars represent ±1 standard error of mean, and are the same in all other figures in this thesis, unless otherwise stated.

We also found a significant main effect of Religiosity for Death of Self \( F(1, 114) = 12.59, p < .0008 \). People with high religiosity \((M = -7.2, SE = 1.53)\) expressed lower levels of death anxiety for Death of Self than people with low religiosity \((M = -0.2, SE = 1.41)\). See figure 6.2. We found no interaction between age and religiosity for Death of Self.

![Figure 6.2](image)

**Figure 6.2.** Death anxiety scores for Death of Self across high and low Religiosity
For Death of Others we once again found the main effect of age $F(2, 114) = 6.53, p < 0.002$. Post-hoc tests revealed that anxiety in adolescents ($M = 4.98, SE = 1.27$) was significantly ($p < .001$) higher than old aged ($M = -14.8, SE = 1.28$) but was not different than middle aged ($M = 2.23, SE = 1.21$). The middle and old age groups were not statistically different, see figure 6.3. No main effect of religiosity or interaction was found to be significant.

<table>
<thead>
<tr>
<th>Sources of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age Group</td>
<td>838.07</td>
<td>2.00</td>
<td>419.03</td>
<td>6.53*</td>
</tr>
<tr>
<td>Level of Religiosity</td>
<td>27.08</td>
<td>1.00</td>
<td>27.08</td>
<td>0.42</td>
</tr>
<tr>
<td>AgeGroup*LevelofReligiosity</td>
<td>12.80</td>
<td>2.00</td>
<td>6.40</td>
<td>0.10</td>
</tr>
<tr>
<td>Error</td>
<td>7316.05</td>
<td>114.0</td>
<td>64.18</td>
<td></td>
</tr>
</tbody>
</table>

*p < .005

Table 6.3 shows the significant main effect of age group in terms of death of others whereas no main effect of level of religiosity and no interaction of age group and level of religiosity.

![Figure 6.3](image)

**Figure 6.3.** Death anxiety score for Death of Others showed mean differences among adolescence, middle aged, and old aged individuals

We also found a significant main effect of Age groups for Dying of Self $F(2, 114) = 3.61, p < .01$, suggesting that death anxiety resulting from Dying of Self in adolescents ($M = 3.03, SE = 1.11$) was comparable to middle aged ($M = 3.33, SE = 0.78$) and old aged ($M = -0.58, SE = 1.42$) individuals, however anxiety between middle aged people was significantly ($p < .046$) higher than old aged people. See figure 6.4. No main effect of religiosity or interaction was found to be significant.
Table 6.4: Two Way ANOVA of Age and Religiosity for Dying of Self Subscale

<table>
<thead>
<tr>
<th>Sources of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age Group</td>
<td>376.80</td>
<td>2.00</td>
<td>188.40</td>
<td>3.61*</td>
</tr>
<tr>
<td>Level of Religiosity</td>
<td>31.01</td>
<td>1.00</td>
<td>31.01</td>
<td>0.59</td>
</tr>
<tr>
<td>Age Group*Level of Religiosity</td>
<td>44.07</td>
<td>2.00</td>
<td>22.03</td>
<td>0.42</td>
</tr>
<tr>
<td>Error</td>
<td>5956.45</td>
<td>114.00</td>
<td>52.25</td>
<td></td>
</tr>
</tbody>
</table>

*p<.05

Table 6.4 shows the significant main effect of age group in terms of dying of self whereas no main effect of level of religiosity and no interaction of age group and level of religiosity.

Figure 6.4. Death anxiety score for Dying of Self showed mean differences among adolescence, middle aged, and old aged individuals

For Dying of Others no main effects or interactions were found to be statistically significant. And finally we ran a (3 X 2) Analysis of Variance on the total score. Representing a composite score of death anxiety in different age groups and their levels of religiosity, we found a significant main effect of age, \( F(2, 114) = 10.83, p < .0001 \). Adolescents (\( M = 9.58, SE = 3.51 \)) expressed significantly (\( p < .04 \)) higher death anxiety levels for total death anxiety scores compared to middle aged (\( M = -2.7, SE = 2.64 \)) and significantly (\( p < .0001 \)) higher than old aged (\( M = -13.43, SE = 3.82 \)). See figure 6.5.

Table 6.5: Two Way ANOVA of Age and Religiosity for Total Death Anxiety Score

<table>
<thead>
<tr>
<th>Sources of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age Group</td>
<td>10596.02</td>
<td>2.00</td>
<td>5298.01</td>
<td>10.82**</td>
</tr>
<tr>
<td>Level of Religiosity</td>
<td>2270.70</td>
<td>1.00</td>
<td>2270.70</td>
<td>4.64*</td>
</tr>
<tr>
<td>Age Group*Level of Religiosity</td>
<td>341.25</td>
<td>2.00</td>
<td>170.63</td>
<td>0.35</td>
</tr>
<tr>
<td>Error</td>
<td>55840.00</td>
<td>114.00</td>
<td>489.83</td>
<td></td>
</tr>
</tbody>
</table>

**p<.0005. *p<.005
Table 6.5 shows the significant main effect of age group and level of religiosity in terms of total death anxiety whereas no interaction of age group and level of religiosity.

![Figure 6.5](image)

**Figure 6.5.** Death anxiety total (composite) score showed mean differences among adolescence, middle aged, and old aged individuals

We also found a significant main effect of Religiosity, $F(1, 114) = 4.64, p < .03$. Individuals with high religiosity ($M = 2.17$, $SE = 3.03$) expressed higher total death anxiety than low religiosity group ($M = -6.53$, $SE = 3.12$), see figure 6.6 below. No significant interaction was found between age and religiosity.

![Figure 6.6](image)

**Figure 6.6.** Death anxiety scores (total) across high and low Religiosity

No main effect of gender was found for all the death anxiety scores except for dying of self. For dying of self, analysis (t-test independent samples) showed that anxiety in girls/women ($M = 3.25$, $SE = 0.90$) was significantly higher ($p < .04$) as compared to boys/men ($M = 0.60$, $SE = 0.97$), see figure 6.7 below.

<table>
<thead>
<tr>
<th>Gender</th>
<th>M</th>
<th>SD</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
<td>0.6</td>
<td>7.51</td>
<td>2.83*</td>
</tr>
<tr>
<td>Women</td>
<td>3.25</td>
<td>6.97</td>
<td></td>
</tr>
</tbody>
</table>

$df= 118$, *$p<.05$
Table 6.6 shows that Men ($M=0.6$, $SD=7.51$) scored lower on Dying of Self Subscale as compared to Women ($M=3.25$, $SD=6.97$), showing a significant difference between Men and Women.

![Gender Difference in Dying of Self Anxiety](image)

**Figure 6.7.** Death anxiety scores for ‘dying of self’ showed that girls/women show significantly higher anxiety than boys/men

### 7. Discussion

We explored the relationship of age and religiosity with death anxiety and for this purpose used fear of death scale and its four subscales. The results of the study showed that death anxiety was higher in Collett-Lester adolescents compared to middle- and old-aged groups. Fear of death was higher in people having low level of religiosity than high and this fear was higher in women compared to men.

We claimed that people with low level of religiosity would suffer from more fear of death than the people having high level of religiosity. This hypothesis was supported by the results on the subscale of Death of Self as well as on total Death Anxiety. This finding is consistent with a study carried out in Pakistan by Suhail and Akram (2002). They administered Templer Death Anxiety Scale, Collett-Lester Fear of death Scale and Scale of Religious Index on 132 individuals and established that people having low levels of religiosity scored higher on death anxiety as compared to those having high religiosity levels. They and we propose that religion teaches people a set of religious ideas that include extension of life after they die and that afterlife is blessed by being in heaven if the individual has followed a virtuous life. So people who believe in religion experience lower death anxiety because of expectations of better afterlife. This they can achieve by adhering to the religious doctrines focusing on forgiveness for all past wrong deeds. Resultantly, people who have strong intrinsic religious beliefs suffer less from the fear of death.

For Death of Self, Death of Others, Dying of Self and Total scores we found an age effect, adolescents scored higher than the middle- and old-aged people. Russac, Gatliff, Reece, and Spottswood (2007) conducted two studies to measure the fear of death in adult years of human life. Different tests were used in both studies, with Collett-Lester fear of death scale in the first study and Templer Death Anxiety scale in the second study. Results of both these studies indicated that death anxiety was at its peak in both men and women during their 20s and after that their death anxiety declined significantly. Wu, Tang, and Kwok (2002) conducted interviews on 237 old aged people (60 to 91 years) of China to determine their cognitive and emotional reactions towards death. The results of the study indicated that greater death anxiety was associated with younger age i.e. close to 60 years, while for increasing old age death anxiety lowered. One common view about old age is that they always have some degree of preparation to face their death as they have seen a lot of deaths and funerals throughout their lives, so they do not experience high death anxiety. Moreover they do not have careers to pursue or families to raise, thus generally have less death anxiety (Freiberg, 1992). This confirmed our second hypothesis that adolescents will be having high death anxiety as compared to the middle and old aged people.

The third hypothesis of the research i.e. women experience more death anxiety than men was confirmed only for one subscale (Dying of Self) of death anxiety. Even though, in our study, this gender difference was only for one subscale, but the finding that women suffered more than men from death anxiety has also been confirmed by the findings of other researches as visible in a research conducted by Chuin, and Choo (2010). They conducted a survey on 320 participants who were asked to complete Templer Death Anxiety Scale and Age Universal Religious Orientation Scale. They found noteworthy sex dissimilarity in fear of death with women scoring higher anxiety than men on death anxiety.
8. **Conclusion.** In conclusion, we add that our study found and replicated a number of previous studies. It seems that death is an inevitable phenomenon; people who subscribe to religious ideas suffer less on the hands of fear from death than the less religious ones. Our study found that participants had higher intrinsic religiosity and perhaps took death as an internal affair. This may have marshaled impetus to do good or bad in their worldly life. Now if you were not religious, age would decline the fear of death in time. Personal experiences of losing friends, retirement, and raising a family are all done with and thus the older individuals prepare themselves for the eventual end. Women tend to suffer from death anxiety more than men, although not on all measures we investigated but nevertheless points out a gender difference that may exist with regards to death anxiety. We can only speculate that this gender difference results from being a woman and belonging to the ‘weaker’ gender. In that perspective fear of death may be more intense than their counterparts.

9. **Limitations and suggestions.** The results of the current study would have been clearer and reliable if it could have been extended to a larger and diversified sample. Scales were from western culture and sample was from eastern culture, eliminating this difference would have revealed more clear results. In future, other demographic variables like ethnicity should also be studied. This was a quantitative research about death anxiety; in future, a qualitative approach should also be used to determine the phenomenon. In future, scales should be developed that should be appropriate with our culture and research should be conducted using the native scales. Other cultural issues regarding death anxiety should also be taken into account.

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A WEB-BASED AUTOMATION SYSTEM FOR ACADEMIC EXCHANGE PROGRAMS: THE WORLD WEB OF MEVLANA

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ABSTRACT. With the developing world, boundaries between countries are decreasing in all areas. Also in higher education, most countries are in a search for increasing internationalization. As a result, many academic exchange programs have emerged. The Mevlana Exchange Program (MEP) is the third exchange program of Turkey. Implemented since 2013, students who want to participate in the MEP can do so for a duration of minimum one, maximum two semesters. Also academic staff can participate in the program with a duration of minimum one week and maximum three months.

Increasing numbers of exchange students or staff will make manual processing of the formalities more difficult each time and end up with human-oriented mistakes leading to potential losses. Additionally, manual processing and transfer of documents needs a lot of time and effort for both applicants as well as program employees. Hence, there is a strong need for alternative solutions utilizing internet Technologies of the current era.

In this paper, we aim to report features and results of the World Web of Mevlana (WWM), the automation system developed to process the Mevlana Exchange Program.

The WWM will facilitate the Mevlana Exchange Program procedures for all stakeholders, including Mevlana Exchange Office workers, local and international coordinators, students, and academic staff. Using the experience accumulated at Atatürk University, we expect other institutions to implement the WWM for their universities. Since the processes are fairly similar, the system can be applied to other exchange programs such as ERASMUS and Farabi too with some modifications.

Keywords: academic exchange programs, Mevlana Exchange Program, Web automation

1. Introduction. With the developing world, boundaries between countries is decreasing in all areas. Also in the area of higher education, most countries are in a search for increasing internationalization. As a result,
many new academic exchange programs have emerged. The Mevlana Exchange Program (MEP) is the third exchange program of Turkey. Its bylaws were ready by the year 2011 but due to several reasons, its application was postponed to the 2013-2014 teaching period. The aim of MEP is defined as “Enabling academic exchange between Turkish and international universities worldwide” [1]. Different than other exchange programs, the MEP aims academic exchange without any geographical boundary. Students who want to participate in the MEP can do so for a duration of minimum one, maximum two semesters. Also academic staff can participate in the program with a duration of minimum one week and maximum three months. The same policy applies for students and staff from international universities who want to come to Turkey [1]. Atatürk University signed MEP protocols with 16 international universities and ended up with 102 planned exchanges for the teaching period of 2013-2014. Most of the planned exchanges could be accomplished. However, planning and implementing the work on paper/pencil basis needs a lot of workforce, not mentioning the risk of making human oriented user errors. Other exchange programs such as ERASMUS and Farabi have similar processes. As it can be easily understood, increasing numbers of exchange students or staff will make manual processing of the formalities more difficult each time and end up with human-oriented mistakes leading to potential losses. Additionally, manual processing and transfer of documents needs a lot of time and effort for both applicants as well as program employees. Hence, there is a strong need for alternative solutions utilizing internet Technologies of the current era.

In this paper, we aim to report features and results of the World Web of Mevlana (WWM), the automation system developed to process the Mevlana Exchange Program.

Supported by the Scientific Research Projects funding unit (BAP) of the Atatürk University, a Project was initiated to develop an automation system for the Mevlana Exchange Program.

The processes of the Mevlana Exchange Program can be listed as follows:

1. Determination and agreement of available exchange quota by coordinators from host and guest universities.
3. Application of local and international students to the announced seats.
4. Application of local and international academic staff to the announced seats.
5. Collection of Grade Point Average (GPA) and foreign language scores of students.
6. Matching and selection of students and academic staff eligible for exchange.
7. Preparation and transfer of acceptance letter for those who are accepted for exchange.
8. Matching of lectures and preparation of the learning protocols.
9. Collection of final reports of students and staff who successfully participated in the exchange.
10. Production of different reports.

After review of the literature, all processes and details of the system were outlined. Modules necessary to run the system were drafted and modified over time as needed. The web-based automation system software was hosted under the domain http://mevlana.atauni.edu.tr. WWM was developed using asp.net (C#.net) as the main interface programming language with MSSQL as the database programming language. Additionally Ajax technologies, Java script, Jquery, and CSS were implemented as necessary. The software was developed based on a layered architecture. WWM was prepared bilingual, including Turkish and English. The system was developed taking into account that it may be used for other institutions with small modifications. The logo of the WWM, representing Mevlana Jalal al-Din al-Rumi and internet is presented in Figure 1.
3. Results. General functions of the WWM emerged as follows:
   1. Managing activities and news of the MEP
   2. Managing student application process
   3. Processes related with local coordinators
   4. Processes related with international coordinators
   5. Reporting based on the level of authorisations

Users defined in the WWM are as follows:
   1- System manager
   2- Local coordinators
   3- International coordinators
   4- Local students
   5- Local academic staff
   6- Guest users

3.1 Communicating with Other Systems
The WWM allows each user to accomplish procedures according to the authorization level by entering his/her username/password. Data related with the competencies, courses, curriculum content, and ECTS credits is retrieved from the Course Information Package portal of the university [2]. By this way it is ensured that all the information taken is reliable and official, also preventing typing and other errors. Personal informations of local students and staff is retrieved from the Student and Staff Information System of the university [3], which allows the system to assure for reliability of the information provided and prevents external people to register on behalf of local students/staff. Additionally, students and staff save time and effort because they do not need to bring proof of their position or information such as GPA to the Mevlana Office; all these information is taken automatically.
3.2 Generating Reports
The WWM has a module for generating reports for individual needs. Students can view available programs and quota allowing also filtering when needed (Figure 2). Program coordinators can generate reports on student information and matchings.

![Figure 2: Report of available quota filtered according to guest country](image)

3.3 Data Security and Back-up
Data security is achieved via working behind the firewalls of the university and taking back-ups at the end of each week. The back-up interval is increased during heavy data flow periods. System language can be chosen at the main page, during login, or after entering the site. The login page allows password reminders. Partner universities are presented visually using the Google Maps application [4] with country, city, and coordinate informations.

3.4 First Year Results
The WWM was taken into operation by December the 1st, 2013 after a two-weeks period of tryout (Figure 3). Information in the system as to the 10th of May is as follows:

- Total 35 protocol agreements were done for the 2014-2015 period
- 35 international coordinators were defined for the partnet universities
- Quota were defined for aotal of 231 different programs (total available programs at Atatürk University were 487)
- 106 local coordinators were defined for the different local programs
- The following exchange quota were defined for the 231 programs:
  - Incoming academic staff: 313
  - Incoming students: 480
  - Outgoing academic staff: 425
  - Outgoing students: 525
  - Total quota available: 1743
4. **Conclusion.** The Mevlana Exchange Program automation system was successfully developed and implemented for the 2014-2015 exchange period. The system is working smoothly with mostly positive user feedbacks. Minor bugs encountered during operation are fixed instantly. However, since the exchange period for the 2014-2015 period is still continuing, we need to wait in order to see the performance of the system for processes such as preparing learning protocols and submission of final reports.

The need for being continually engaged in some form of learning activity will force the development for new educational settings and infrastructure removing the boundaries created by time and space [5]. As to our knowledge, the WWM is the first automation system for exchange programs in Turkey. Utilization of information technologies has been widely expanded during the recent years. Even governments started to accomplish many of their procedures through electronic government (e-government) systems, which will probably trigger the transformation of “university” to “e-university” [6]. As another example of good implementation of the internet technologies one can mention the FAT H Project, which is intended to provide equal opportunities in the Turkish educational system and providing the most productive usage of information technologies by refining technologic infrastructure in schools [7].
The World Web of Mevlana will facilitate the Mevlana Exchange Program procedures for all stakeholders, including Mevlana Exchange Office workers, local and international coordinators, students, and academic staff. It will also help to promote the Mevlana Exchange Program by enabling fast access to all resources via the internet [8]. Using the experience accumulated at Atatürk University, we expect other institutions to implement the WWM for their universities. Since the processes are fairly similar, the system can be applied to other exchange programs such as ERASMUS and Farabi too with some modifications.

REFERENCES

A REVIEW OF ADAPTIVE BAYESIAN MODELING FOR TIME SERIES FORECASTING

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ABSTRACT. Statistical time series forecasting is one of the fruitful areas having applications ranging from finance, economics, risk management, environmental sciences, geo sciences, genomics and etc. In time series forecasting models, Bayesian Modeling is one of the most successful areas having applications in time series parameter estimation, apriori relationship modeling and causality analysis in d-separated or free conditions. Due to heavy iterative differential equations, boundary conditions, and incomplete integral problems, scientists have started using derivative free and approximation algorithms that are adaptive in nature and have shown better performances over conventional statistical time series models. These adaptive models include artificial neural networks, genetic algorithms, evolutionary algorithms, nature inspired algorithms and etc. These adaptive models have proven results in different domains of applications including time series forecasting. But the field of adaptive models using Bayesian approaches for time series forecasting is an immature field. In this paper, a review on the adaptive Bayesian modeling is presented. We show how Bayesian framework is used in neural network, genetic algorithms, wavelet analysis for time series analysis and forecasting. We discuss the applications of Bayesian approach with different methods for various time series data including wind, hydrological, financial, rainfall, electricity load time series data etc. It is shown that there is big room for new research work and have proposed some new approaches as well.

Keywords: Bayesian framework, neural networks, genetic algorithms, wavelets, statistical time series modeling and forecasting.

1. Introduction. For decades, scientists and engineers are struggling to find the underlying structure of a random phenomenon normally called kernel. In statistical terms, this is called kernel estimation or probability model estimation for some underlying problem. There are a number of techniques in parametric, non-parametric and semi-parametric approaches that are used for this purpose Ycite{DudaHartStork2001}. In Bayesian modeling, we can foresee any random process based on the prior information. Thus for Bayesian data analyses approaches, we require a well-defined prior data structure so that be able to construct the posterior probability distribution/structure for the unobserved variable(s) based on the prior information. Thus, in every field where a causal relationship hold true, we can adapt Bayesian approaches to model the situation.

The Bayesian neural networks (BNNs) are used for modeling the nonlinear time series because of their competencies to manage with the intricacy issue. Moreover, a natural interpretation of the estimation and the forecasts from the estimated models are ensured by them. Due to this purpose, BNNs are used with the time series, the regression, the classification and the density estimation problems. Basically, Gaussian
approximation, the ensemble learning and Markov Chain Monte Carlo (MCMC) simulations are the typical base of Bayesian treatments of the learning in the ANNs, known as the full Bayesian approach. For ANNs, [5] and [30] introduced Gaussian approximation known as Laplace’s method. The approach of modeling the posterior distribution by a Gaussian distribution, centered locally at a mode of posterior distribution of parameters [30], [16] introduced the ensemble learning, in which the fitting of approximating distribution can be done by minimizing a Kullback–Leibler divergence globally rather than locally. In full Bayes framework, advanced Bayesian simulation methods is introduced by [36], in which the parameter samples from the posterior distribution can be generated by using MCMC simulations. Bayesian learning is integrated with Hybrid Monte Carlo (HMC) method by [36] due to computational expensiveness of MCMC techniques, and also suffering from measuring the convergence. Later, [2], [31] and [37] reviewed the Bayesian applications to ANNs in detail.


2.1. Neural Networks. Neural networks are parameterized nonlinear models used for empirical regression. Neural networks are built out of interconnected neurons (or units) arranged in layers. The network’s architecture used for this work is the perceptron made of three layers \cite{Bishop1995} the input layer, one hidden layer and the output layer.

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{Figure1.png}
\caption{A simple artificial neural network model}
\end{figure}

In the literature, some remarkable studies are there, in which focus is specifically made on the ANNs from Bayesian perspective related problem. For example; for the dimensionality problem in the ANNs, the issue of selecting the number of hidden neurons with the growing and the pruning algorithms have been discussed by [20], [18] and [32]. The sequential Monte Carlo (MC) methods and the particle filters are incorporated in the BNNs by [7]. [35] proposed an MCMC algorithm with Hierarchical Bayesian approach for nonlinear time series prediction. They used predictive distributions for drawing samples for the computation of predictive mean and error bar. The algorithm is tested by (chaotic) Rössler system generated time series and quadratic approximations are outperformed by it. [33] proposed a novel neural network method with Hierarchical Bayesian method for nonlinear time series forecasting. The approach is applied on power demand forecasting for buildings and chaotic time series data. [34] introduced a Bayesian feed forward neural network prediction model for time series data. An MCMC simulation based inference scheme is presented. For model selection criteria, analysis on moving standard birth/death reversible jump is made. For illustration of the methodology they used the airline passengers and the lynx time series data. [41] applied BNN models to predict motor vehicle crashes. They compared back propagation neural network (BPNN), Bayesian neural network (BNN) and the negative binomial (NB) regression models. The techniques are applied on collected data from Texas. They showed that in forecasting comparison NB regression model outperformed by both neural network models in general. Also BNN model
gives better abilities to generalize than the BPNN model. And the over-fitting problem can be alleviated effectively even nonlinear approximation ability would not be compromised significantly. Also showed in the safety of highway other valuable analysis could be done by BNN.[26] forecast short term electric load by design a neural network model based on Bayesian approach. They applied the Bayesian neural network to real load data. Forecasting accuracy is assessed by MAPE and RMSE. They showed that the proposed model can efficiently deal the model complexity as compared to cross validation NN techniques by using the evidence framework and model selection.[40] forecast electricity prices by proposing a BNN model. Some remarkable advantages are presented over the classical NN models. The network over-fitting can be avoided, the uncertainty degree in the forecasts can be indicated, an appropriate scale can be automatically selected for network weights and, consequently, the optimal model for prediction can be selected with the proposed BNN model. Also they found superior results in the comparison of proposed method with ARIMA, Wavelet-ARIMA and a classical neural network method.[21] proposed a time-delay back propagation neural network model on the basis of Bayesian regularization. They forecasted the import and export trades in one industry with the model. They resulted that the proposed model capable in generalization efficiently. Also the historical curve can be learned and business trends can be predicted efficiently. [17] evaluated automatic NN modeling techniques using Bayesian approach. They applied the model to daily load and weather data for six samples of four different countries. The analysis of Bayesian ARD input selection is made, and the best structure selection by Bayesian approach as compared to cross validation method is described. They also compared the Bayesian results to cross validation and naïve based NN method.[3] proposed an adaptive forecast method for very short term prediction of wind power. An ANN model is employed together with adaptive Bayesian learning and Gaussian process approximation. It is established for two cases the proposed method outperforms the persistent method. [27] presented a robust two-step method to forecast wind speed. The proposed method is obtained by applying Bayesian combination algorithm and ADALINE, BP and RBF neural network models for forecasting. They resulted that reliable, adaptive and relatively precise predictions can be obtained by the Bayesian combination method. [38] presented a model based on BNN learned by the Hybrid Monte Carlo algorithm to forecast electricity load. Laplace and HMC algorithm is used for BNN and back propagation algorithm is used for ANN. They forecast 25 days hourly load of four seasons each. Forecast evaluation was measured by MAPE and RMSE. They showed that hybrid Monte Carlo BNNs model outperform the other model and the over-fitting problem can be solved from it due to powerful capability of generalization. [12] proposed Bayesian neural network (BNN) with adjusting procedures. They compared the proposed model with natural BNN and feed forward neural network (FFNN). Mean square error (MSE) is used for forecasting accuracy. They used rainfall data in Jatisrono station, central Java, Indonesia. They showed that BNN with adjusting procedure outperforms the natural BNN and FFNN. [39] proposed a novel artificial neural network with Bayesian regularization for financial market forecasting. Goldman Sachs Group Inc. and Microsoft Corp. stock are used for determination of the model effectiveness. They resulted that the model outperforms the ARIMA and the fusion model without need for data preprocessing, test of seasonality, or analysis of cycle.

2.2. Genetic Algorithm. GAs developed by John Holland in 1970’s are heuristic optimization methods based on the concepts of natural evolution, and belongs to the larger class of evolutionary algorithms [16] and [19]. They consist of the artificial operators such as selection, mutation, crossover and migration that are the components of the natural evaluation process. In the selection process of GAs, the possibilistic (or linguistic) and the probabilistic uncertainties arise when the parents (the parameter vectors), who would create the next generation, are being selected into the mating pool [Kocadag̣lı 2012, Jilani Amjad Yasmeen 2012].
[28] proposed to the evolutionary MC algorithm which samples the parameters in the ANNs from the Boltzmann distribution using the mutation, the crossover and the exchange operations defined in the genetic algorithms (GAs). [34] adapted to the mutation and the crossover operators defined in GAs into Bayesian learning, and estimated the parameters using Genetic MC algorithm. [24] integrated the hierarchical Bayesian learning with GAs and the fuzzy numbers to estimate the parameters in the ANNs. [25] proposed an evolutionary Monte Carlo (MC) algorithm is proposed to train the Bayesian neural networks (BNNs) for the time series forecasting. This approach called as Genetic MC is based on Gaussian approximation with recursive hyper-parameter. Genetic MC integrates MC simulations with the genetic algorithms and the fuzzy membership functions. In the implementations, Genetic MC is compared with the traditional neural networks and time series techniques in terms of their forecasting performances over the weekly sales of a Finance [22] proposed a two phased method, where the length of fuzzy intervals were estimated using genetic algorithms and the time series forecasting is performed using a simple PSO algorithm.

3. Bayesian Adaptive models for Time Series Analysis: In the literature, there are many stochastic processes described over time. These processes have quantities related to recent time periods influenced by their past values. This structure is based on time series methodology. The approach of [4] is given as a classic reference on time series techniques in order to model the functional structure. [8] presented a nonlinear Bayesian multivariate adaptive regression model to forecast average wind speeds which was collected at several different sites in a complex terrain, where only a short run of data is available. [40] evaluated the forecasting precision of linear autoregressive, smooth transition autoregressive (STAR), and neural network (NN) time series models for 47 monthly macro-economic variables of the G7 economies. An NN model is obtained using Bayesian regularization. They resulted that generally linear autoregressive models are outperformed by STAR model. The NN models provide mix results specifically at long horizons forecasting, more accurate forecasts are produced by Bayesian NN model than a corresponding model specified using the specific-to-general approach. [29] proposed a Monte Carlo algorithm for Bayesian neural networks (BNNs) training. Despite hidden units, a prior on network connections is put in BNN model selection. The BNN model is compared with ARIMA, bilinear, TAR, and traditional neural network model, on various data sets. He showed that the BNN model outperforms the other models. capable in generalization capability of BNNs are discovered in many respects.

[13] explored chaos theory as a tool from non-linear time series analysis to automatic select the lags of the load series data that will be used by the neural models. Bayesian inference applied to MLPs and relevance vector machines are used in the development of autonomous neural models. They showed that the results are comparable especially for the BIAMLPS, show the potential of the proposal. [15] proposed a new homogeneous neural network ensemble approach called Generalized Regression Neural Network (GEFTS–GRNN) Ensemble for Forecasting Time Series. GEFTS uses a dynamic nonlinear weighting system.
wherein the outputs from several base-level GRNNs are combined using a combiner GRNN to produce the final output. 11 most used algorithms are compared with GEFTS on 30 real datasets. They found that the proposed algorithm performs efficiently than existing ones. Also GEFTS effectively forecast seasonally patterned time series. [23] proposed a new fuzzy time series model for multivariate fuzzy time series using fuzzy logical relationship groups. [30] compared ANNs and adaptive neural-based fuzzy inference system (ANFIS) with autoregressive (AR) model to forecast monthly reservoir inflow. Flow time series data of the Sutlej River at Bhakra Dam, India is applied. In forecasting comparison ANFIS outperform the AR and ANN models in all cases. The cyclic terms is incorporated with the proposed ANFIS model, which gave improved representation of the monthly inflow forecasting for planning and operation of reservoir.

4. Wavelet Analysis. Wavelet decomposition delivers a technique of inspecting a signal in both time and frequency domains. Through Analysis of Wavelets it has been observed to deliver an operative and effective model for \( y = f + z \), sort of data, where \( f \) is a theoretically multifaceted and complex, specially nonhomogeneous function. Actual feel of a wavelet-based model is a one-to-one transform off into a space of wavelet coefficients. The coefficient space is organized unevenly with respect to the location and scale of the functional information confined in every coefficient. Standard wavelet approaches undertake equally distanced measurements off with additive noise, and try to “denoise” the data by shrinking the empirical wavelet coefficients toward 0. When the reduced empirical coefficients are then transformed back to the data space, the reconstructed signal typically has much of the noise detached.

[46] suggested an innovative neural wavelet model to project electricity consumption load. The estimated model is based on wavelet multi-resolution disintegration by autocorrelation shell demonstration and neural
networks (multi layer perceptrons, or MLPs) modeling of wavelet coefficients. The applied Bayesian method ARD model is applied to select the extent of MLPs, which are then trained to deliver predictions. The projected techniques have been verified with the Australian electricity market data series with capable results. Various tactics for load estimation are as well executed on the identical load series for evaluation to display the usefulness of the projected hybrid forecast model. [45] engaged the adaptive Metropolis-Markov chain Monte Carlo (AM-MCMC) algorithm to wavelet regressive modeling procedures (called AM-MCMC-WR) was recommended for hydrologic time series forecasting. The parameters’ improbability is assessed by AM-MCMC algorithm in WR model, which is the foundation to deliver probabilistic hydrologic time series forecast. They lead to the forecasting presentation of AM-MCMC-WR and WR models and are alike but overtake the linear regression models.

5. Conclusions and Future Studies. The statistical approaches for parameter estimation work under many assumptions. On the other hand, Machine learning algorithms have proven applications in pattern classification and regression modeling and so the objective of hyper-parameters’ estimation are carried out using machine learning algorithms. These methods are superior to statistical hyper-parameters’ estimation methods because we don’t need to follow statistical assumptions like normality and stationarity. Furthermore, derivative free methods and nature inspired algorithms optimize the objective function without assuming any differential equation although they are iterative too. Thus time and space complexity issues are dramatically reduced using machine learning approaches. To overcome the excessive parameters in Bayesian estimation, the complexity is highly reducible.

As the research in machine learning algorithms is one of the top research areas, therefore, the development of new machine learning algorithms is an open challenge. On the other side, when using these ML approaches for Bayesian estimation, then the hybrid models will result in better estimation with lower complexity.

We aim to develop new adaptive Bayesian estimation models of low complexity and cheaper by using from machine learning areas.

REFERENCES


EXTRACTS FROM ASPARAGUS ADSCENDENS EXHIBITS POTENTIAL ANTIFungal ACTIVITY

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ABSTRACT: Asparagus adscendens (A. adscendens) has been used as traditional herbal medicine for centuries. In this study, methanolic root and leaves extracts of A. adscendens were evaluated for antifungal activity. Antifungal activity and percentage inhibition of the methanolic root and leaves extracts of A. adscendens and antibiotic Fluconozol was analyzed at the concentration of 1000 µg/mL, 500 µg/mL, 250 µg/mL, 125 µg/mL and 62.5 µg/mL against four different strains of fungi including Aspergillus flavus (A. flavus), Aspergillus terreus (A. terreus), Aspergillus niger (A. niger) and Alterneria spp. The results showed that linear fungal inhibition for root and leaves extract was maximum at 1000 µg/mL and minimum at 62.5.5 µg/mL. Area of inhibition of fungal strain for different concentration of methanolic root and leaves extracts of A. adscendens were also analyzed. Extracts at 1000 µg/mL concentration showed activity against all fungal strains ranging from 3.45 cm for A. niger to 1.8 cm for Alterneria spp. Mean of mycelial inhibition percentage of fungal strains of methanolic root and leaves extract of A. adscendens showed activity against all fungal strains ranging from 115 % for A. niger to 78.6 % for A. flavus. Minimum Inhibitory Concentration (MIC) of methanolic root extract was 1000 µg/mL each for A. flavus, A. niger and Alterneria spp, while MIC of methanolic leaves extract was 62.5 µg/mL for A. flavus, 250 µg/mL for A. niger and 1000 µg/mL for Alterneria spp. In the same way, MIC for antibiotic fluconozol was 125 µg/mL for A. terreus and Alterneria spp. while it was 62.5 µg/mL each for A. flavus and A. niger. Our results show that the methanolic extract of A. adscendens have significant antifungal activity and can be used as herbal medicine to treat different infections caused by the tested organisms.

Key Words: Asparagus adscendens; Antifungal activity; methanolic extract; medicinal plant

Introduction: Medicinal plants, since times immemorial, have been used in virtually all cultures as a source of medicine [1]. Traditionally, thousands of herbs have been investigated and suggested for therapeutic and medicinal purpose all around the world [2]. The practice of traditional medicine is widespread in China, India, Japan, Pakistan, Sri Lanka and Thailand [1]. Antimicrobial and antifungal activity of variety of herbal extracts has been noticed and found effective in different ailments [3, 4]. About 3000 species of Asparagus are known to occur in world. The genus Asparagus has been recently moved from the family Liliaceae to newly created family Asparagaceae [5].

Asparagus adscendens is a member of the genus Asparagus belonging to the family Liliaceae [6]. Asparagus adscendens is commonly referred to as Shweta musali in India and Sufaid musk in Pakistan [7]. A.
Asparagus adscendens is distributed in Punjab plains and foothill regions of Pakistan, Kashmir, and India [8, 9]. A. adscendens is used as rejuvenative herb and is also very powerful aphrodisiac and is very beneficial herb for treating low sperm count and male infertility with a very high demand in the market [7]. A. adscendens provides a rich source of potential antidiabetic agents for diabetic persons [4, 7]. The roots of A. adscendens showed a significant antitumor action in skin and fore stomach papillomagenesis [4]. In Ayurveda, Asparagus adscendens is also used in making health. It is also used in curing problems like leucorrhea, menorrhagia, arthritis, pre-natal and post-natal sufferings [4, 7].

Asparagus genus is considered to be of medicinal importance because of the presence of steroidal saponin and sapogenins in various parts of the plant [10]. Other species of this genus possess potential antimicrobial ability against various microbes. Mshelia et al. (2008) evaluated the phytochemistry and antimicrobial effect of the stem, bark, and leaf of Asparagus flagellaris [11].

Uma et al. (2009) reported the antifungal activity of Asparagus racemosus roots and tubers extract against Candida albicans, Candida tropicalis, Candida krusei, Candida guillermontii, Candida parapsilosis and Candida stellatoida. The extract of Asparagus racemosus showed high degree of activity against all the Candida strains. The inhibitory effect of the extract against all the Candida tested was found comparable with that of standard antibiotics used [12].

Sangvikar (2012) investigated the root extracts of five plants namely Asparagus racemosus, Chlorophytum tuberosum, Hemidesmus indicus, Withania somnifera, Rauwolfia tetraphylla against two seed borne pathogenic fungi Alternaria solani, Fusarium moniliforme. Out of the five root extracts, two showed strong antifungal activity. The extract of Hemidesmus indicus showed maximum activity while minimum activity was observed by Rauwolfia tetraphylla [13].

The screening of plant extracts and their product for antifungal activity has shown that higher plants represent a potential source of novel antibiotic prototypes. Thus, this study was conducted with aim to evaluate antifungal activity of the methanolic root and leaves extract of Asparagus adscendens on various fungal strains.

Materials And Methods:

Collection of plant: The fresh plants of Asparagus adscendens were collected from different area of Hangu including Alizai, Marai, KaamSaam, and Usterzai. The taxonomic identification of Asparagus adscendens was confirmed by the taxonomic key and flora of Pakistan.

Fungal Strains: The fungal strains evaluated in the present study were Aspergillus flavus, Aspergillus terreus, Aspergillus niger and Alternaria spp.

Antibiotics Dilution Method: 10 mg reference antibiotic, Fluconozol (Glaxo Smith Kline Beecham, Pakistan) was prepared in Dimethyl Sulfoxide (DMSO) at the concentration of 10,000 µg/mL, 1000 µg/mL, 500 µg/mL, 250 µg/mL, 125 µg/mL, and 62.5 µg/mL in 1.5 mL Eppendorf tubes and used for antifungal activities.

Methanolic Root and Leaves Extract Preparation: The leaves and roots of Asparagus adscendens were first washed with distilled water and shade dried under room temperature. After drying of the plants, they were cut into small pieces and powdered by electrical grinder. About 120 g of leaves powder and 90 gram of the roots powder was suspended in 200 mL (95 %w/w) of absolute methanol in 1000 mL flat bottom flask and kept at room temperature for maceration at 37 °C for about 15-20 days. The whole mixture was filtered through Whatman filter and evaporated by rotatory evaporator to get viscous mass and then dried under reduced pressure at 40-50 °C. The resulting dried crude extracts were then stored in refrigerator at 4 °C and used for antifungal activities.

Screening of Antifungal Activities: In order to check the antifungal activities, sterilized 5 mL media was poured to each test tube and kept in slant position for solidification in aseptic and sterilized environment of biosafety cabinet. The inoculum from the fungal strain was taken for inoculation on the medium in test tubes.

The stock solution of both roots and leaves extract at the concentration of 10,000 µg/mL was prepared by taking 1 mg of dried extract both from roots and leaves and dissolved in 1 mL of DMSO (Dimethyl Sulfoxide). Then from the stock solution of 10,000 µg/mL, further dilutions of concentration of 1000 µg/mL, 500 µg/mL, 250 µg/mL,
125 µg/mL and 62.5 µg/mL were prepared. The control antibiotic was also diluted from the stock solution at same concentrations.

About 500 mL of each concentration of roots and leaves extract of *Asparagus adscendens* and standard control (antibiotic) was poured into the 5 mL pre solidified SDA media in test tubes. After 30 minutes the SDA media was solidified and streaked from standard fungal strain under sterilized conditions. The test tubes were then kept in refrigerator at 4 °C in slant position for effective diffusion of the medium. The test tubes were incubated at 37 °C for 3 night period of time.

**Statistical Analysis:** After incubation of the test tubes at 37 °C for 3 nights, different concentrations of methanolic root and leaves extracts and standard control (antibiotic) were analyzed for the antifungal activities by measuring the Fungal Inhibition, Mycelial Inhibition Percentage and Minimum Inhibitory Concentration (MIC).

**Results And Discussion:** *In vitro* antimicrobial activity of plant extracts is the first step towards the development of new potential drugs. Antifungal activity and percentage inhibition of the methanolic root and leaves extracts of *A. adscendens* and antibiotic Fluconozol was analyzed at the concentrations of 1000 µg/mL, 500 µg/mL, 250 µg/mL, 125 µg/mL and 62.5 µg/mL against four different strains of fungi including *A. flavus*, *A. terreus*, *A. niger* and *Alternaria spp*. In the present study, Linear Fungal inhibition of methanolic leaves and root extract of *Asparagus adscendens* was analyzed at the concentration of 1000 µg/mL, 500 µg/mL, 250 µg/mL, 125 µg/mL and 62.5 µg/mL. Tables 1 and 2 show linear inhibition of antibiotic and plant roots and leaves extract, respectively. Figures 1.A, 1.B, 1.C and 1.D show the antifungal activity of antibiotic Fluconozol and *A. adscendens* roots and leaves methanolic extracts against *A. flavus*, *A. terreus*, *Alternaria spp* and *A. niger*, respectively.

**Figure 1.A:** Linear Inhibition of *Aspergillus flavus* by Root and Leaves extracts of *Asparagus adscendens* and Fluconozol.
Figure 1.B: Linear Inhibition of Aspergillus terreus by Root and Leaves extracts of Asparagus adscendens and Fluconozol.

Figure 1.C: Linear Inhibition of Alternaria spp for Root and Leaves extract of Asparagus adscendens and Fluconozol.
**Figure 1.D:** Linear Inhibition of *Aspergillus niger* by Root and Leaves extracts of *Asparagus adscendens* and Fluconozol.

<table>
<thead>
<tr>
<th>Fungal Strains</th>
<th>1000 µg/mL</th>
<th>500 µg/mL</th>
<th>250 µg/mL</th>
<th>125 µg/mL</th>
<th>62.5 µg/mL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Antibiotic</td>
<td>Root Extract</td>
<td>Antibiotic</td>
<td>Root Extract</td>
<td>Antibiotic</td>
</tr>
<tr>
<td><em>Aspergillus flavus</em></td>
<td>3.5</td>
<td>2.2</td>
<td>3.2</td>
<td>2</td>
<td>3.1</td>
</tr>
<tr>
<td><em>Aspergillus terreus</em></td>
<td>1.6</td>
<td>1.3</td>
<td>1.45</td>
<td>1</td>
<td>1.2</td>
</tr>
<tr>
<td><em>Aspergillus niger</em></td>
<td>3.1</td>
<td>2.3</td>
<td>2.7</td>
<td>1.8</td>
<td>2.6</td>
</tr>
<tr>
<td><em>Alternaria spp</em></td>
<td>1.45</td>
<td>1.2</td>
<td>1.4</td>
<td>1</td>
<td>1.2</td>
</tr>
</tbody>
</table>
Table 2: Linear Inhibition of Leaves Extract and Antibiotic (Fluconozol)

<table>
<thead>
<tr>
<th>Fungal Strains</th>
<th>The Linear Inhibition of Leaves Extract and Antibiotic (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1000 µg/mL</td>
</tr>
<tr>
<td></td>
<td>Antibiotic</td>
</tr>
<tr>
<td>Aspergillus flavus</td>
<td>3.5</td>
</tr>
<tr>
<td>Aspergillus terreus</td>
<td>1.6</td>
</tr>
<tr>
<td>Aspergillus niger</td>
<td>3.1</td>
</tr>
<tr>
<td>Alternaria spp</td>
<td>1.45</td>
</tr>
</tbody>
</table>

The results showed that linear fungal inhibition for root and leaves extract was maximum at 1000 µg/mL and minimum at 62.5 µg/mL. Similar results were also obtained by Naz and Bano (2012) who investigated the antifungal activity of methanol and aqueous leaf extracts of Ricinus communis against selected fungal strains including Aspergillus fumigatus and Aspergillus flavus. They noticed that methanol and water extracts of R. communis were able to show broad spectrum antifungal activity against the tested fungal isolates at a final concentration of 12 mg/mL. Methanolic and water leaf extracts of R. communis inhibited the fungal growth of A. fumigatus and A. flavus by 59.5 % and 56.3 % respectively [14].

Table 3: Area of Inhibition of fungal strains for different concentrations of root extract of Asparagus adscendens

<table>
<thead>
<tr>
<th>Fungal strains</th>
<th>Area Of Inhibition Of Fungal Strains For Root Extract (cm²)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1000 µg/mL</td>
</tr>
<tr>
<td>Aspergillus flavus</td>
<td>3.3</td>
</tr>
<tr>
<td>Aspergillus terreus</td>
<td>1.95</td>
</tr>
<tr>
<td>Aspergillus niger</td>
<td>3.45</td>
</tr>
<tr>
<td>Alternaria spp.</td>
<td>1.8</td>
</tr>
</tbody>
</table>
Table 4: Area of Inhibition of fungal strains for different concentrations of root extract of *Asparagus adscendens*

<table>
<thead>
<tr>
<th>Fungal Strains</th>
<th>Area Of Inhibition Of Fungal Strains For Leaves Extract (cm$^2$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1000 µg/mL</td>
</tr>
<tr>
<td><em>Aspergillus flavus</em></td>
<td>4.5</td>
</tr>
<tr>
<td><em>Aspergillus terreus</em></td>
<td>1.95</td>
</tr>
<tr>
<td><em>Aspergillus niger</em></td>
<td>3.45</td>
</tr>
<tr>
<td><em>Alternaria spp.</em></td>
<td>1.8</td>
</tr>
</tbody>
</table>

Area of inhibition of fungal strain for different concentration of methanolic root extract and leaves extract of *A. adscendens* were also analyzed. Extracts at the concentration of 1000 µg/mL showed activity against all fungal strains ranging from 3.45 cm$^2$ for *A. niger* to 1.8 cm$^2$ for *Alternaria spp*. The maximum area of inhibition was observed at the concentration of 1000 µg/ml that was 3.45 cm$^2$ for *A. niger*, 3.3 cm$^2$ for *A. flavus*, 1.95 cm$^2$ for *A. terreus* and 1.8 cm$^2$ for *Alternaria spp*. While at 62.5 µg/ml, area of inhibition was 1.65 cm$^2$ for *A. niger*, 1.35 cm$^2$ for *A. terreus*, 0.75 cm$^2$ for *A. flavus* and 0.6 cm$^2$ for *Alternaria spp.*

Table 5: Area of Inhibition of Fungal Strains for Different Concentrations of Fluconozol Antibiotic

<table>
<thead>
<tr>
<th>Fungal Strains</th>
<th>Area Of Inhibition Of Fungal Strains For Fluconozol (cm$^2$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1000 µg/mL</td>
</tr>
<tr>
<td><em>Aspergillus flavus</em></td>
<td>5.25</td>
</tr>
<tr>
<td><em>Aspergillus terreus</em></td>
<td>2.4</td>
</tr>
<tr>
<td><em>Aspergillus niger</em></td>
<td>4.57</td>
</tr>
<tr>
<td><em>Alternaria spp.</em></td>
<td>2.17</td>
</tr>
</tbody>
</table>

Table 6: Mean of Mycelial Inhibition percentage of fungal strain for different concentration of methanolic root extracts of *Asparagus adscendens*

<table>
<thead>
<tr>
<th>Fungal Strains</th>
<th>Means Of Mycelial Inhibition Percentage Of Fungal Strains (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1000 µg/mL</td>
</tr>
<tr>
<td><em>Aspergillus flavus</em></td>
<td>78.6 ± 0.7</td>
</tr>
<tr>
<td><em>Aspergillus terreus</em></td>
<td>86.6 ± 0.84</td>
</tr>
<tr>
<td><em>Aspergillus niger</em></td>
<td>115.0 ± 2.82</td>
</tr>
<tr>
<td><em>Alternaria spp.</em></td>
<td>80.0 ± 1.41</td>
</tr>
</tbody>
</table>
Mean of Mycelial inhibition percentage of fungal strains of methanolic root and leaves extract of *Asparagus adscendens* was analyzed at the concentration of 1000 µg/mL, 500 µg/mL, 250 µg/mL, 125 µg/mL and 62.5 µg/mL against four different strains of fungi including *A. flavus*, *A. terreus*, *A. niger* and *Alternaria spp*. Methanolic root extracts of *Asparagus adscendens* at the concentration of 1000 µg/mL showed activity against all fungal strains ranging from 115% for *A. niger* to 78.6% for *A. flavus*. The maximum Mycelial inhibition percentage at the concentration of 1000 µg/mL was 115% for *A. niger*, 86.6% for *A. terreus*, 80.0% for *Alternaria spp* and 78.6% for *A. flavus*. Similarly, methanolic leaves extract of *Asparagus adscendens* at the concentration of 1000 µg/mL showed activity against all fungal strains ranging from 188.8% for *A. niger* to 78.6% for *A. flavus*. The maximum Mycelial inhibition percentage at the concentration of 1000 µg/mL was found 188.8% for *A. niger*, 115.5% for *A. terreus*, 92.8% for *Alternaria spp* and 78.6% for *A. flavus*.

**Table 7:** Mean of Mycelial inhibition percentage of fungal strain for different concentration of methanolic leaves extract of *Asparagus adscendens*

<table>
<thead>
<tr>
<th>Fungal Strains</th>
<th>Means Of Mycelial Inhibition Percentage Of Fungal Strains</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1000 µg/mL</td>
</tr>
<tr>
<td><em>Aspergillus flavus</em></td>
<td>78.6 ± 0.7</td>
</tr>
<tr>
<td><em>Aspergillus terreus</em></td>
<td>115.5 ± 2.54</td>
</tr>
<tr>
<td><em>Aspergillus niger</em></td>
<td>188.8± 9.3</td>
</tr>
<tr>
<td><em>Alternaria spp</em></td>
<td>92.8 ± 0.56</td>
</tr>
</tbody>
</table>

**Table 8:** Mean of Mycelial inhibition percentage of fungal strain for different concentration of Antibiotic Fluconozol

<table>
<thead>
<tr>
<th>Fungal strains</th>
<th>Means of Mycelial inhibition percentage of fungal strains</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1000 µg/mL</td>
</tr>
<tr>
<td><em>Aspergillus flavus</em></td>
<td>233.3 ± 0.42</td>
</tr>
<tr>
<td><em>Aspergillus terreus</em></td>
<td>133.3 ± 2.4</td>
</tr>
<tr>
<td><em>Aspergillus niger</em></td>
<td>244.0± 2.82</td>
</tr>
<tr>
<td><em>Alternaria spp</em></td>
<td>116.0 ± 2.8</td>
</tr>
</tbody>
</table>

**Table 9:** Minimum Inhibitory Concentration of methanolic leaves, root extracts of *Asparagus adscendens* and Antibiotic Fluconozol against fungal strains

<table>
<thead>
<tr>
<th>Fungal Strains</th>
<th>Minimum Inhibitory Concentration (MIC) µg/ml</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Asparagus adscendens root extract Asparagus adscendens leaves extract</td>
</tr>
<tr>
<td><em>Aspergillus flavus</em></td>
<td>n.d. n.d.</td>
</tr>
<tr>
<td><em>Aspergillus terreus</em></td>
<td>1000 62.5</td>
</tr>
</tbody>
</table>
Aspergillus niger 1000 250 62.5

Alternaria spp. 1000 1000 125

* n.d. = Not determined

Minimum Inhibitory Concentration (MIC) of methanolic root extract, leaves extract of Asparagus adscendens and antibiotic Fluconozol was evaluated. Minimum Inhibitory Concentration (MIC) of methanolic root extract was 1000 µg/mL each for A. flavus, A. niger and Alternaria spp. While MIC of methanolic leaves extract was 62.5 µg/mL for A. flavus, 250 µg/mL for A. niger and 1000 µg/mL for Alternaria spp. In the same way, MIC for antibiotic Fluconozol was 125 µg/mL for A. terreus and Alternaria spp. while it was 62.5 µg/mL each for A. flavus and A. niger.

Fungi are the cause of major skin diseases. Many species of fungi are also responsible for several plant pathogens. Antifungal activity of A. adscendens was studied and considerable activity was noticed. Root and leaves extract at the concentration of 1000 µg/mL inhibited mycelial growth up to 115.0 % for A. niger, 86.6 % for A. terreus, 80.0 % for Alternaria spp. and 78.8 % for A. flavus. With the spread of resistance against antibiotics, medicinal plants should be considered as alternative to get all the possible antimicrobial benefits of the useful compounds contained in medicinal plants. Thus these studies indicated that this plant can be used as an herbal medicine to treat different infection caused by these tested organisms.

Conclusion: The present study revealed that the methanolic root and leaves extracts of Asparagus adscendens exhibit promising antifungal activity against fungal strains tested. Methanolic root and leaves extracts of A. adscendens may be used as useful medicine against diseases caused by the test fungal strains.

REFERENCES

METHODOLOGY OF MOLANA MUHAMMAD IDRESS KANDEHLVI (1899-1974) IN HIS TAFSEER MARIF UL QURAN (TAFSEER BIL RAI)

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ABSTRACT. The Holy Quran is a comprehensive guidance for mankind and an everlasting miracle revealed by Allah almighty to His last messenger prophet Muhammad peace be upon him. With respect to its contents it is the source of all knowledge and science. It has pointed out many scientific and historical facts which were not only unknown at that time but not even be imagined. The knowledge that refers to the findings and descriptions of the Holy Quran is called Ilme-Tafsyr. This work has been started from the prestigious age of the Holy Prophet peace be upon him. His followers (Sahaba) established numerous school (Madaris) of tafsyr within the perimeter of Arab and outside. Many Tafsyrs have been compiled on various perspectives. In Urdu language valuable Tafsyrs have been written among them one is Maarif -al -Quran by Mulana Muhammad Idrees Kandehlvi. The author under reference is a well known authority among the scholars of Islam. He has a distinctive position in all fields of religious sciences especially Tafsyr and Hadith. Maarif ul Quran is his master piece which he wrote in his later part of life. This Tafseer is a brief synopses and summary of the past tafsyrs. Since Maarif ul Quran is very popular among all and sundry, and many logical problems have been solved in a realistic way so in the article under reference this aspect (Tafsyer Bil Rai) of the said prominent Mufassir was choosen for discussion which will prove very useful for scholars.

Keywords: Quran, Tafseer, Opinion, Logic,
مولانا محمدادريس کاندبلوؤا کا تفسیر بالرآنی میں منبج

تفسیر بالرآنی کی لغوی تحقیق:

امام رأی امیر (١) فرماتے ہیں، "آری؟ احقاق النسخ الدینی القدامی علیہ السلام" (٢)

"رآنی، غالب غمان سے دو متصاد چیزیں مسلسل سے ایک پر نفس کا تحقیق (دل کی تسلی) کانام ہے:")

ارش فرماتے ہیں: (۹۹) لہذا بیان الفن

وہ آنے وہ روایت کی ایک مثال ہے جس میں مسلسل کرے تھے۔

بیان کافی سے مسلمانوں کا شکر ہے کہ اسی میں ایک سے دگان کے ایک کے موجودہ۔

اسے طرح رائنی کسی جزیرے کے متعلق تفصیر کے معنی انا آئے ہے اسے تفکر کئے حسی ومشاباتی اور

کہیں تخلیقی ونصوراتی بولی ہے۔

اسی مناسبت سے خواہ کو زیر کہیں بیس میں تصوراتی مشابہہ بولا ہے (٣)۔

رائنی کا اطلاق اجتہاد اور قیاس بر بیٹا ہے اس لحاظ سے اسحاب الیاق کو اصحاب الرائنی کے

کہیں ہے۔

تفسیر بالرائنی کی اصطلاحی تحقیق

امام زرکشی (٤) فرماتے ہیں: "آنے وہ بیان الفن از آتی الہ تفریق وحقوق وعبرت وعبرت وعیوش وسیب الیکر وء ما یحتاج فی أثاب نہ

قرآن حکم کی تفسیر میں ایک لیتی کی طرف رجوع کرنا اس میں ناصح ومسنخ واری عہد نزول کی

پہچان یا اس کے ضرورت کے لیے جزیرے کی ضرورت نہ ایہ سمجھ جو تفسیر کرنا

[ تفسیر بالرائنی بے جو خطا سے بچے کا محفوظ تبیقی، ٨)۔

اسی کی تعریف اس طرح ہے کہ گنگی ہے۔

"تفسیریاتی عبارتیں کے تفسیرالقرآن اجتہاد بعد معرفہ الفن یکی کلام الیکر وء وعیوش وسیب الیکر

ائز راز کے مفسر کی اس قرآنی تفسیر میں عباراتیں جو اجتہاد کی روشنی میں بھول اور اس مفسر کلام الیکر نہ

ویاکت حاضر کی اس علم اور عبادات کی وجہ سے شنا ظاہر اور دیگر ایک جانی جانی ایک مفسر

کہ لے ضروری بیٹا بے (٧)

ایت قرآنی میں غوری یک دیگر نہ صرف مستحسن بلکہ مطلوب ومفسور بھی ہے۔

اللہ تعالیٰ:

فزرماتے ہیں: 

(٧) نذکر اولولاناب (٨)

"ہے تو بھی بین جو عقل مسلسل بین۔"

اسی طرح ارشاد بیان الفن علیہ السلام: (٩) فتا بین ادلہ الفن ام علیہ الفن

"تو کیا ہے لوگ قرآن میں عور مشہور کرتے یا اسی دل اوں پر قفل لگ رہے بھی۔"

ابو اور مقل پر پر پر اور کرنا نے قرآن مجد کے نزول کا مقصود تبیق اور تذکری کہ تفصیلات حاصل کرنا بیں

ہیں کہ ایک مفسر کہ ایک مشکل سے اور ذکر اولولاناب (٢)

"ہے نہایت مبارک کتابیں بے جو بے نے تمبارموتی طرف اتاری بے تاکہ لوگ اس کی ایات میں تبیق کریں

اس سے یاد حاصل کریں "

ابی، الہ تعالیٰ اور زائر

آیات ذکور کہ آن کی مثل دیگر ایک، میں فکر وتدبری تحسین کیا گیا ہے لیکن اس کے علی کے

رغم ایک حدث میں وارد ہے:
من قال في القرآن برّاء فاضل فقد اخطأ (11)

جنس كسي في قران مجرد تفسير مين إني رأيت سه كجة كيا اور اس كي بات ده نكل تو

ء اس نه غلطي كي جس كي تحت قران كي تفسير مين رائي كي استعمال كي تصويب نبين كي

يؤب

اس كي جواب مين امام بغوي (12) فراماته بن:

قد جاء اليوه في حق من قال في القرآن برّاء وذالك من قال من قبل شايفرمان (13) يه وreed اسم شخص كي باره مين

بيجو قران كي تفسير مين إني طرف كي كونى إنسى بات كي جو علمي اور تحقيق بنيادير نم يو

اور اتفاقاً كي رائي أصل كي مواقف جاني. ابدي تأويل جوعم واجتهاد برمي بوارى قر

كي مخالف نس بور تو علماء مين كي اجرايت دى بيت.

عآلام مدارى (14) كي نفظ كا خل_launch با يب

من تكيم في الفتر برّاء ينستنج في نيند. وخطر بلال من ين دزايا با البسول ولا عيزبة بالنشوإ فاصاب أن فواقف كا الصواب ..... فقد الخطأ

في كارون القرون

قرآن كريم مين إني رائي سه كجه كينا جس كي بنيادى كي علمي يا بوائي نفس يو بور انف

صحيح تفسير كي مواقف نكل تو يبحق كي بجنيفاتينا خطأ شمار بويج جس كي حديث مين مماثع

تفسير بالرائي كي أقسام:

تفسير بالرائي كي بنيادى طور دو اقسام بين:

تفسير بالرائي المحمود:

واضح ربي كي تقسم ايل علم نى ابي اتحاد سى كي كي بور تفسير كي جانجى كي لنى ايك

ميزان. مقرر كي با جس بر كي تفسير كا درجه متعين كيا جاتى كى ذل مين مماثع كي أرا ذكر كي

جاني بين.

: امام حافظ ابن قيم الجوزية (16) ان دونو قسم كي تفسير كي وضاحت ان الفاظ مين كرتى بيت.

ان الرحي نونان: اخد مساعدته كي لا دليل عليه بل بطل وكمين هذا أر الكافلة الفضيل والصباحة بد ووالذي راى مساعدته إلى استبلى ول الاحتياط

من النص: .... فهنا من أذنفهم الفهم النصوص كأفق(17)

رائي كي دو قسمين ببين ايك تو و هو مجرد رائي بيو نو كسدي دليل يه قائم نه بوي بلك. ظن وتخمن برف

منى يوتو اس قسم كي رائي سى سيدنا أبو برك صديق اور دوسرى اصحاب كرمال: كي تعالى كي نين

ماميجي بيو دوسرى قسم وبي بيو جس كا استدل كسي دوسرى نس كي كي بلو تو يناميا ايطف

اور دقيق فينصوص كا نامج به.

2: امام زركشي: "فراماته بين: 

ولا ما يفسر القرآن اخد الرفي والاجتياح من غير أصل (18)

"قرآن مجيد كي تفسير يغم دليل كي محض رائي اور اجتهد سى كروا جائز نبيين" 

يتعى رائي أكر دليل كي روشنى مين يو تو نهر مدموم نيين بصورت ديجر تابستيده شمار بويج.

ياسي طرح فراماته بين:

"واما التي يئسدها: أثر فاشكر يب في البازى جاني (19)

جو رائي كسي دليل ير مين يو تو بيش آده نى مسان مين اس كي مطالب فيصل. كروا جائز بيت

اس تفصيل سى ثابت بيو بى كرائي مطلق كه محمود يو اور نه مدموم نه بر رائي قابل ترديد بيه

اور نى بر ايك قابل قول. أكر تفسير كي مسلم اصول وقواعد كى منظور ركي كر رائي قاتى كي جان

تو وه رائي مدموم بيشد بويجى أور أكر ان مسلمات كا استعمال كريك كى كى واضح نقية.
کوشنیزی رائے کی بہت خطرنا جانے تو یہ رائے مذموم نا پسنیدی [شمار بھی]

مولانا محمد اردیس کاندلوی(20) کا تفسیر بالرائم مین منج
دل بین مولانا محمد اردیس کاندلوی کا تفسیری منج ذکر ہیں کیا جا تے

آیات اور سورتوں کے مابین ربط کا اتصال
مولانا محمد اردیس کاندلوی کی بہ خصوصیت یہ کہ ابند نے اپنی تفسیر مین ربط کا اتتام کیا

پہلے سورت کی ابتدا میں ایلی مزارت کے ساتھ اور اس کے کیسمی طرح ایک کا ابت کے ساتھ ربط ہے۔
گیا ایک کے درمان پانے جاتے جانے والے ایسے روضہ اور سردار بین کی بین کہ، قرآن مذکر کی سورتوں
اورات ایک لزئی میں پرائی پوئن مونی کی طرح نظر آتی بین کی جگہ پر ایک سے زیادہ

اسبہ پیا کے بین مہ سوار بلفقاور سورت حال عمران کے درمان پانچ طریقوں سے

ذکر کیا ہے نہ ہیں مہ ملالہ پر

بہ کتاب ان کی کہ کہ سے

پہلی سورت میں بد کی نگائی کا ذکر تھا جو اعہب العجان بیے اور دوسری مین عیسی

عملہ السلام کی بہائی کاتکرر بہی

سورة بقرہ کا خاتمه، دعاء یہ بہی اسی طرح سورة ال عمران کا اخری رکوب بہی دعاء

پر مشتمل بہی


سورة بقرہ کی ابتدا مین منفین کا ذکر تھا اسی طرح سورة ال عمران کے اخر مین بہی


مفسر ہی فصائحت وبلغات کی بہی سے نکات کے طرف نشادنی کی بہی

سورة فاتحہ کی تفسیر مین اپ کی الاظہر کا خلافہ پہی

ابتداء سورة مین طرز کلام غناہانہ تھا اور ایک ایک نغمہ جانے غناہانہ کی حاضرہ، طرز اختیار
کیا گیا اور اس طرح غیب سے خطاب کی طرف انتقال کیا گیا...غناہانہ، عمدہ وہا زیاده اخلیص کی
علامت ایک اور عبتہ وحدت حضرؤ مین بیوین بن نیز نہیں کی جب نام شروع کی تفہوم بنزلہ

اجنی اکثر کہ ایک گیا گیا خواہاہ زوال جلالی کی غناہانہ، حرم وثناء شروع کی اور جب حمد وثناء
مناجات حد کمال کو پہنچی تو دعے دید کے وہ سے اور اجنبیت یگانگت سے بدلتا گیا اذہ صیغہ

(21)

صرف ونوی تحقيق

ایک جھگہ، فرماتے بین: (ونے ادنی مبین، عثما منکین(23)) کے بارے مین کئی توجیبات بین: بھینہکا ماده

طق علی، طاق تیں جس کے معنی کسی وہ لیکھ رنیمئی، حضانتہ ومضتخت کے ساتھ قادر بونے کے بین اور

بسیلہ قادر بونه کو [یونی] کبھی بین تو یہ کا معنی یہ بھی بھگا کہ جو لے رہے رکھئد

دقیق فرامی (بہت مشقت کے ساتھ) قادر بون جسیا کہ شیخ کبیر [بہتا پوئرہ] بیOND بیع تو او

اسی طرح فرماتے بین: کہ میں ضمير مفعول صوم کی طرف نہیں بکھا کی

ع بہو لفظا مؤثر بے مگر رتیہ مقدم بے کوئ کے "ونے ادنی مبین" کی

"بندہ مؤثر بے اور طعام مسکین مبتداء سے بدل بے اور مبتداء کا بدل رتیہ مقدم بے"(24)

کلام مسائل حل کرے مین مفسر کا منج

مفسر نے کئی اعتقادات اور کلام مسائل پر سیر حاصل تیزہ کیا پہ جن مین وجود باری

تعلی، عصمت اطیار، میرے کی عدم اصلیت وردیقیدت تیلیث، حقیقت عفیدہ ختم بیوت اور اثبات قدری

2421
وجدت باري تعلالي، كون مختلف عقلي، دلالے سے ثابت كرنا كي كودشش كي بي،

اپنے (وكان فيهم اللہ الہي) (25) اگر آسمان اور زمین بين اللہ كي سوا محبوب بوتي تو زمین و آسمان
كى تفسير مnine ارشاد فرمياي بيين: كي بيربان غلبى بهي بي او رنقى بهي جس كي توانا كي بيت بيين، اس كا مطالب بي بي كي تمام كارخانه عالم يکي خداوند قدوس كي تدير سے

اہندی عرفشش سے بدستور جایا بي اگر كي محبوب بوتي تو نظام درم برم بوجاتانگ فсад
 موجود نزين بي تو ذات بوان، اللہ ايک بي بي او تعود اللہ باطن بي (26)۔

2: مسلسل عمائد انبياء پر ایک جگھ روشنئي ذاتي فرميات بین

ابل اسلام كا اتفاق بى كا انبياء كرام عليني السلام ابتداء بى سے توديد وى آدم سے مفطرد بوتي بين
غمب سے پيدا بوتي ببين سے ان كي قلوب كف أور شرک سے پاک اور منزہ اور اقیان
احکم الہي تبليغ مين انپر كرام مخصوص بوتي بى كيس ترون كسي صورت سے كنب اور
تحرفي كا سا سے سرزد بونا مخالي بي (28)۔

3: عقیدہ ختم نبوي كے اثاث مین لکھتے بین

دو معانی پردالت كرتا بى حقيقی مجازي متعلق مين خاتم سے مراد آخر كي بین
جو سب كي بعد ہوا مضاصر متعلق افضل وامک بيين اكمل اوائل وذيه كي بيع بے جس پر كمال
وضیافت كا خاتم بوي پلي فدحن دون سے احر کي افراد اخر كي بيب ہو اور
تمام كمالات كي جامع بھي اول ست كاجمعی عقیدہ بى كہ اپ دونس طرح اور دونس منيون مين
ختم النبيين (29)۔

4: عقیدہ تثلیث كے متعلق الہ كے موقف كا خلاصہ بى بے

بلاشبہ، بى عقیدہ صحیر الباطن اور بدان عقل كي خلاف كي خلاف، بھي بھي زوجات وفردي اور وحدت وکثرت كا
اکي ذات كي جمع بوني عقلي عالم كي كردو کي بيب مخالي بسي عقل كي عقل كودشي نور
بهانگي بى صارع بى بلنانير كي بھي تبون اقائيم باببي بيتا اور روح القدس(27) ابى وجود اور شخص مين
اکي نورس بى سے جدا أور ممتن بينا بن نتير، اگر بھي كيب كا اكھنگ بيون پيه تين اخشار
بوين توخود كبن ربي اگر تبون كي ايا تسليم كربي تو خين كميا غلث بى او تنايل تحق بونى (30)۔

5: عقیدہ تیلیحہ كے بیانات کہ بیانول او پیر کردن بى بونے لکھتے بین

فلاسفة، اور بیانات کا ازالی اور اپنے ثقافتی تفسیر کے گواندن کا پانجا پانگا بیا پانگا بیا
باند بے جنس چيز بى كي لين لازم بى كي كي بھي كي لين كوني خاص شکل برون ووه شکل بلدنی
راجي بی سشن اور مخلوق بونے كی دلیل بى، رفع سے وجد اور وجود سے عدم مين
واعل واعل اللہ کي بھي اگر جي كي ايا عجیب اور اچتنیا بى تو اپ مخالي اور نامکن تين كه مخالف
عقیدہ عملی عقلی مرتب جب سے ملتؤم نبني (31)۔

6: صحابہ کرام رضي اللہ عنہم كي مقبوليت عنالله كي ايا كچھ اس طرح واضح كرتے بین

اسبًا، اس طرح واضح کرتے بین

والمسلمون الاولات من الفجاجیر والا تقارير ولا اتفاق (28)

33) جن لوگوں نے سباقت كي (يعنی سبي سبي) پیلے(ايمان لاتي) مہاجرین مين سے بي امور انصار مين

سیي بيي بر جو جوب لان كی نیوکاری کساتن ان كي پریمو كي اللہ ان سے خو

خوشن بین(29) کت تحت لکھتے ببين:اس اپي سے صحابہ كا مومي كامل بونا معلوم بوس او جن كي

کافر او موناقش سے راضي نہیں بونا توجیسا كی اشان خداوندی بى (30)۔ اللہ لا یرضي عن الهم الؤمین (31)

شن نبني بونا۔

ْْنَٰ ﻻَ ﳛُِﺐ ُّٰ ﻋَﻨْﮭُﻢْ وَرَﺿُﻮْاﻋَﻨْﮧُ

(32) ہیں اللہ لا یجب کیفائن (34) پس اللہ کافرون کو دوست نہیں رکھتی ۔، اس سے معلوم بوس كے صحابہ، كرام رضي

نہ فاسق تھے او نہ کافرون۔ اللہ كے مقبول ومقرب بندے نہیں (35)۔
وزن اعمال کے بارے میں ان کے نئے نظر کا خلاصہ ہے میزان کو اس حسین اور عرفہ ترازو میں منحصر سمجھ لیا چیزیں سمجھ لیا جاں بھی کہ ترازو کی کئی قسمیں اس دنیا میں معروف بہیں ایک قسم سے متعلق پیچزیں [سونا چاندی وغیرہ] تعلیمی جاتیں پیش کر دی گئیں۔

سے پھر کیچ حبیبز یا بھی سے اور لکڑی وغیرہ اور وزن کی جاتیں بہی ایسی طرح پر، حرازت اور بجلی وغیرہ لوٹے کے لے آگے پیمانے مقرر بہبیں تک کہ ایک قسم غیر حسی میزان سے شعر ہو جاتا ہے۔ ایسی طرح لوٹے کے لئے ایشیاء تلکی بین نیوانگا کے قدرت سے بعد بنی کہ قیامت کے دن ایسی حسی اور مقداری میزان قائم کر دیا جاں۔

سے بندوں کے اعمال تولی جاسکیں (36)۔

فقیہ مسائل مبنی مفسر کا منهج

مسلمے نے تفسیر میں جامع فقیہ مسائل کی تحلیلی بھی کی پہلے مسئلہ کے عنوان سے ان کا ذکر کرتا ہے:

مسلمے تعلق کے بارے میں لکھتے ہیں:

قرآن میں محمد کی زکوۃ دیدی ہے کے لئے لفظ اینہ استعمال کیا جاتا ہے اور اس کام کے لئے کسی شے کے نئے مطلب سے بالکلی نکال کر کسی اور اس کو مالک بناتا ہے زکوت میں ہے تعلق ہے۔

ومنعت بیٹے بیٹھنے، باب دادا اور بیٹے بیٹے کو زکوت دینا یہ سمجھیں کہ اس میں من کھیی رہنے (37)۔

ایک (38) کے تحت لکھتے ہیں:

قضاء قاضی سے کوئی حرام شیہ حالیہ نہیں ہوجاتی اس قسم کا فصلہ ہے۔ جس کا فصلہ کیا جااتا ہے کہ لئے نہ ہوئی اور اس کے لئے نہیں ہوئی۔

[کہ طبیب مریم اس میں کملکاتی بین گنی، اکبت ابادنا [اللہ ] کے نزدیک] نافذ نہیں بوتوار اس کے حالیہ نہیں۔

(39)۔

8: مسلم کے کہ بارے ان کے نئے نظر کا خلاصہ ہے 

سود میں فعض بلا عوض اور اجزاء کا مقابلہ لئے اجزاء سے ہوتا ہے جب کہ اسے میں فعّل عوض اور مجموعہ کا مقابلہ لئے بھی مسائل نظر کیے جاتے ہیں۔

سود نکسے بیٹے باطنا اینے کہ کبھی کبھی کچھ دو درہم کے مقابلہ ہے میں فروخت کیا تو دونوں جنس میں کلا بھی تو کل کیا کہ ہر کام کے مقابلا میں انتہا گا اور فعض بلا عوض نہیں ہوگا۔

اس کے باعث ایک درہم کو دو درہم کے مقابلہ اور لکھتے ہیں جس پر ہے کہ جس پر ہے۔ کہ اسے میں کامقابلہ لئے اہم درہم کی ہے اور دونوں درہم فلا عوض پھر پہاڑی اور میں جوہر پا رہا ہوں۔

سود کیہاسا۔

ایک سوال کے جواب میں ارشاد فرماتے ہیں:

سود تاخیر وقت اور مہلت کے عوض لیا جاتا ہے سوہم استدلال اس وجہ سے محقق نہیں کہ میں اور تاخیر نہ عقیدہ کونی مال بی بی اور نہ عقیدہ کونی ایسی چیز بی بی جس پر فضائل کی جائے اکثراً کیا ہے (40)۔

مفسر کا عمومی منهج

مفسر علام کا اپنی تفسیر میں یہ اسلوب رہا ہے کہ:

- سورات کے آغاز میں ربط کے علاوہ سورت کے بعض ذکر جو کرتے ہیں۔
- عدممالاتی کی وضاحت ترجمہ کے ساتھ کرتے ہیں۔
- یکسی سورت کے ایک عناوین کو شروع میں اکثر فارسی اور کبھی بھی اردو کے جلی حروف میں ذکر فرماتے ہیں۔
- لاطینی معاشی کے عنوان کے تحت فنصالی گفتگو کرتے ہیں۔
- نصاب جوہر کا اسی سوال کے متعلق جوابات ذکر کرتے ہیں وقت فارسی عدنی ترتیب کا لحاظ کرتے ہیں۔
حواشي وحوالات

حسن بن محمد بن مفضل أبو القاسم اصفهاني لغت أور أدب كي امام تهي اصفهان [إيران [مين بدآ
بونه تاريخ ولادت معلوم نبي. هك كوفات نبي.  (روضات الجنان،محمد باقر موسوي اصفهاني
دار العلم للملامين بيروت

المفردات في غريب القرآن،مام راغب اصفهاني: دارالمعرفةبيروت سن ندارد

: 

: 

محمدين بنين عبد الله،ابو عبدالله،بدرالدين، الزركشي [ ] ه [ ] ترك
بين. مصرمين بيدانين أوروبين وفات نبي. فقه شافعي كهمتتاعلم تهي مختلف عمل وفون مين
قرار قدرتصانيف جهوزين.(شنارات الذب في اخبارنذب،ابن عماد : دارالكتبيروت سن

: 

البربان في علوم القرآن،مام بدر الدين زركشي: دارالمعرفةبيروت سن طباعت ندارد

التفسير والمفسرون،محمد حسين الذبي: 

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أبو حسین بن مسعود بن محمد،القراء،محمي السنة،البغوي،محدث،قفيه اور مفسر تهي برات
ومروکه مابين قصب[بغا]مين [حيح] هك كي بيدانين شافعي مسلك سن تعلق ركعته تهي بزة

بين. مقام و محل كي مناسبت سه عربى،فارسى أور ارد اشعار ذكر فرماته بين. "ّنكتم" كي عنوان سه كوني ابم بات سمجها نا جابي بين.
كان محمداً بن إبراهيم بن عمرو بن حزم، كتب "تفسير سورة البقرة"، وهو وصف بالتفصيل، بمثابة تفسير نادر ومهم للقرآن الكريم.

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ملخصاً بذيل تفسير سورة البقرة

بذيل تفسير سورة البقرة

ملخصاً بذيل تفسير سورة البقرة

بذيل تفسير سورة البقرة

ملخصاً بذيل تفسير سورة البقرة

بذيل تفسير سورة البقرة

ملخصاً بذيل تفسير سورة البقرة

بذيل تفسير سورة البقرة

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COUNTING OF BINARY MATRICES AVOIDING SOME 2 × 2 MATRICES

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ABSTRACT. The number of matrices avoiding certain types of matrices is NP-hard in general. In this paper the binary matrices are considered. In particular, the problem of finding the total number of special binary matrices avoiding some types of 2 × 2 matrices is the main objective of this paper. The solution of the problem is given under some constraints as well as under general situation. The formula for the special binary matrices is obtained for total count of matrices of order n × k and also obtained the formula for special binary matrices avoiding some matrices of order 2 × 2. The formula is obtained in terms of the Catalan numbers.

Keywords: Catalan number; special binary matrices; lonesome matrices.

1. Introduction. Let M be the set of all binary matrices of order n × k then obviously the cardinality of M is 2^{nk}. In the set of binary matrices M, matrices can be calculated which avoid some sub-matrix “γ” of order 2×2 and it can be written mathematically as ϕ(n, k; γ). In this paper we are going to introduce and calculate the total number of special Binary matrices and those special binary matrices which avoid the blocks of order 2×2. Rayser [11] made the classes of binary matrices with the same column sum vector and row sum vector. Brewbaker [1, 2] calculated the number of binary matrices avoiding square identity matrix of order 2. He used the classes defined by Rayser. Rayser worked on lonesome binary matrices and defined lonesome matrices as “the binary matrix which avoids \[ \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \] and \[ \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix} \] is called a lonesome binary matrix”. Brewbaker [1, 2] and Kim [5] also named the binary matrices avoiding “I” as lonesome matrices and also wrote that the number of lonesome matrices are equal to the Poly-Bernoulli number \( B_k^{(−1)} \) with \( k=1 \).

Brewbaker [2] generated the second proof of Rayser’s theorem and studied the properties of binary lonesome matrices. Kaneko [4] defined the Poly-Bernoulli numbers which were used by Kim and Brewbaker for their proof. Kitaev [8, 9, 10] worked on multi avoidance of right angled numbered polyomino patterns and also found number of matrices avoiding some patterns such as stair matrix or forbidden matrices. Klinz and Rudolf [7] spent time to permute the matrices avoiding some forbidden matrices latter on Kaneko [4] took this work forward. Heong-Kwan Ju and Seunghyun Seo [3] worked on lonesome matrices and made some generating functions of the lonesome matrices. They also found the method to find the number of matrices avoiding some equivalence classes of matrices of order 2 × 2 with their generating functions as well. They used the work of Sanchez Pregreno [14] and the work of Brewbaker to find the important results. The study of “A-free matrix” was introduced by Spinrad [12, 13] where \( A = \begin{pmatrix} 1 & 1 \\ 1 & 0 \end{pmatrix} \), he dealt with a totally balanced matrix which has a permutation of the rows and columns that are A-free but in [3] Hyeong-Kwan Ju and Seunghyun Seo...
remarked that the set of totally balanced matrix is different from $M(A)$. They changed the original binary matrices into block matrices by making some change in rows and columns, each block containing 0 or 1 completely. They found the number of matrices avoiding some square matrices of order 2 with their generating functions. They found the number of matrices avoiding $A = \begin{bmatrix} 1 & 1 \\ 0 & 1 \end{bmatrix}$, $B = \begin{bmatrix} 1 \\ 0 \end{bmatrix}$, $E \cup D = \begin{bmatrix} 1 & 1 \\ 0 & 1 \end{bmatrix}$ and $B \cup D = \begin{bmatrix} 1 & 1 \\ 0 & 0 \end{bmatrix}$ under some conditions, also found the generating functions for the formulas.

2. Materials and Methods: Hyeong-Kwan Ju and Seunghyun Seo [3] used different methods to calculate the binary matrices avoiding some $2 \times 2$ matrices. We also worked to calculate the binary matrices which avoid the matrices of order 2 but the avoiding matrix is different from the matrices avoided in [3], we took the work forward by a different method. We used positions of the entries of matrix to make binary matrix then shuffled the rows and columns to make more binary matrices and calculate the total number of matrices made this way and named them as special binary matrices. We calculated special binary matrices avoiding null binary matrix of order 2 by using permutation of things not all different and Catalan number.

3. Definitions and Notations: Binary matrices are the matrices with entries 0 or 1 or both but no any other entry. Block matrices are those matrices in which some matrices are collected or which can be partitioned as small matrices, it is also called partition matrix. Given a matrix $M = \begin{bmatrix} 1 & 0 & 1 \\ 1 & 0 & 1 \\ 0 & 1 & 0 \end{bmatrix}$ is called block matrix in which $\begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$ and $\begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$ are partitions or blocks and $\begin{bmatrix} 1 & 1 \\ 0 & 1 \end{bmatrix}$ is not a partition of the matrix $M$. We also say that $M$ avoids $\begin{bmatrix} 1 & 1 \\ 0 & 1 \end{bmatrix}$ and contains $\begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$ a block $\begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$. A matrix $M = [m_{ij}]$ is called a special binary matrix if it satisfies the following:

$$m_{ij} = \begin{cases} 0 & \text{if } i + j = 1 \\ 1 & \text{if } i + j = 0 \end{cases}$$

The number of special binary matrices of order $n \times k$ is denoted by $\chi(n, k)$. Given a square matrix $M = \begin{bmatrix} m_1 & m_2 & m_3 \\ m_2 & m_2 & m_2 \\ m_3 & m_3 & m_3 \end{bmatrix}$ of order 3. By using conditions of special binary matrices we can make a special binary matrix “$N” from “M” which is $N = \begin{bmatrix} 0 & 1 & 0 \\ 1 & 0 & 0 \\ 0 & 1 & 0 \end{bmatrix}$. Now by exchanging the first column by second column in $M$, we get a new matrix $M_1 = \begin{bmatrix} m_1 & m_1 & m_1 \\ m_2 & m_2 & m_2 \\ m_3 & m_3 & m_3 \end{bmatrix}$ and a special binary matrix $N_1 = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 1 & 0 \end{bmatrix}$. Similarly we can get special binary matrices from ordinary or general matrices. From now on we will use $\chi(n, p; \alpha)$ for the total number of special binary matrices of order $n \times p$ and we will use the notation $\chi(n, k; \alpha)$ for the special binary matrices avoiding block $\alpha$.

The $n$th Catalan number is defined by

$$C_n = \frac{1}{n+1} \binom{2n}{n} = \frac{(2n)!}{(n+1)!n!} = \frac{1}{n+1} \sum_{i=0}^{n} \binom{n}{i}^2 = \prod_{i=2}^{n} \frac{n+1}{i} = \frac{2(2n-1)}{n+1} \cdot C_{n-1}$$

4. Main Results: By using the condition of special binary matrices and permutation of things not all different we can count the total number of special binary matrices of different order as well as special binary square matrices avoiding $Q_{2 \times 2}$, where $Q_{2 \times 2}$ is the square null matrix of order 2.

Theorem 3.1

Let $M = [m_{ij}]$ be a matrix of order $n \times p$, where $n = 2k$ and $p = 2m$, then the total special binary matrices are $\chi(n, p) = (k+1)(m+1)C_m C_k$, where $C_m \in C_k$ are Catalan numbers.

Proof:

As given that $M = [m_{ij}]$ be a matrix of order $n \times p$, where $n = 2k$ and $p = 2m$, we take a set $A$ containing first
n=2k positive integers for column numbering and a set B containing first p=2m positive integers for row numbering then we must have k even and k odd numbers in set A = {1, 2, 3, …, n = 2k} similarly m even numbers and m odd numbers in set B = {1, 2, 3, …, p = 2m}. To make the special binary matrices, by associating all odd numbers with “o” and all even numbers with “e” we get A= B = {o,e}. Now let C be a word of length 2k containing k number of e’s and k number of o’s and let D be a word of length 2m containing m number of o’s and m number of e’s. Now by using the “permutation of things not all different” we can make \[
\binom{2k}{k} \cdot \frac{k!}{k!} = (k+1) \binom{2k}{k} \cdot \frac{k!}{k!} = (k+1) C_k
\]
which is the number of words to label the columns. Similarly we can make \[
\binom{2m}{m} \cdot \frac{m!}{m!} = (m+1) C_m
\]
words of length 2m+1 from the word D. Which is the number of words to label the columns. Now we use \((m+1) C_m\) number of words of columns as column label and \((k+1) C_k\) words as row label to make special binary matrices. When we use one word from \((m+1) C_m\) words to label the column and use all words one by one from \((k+1) C_k\) words as row label we get \((k+1) C_k\) number of matrices as column label and again using all \((k+1) C_k\) words as row label we again get \((k+1) C_k\) number of matrices and by carrying on this process we get total number of special binary matrices \[(k+1) C_k \cdot (m+1) C_m = (k+1)(m+1) C_k C_m\]

**Corollary 1:**
Let \(M = [M_{ij}]\) be a square matrix of order \(n = 2k\), then total number of special binary matrices is \(\chi(n, n) = [(k + 1) C_k]^2\), where \(C_k\) is catalan number.

**Theorem 3.2**
Let \(M = [M_{ij}]\) be a square matrix of order \(n \times p\) where \(n = 2k+1\) and \(p = 2m+1\), then the total special binary matrices are \(\chi(n, p) = n C_m C_k\)

**Proof:**
Given that \(M = [M_{ij}]\) be a matrix of order \(n \times p\) where \(n = 2k+1\) and \(p = 2m+1\), then we must have k even and k odd numbers in set A = {1, 2, 3, …, n = 2k+1} and also there exist m even numbers and m+1 odd numbers in set B = {1,2,3,…. p = 2m+1}. Let us associate all odd numbers with “o” and all even numbers with “e” in both of sets so that we may avoid the repetition of matrices during their use as labels for matrices. Then set A and set B becomes the set \{o,e\}. Now let C be a word of length 2k+1 containing k number of e’s and \((k+1)\) number of o’s and let D be a word of length 2m containing m+1 number of o’s and m number of e’s.

Now by using the “permutation of things not all different” we can make \[
\binom{2k+1}{k+1} \cdot \frac{(k+1)!}{(k+1)!} = (2k+1) \binom{2k+1}{k+1} \cdot \frac{(k+1)!}{(k+1)!} = n C_k
\]
which is the number of words to label the rows, similarly we can make \[
\binom{2m+1}{m+1} \cdot \frac{(m+1)!}{(m+1)!} = (2m+1) \binom{2m+1}{m+1} \cdot \frac{(m+1)!}{(m+1)!} = p C_m
\]
which is the number of words to label the columns. Now we use “\(p C_m\)” number of words as column label and “\(n C_k\)” words as row label to make special binary matrices. When we use one word from “\(p C_m\)” words to label the column and use all words one by one from “\(n C_k\)” words as row label we get “\(n C_k\)” number of matrices now use 2nd word from “\(p C_m\)” as column label and again using all “\(n C_k\)” as row label we again get “\(n C_k\)” number of matrices and so on this way we will get total number of special binary matrices \(\chi(n, p) = (2k+1) C_k \cdot (2m+1) C_m\)

**Corollary 1:**
Let \(M = [M_{ij}]\) be a square special binary matrix of order \(n = 2k+1\), then total number of special binary matrices is \(\chi(n, n) = \frac{(k+1)!}{k!} C_{k+1}\)
Similarly we can make \( \binom{2k+1}{k} \) words of length \( 2k+1 \) that is
\[
\binom{2k+1}{k} = (2k+1) \frac{(2k)!}{k!(k+1)!} = (2k+1) \binom{k}{2} n \binom{\binom{\binom{k}{2}}{2}}{2k+1} \binom{k}{2}
\]
Similarly we can make \( \binom{2m}{m} \) words of length \( 2m \) that is
\[
\binom{2m}{m} = (m+1) \frac{(2m)!}{m!(m+1)!} = (m+1) \binom{m}{2} n \binom{\binom{\binom{m}{2}}{2}}{2m} \binom{m}{2}
\]
Now we use \( (m+1) \binom{m}{2} \) number of words as column label and \( n \binom{\binom{m}{2}}{2} \) words as row label to make special binary matrices. When we use one word from \( (m+1) \binom{m}{2} \) words to label the column and use all words one by one from \( n \binom{\binom{m}{2}}{2} \) words as row label we get \( n \binom{\binom{m}{2}}{2} \) number of matrices as column label and again using all \( n \binom{\binom{m}{2}}{2} \) words as row label we again get \( n \binom{\binom{m}{2}}{2} \) number of matrices and so on this way we will get total number of special binary matrices
\[
\chi (n, p) = n \binom{\binom{m}{2}}{2} (m+1) \binom{m}{2} \binom{m}{2} = n(m+1) \binom{m}{2} \binom{m}{2}
\]

**Theorem 3.3**

Let \( M = \binom{m_k}{2} \) be a matrix of order \( n \times p \) where \( n = 2k+1 \) and \( p = 2m \), then the total special binary matrices are \( \chi(n, p) = n(m+1) \binom{m}{2} \binom{m}{2} \)

**Proof:**

By given \( M = \binom{m_k}{2} \) be a matrix of order \( n \times p \), where \( n = 2k+1 \) and \( p = 2m \), then we must have \( k \) even and \( k+1 \) odd numbers in set \( A = \{1, 2, 3, \ldots, n = 2k+1\} \) and also we have \( m \) even numbers and \( m \) odd numbers in set \( B = \{1, 2, 3, \ldots, p = 2m\} \). Let us associate all odd numbers with “o” and all even numbers with “e” in both of sets so that we may avoid the repetition of matrices. Then set \( A \) and set \( B \) becomes the set \( \{o, e\} \) now let \( C \) be a word of length \( 2k+1 \) containing \( k \) number of “e” and \( (k+1) \) number of “o” and let \( D \) be a word of length \( 2m \) containing \( m \) number of “o” and \( m \) number of “e”. Now by using the “permutation of things not all different” we can make \( \binom{\binom{2k+1}{k}}{2} \) words of length \( 2k+1 \) that is
\[
\binom{\binom{2k+1}{k}}{2} = (2k+1) \frac{(2k)!}{k!(k+1)!} = (2k+1) \binom{k}{2} n \binom{\binom{\binom{k}{2}}{2}}{2k+1} \binom{k}{2}
\]

**Theorem 3.4**

Let \( M = \binom{m_k}{2} \) be a square matrix of order \( n \times n \) where \( n = 2k \), then the special binary matrices avoiding partition \( O_{2 \times 2} \) are \( \chi(n, n; O_{2 \times 2}) = 4(k+1) \binom{k}{2} - 2k+6 \)

**Proof:**

Given that \( M = \binom{m_k}{2} \) be a square matrix of order \( n = 2k \) Then according to corollary 1 of theorem 3.1 we have \( \binom{k+1}{k} \binom{k}{2} \) total number of special binary matrices and according to theorem 3.1 we have \( (k+1) \binom{k}{2} \) words to label the columns as well as rows. Now when we use one word which do not contain sub-word “oo” or “ee” from \( (k+1) \binom{k}{2} \) words to label the column and use all words one by one as row label we will get \( (k+1) \binom{k}{2} \) matrices avoiding block “\( O_{2 \times 2} \)”. Now when we use same word as row label and use all \( (k+1) \binom{k}{2} \) words as column label one by one we will get \( (k+1) \binom{k}{2} \) matrix again but one matrix avoiding \( O_{2 \times 2} \) will be repeated so number of matrices avoiding block \( O_{2 \times 2} \) are \( 2(k+1) \binom{k}{2} - 1 \). Now similarly when we use \( 2n \) word as column label which do not contain two “e” or two “o” together we will get \( (k+1) \binom{k}{2} – l \) matrices avoiding \( O_{2 \times 2} \) and while using same word as row label we will get \( (k+1) \binom{k}{2} - 1 \) matrices because two matrices are repeated. So matrices avoiding \( O_{2 \times 2} \) are
\[
\chi(n, n; O_{2 \times 2}) = 2(k+1) \binom{k}{2} - 1 + (k+1) \binom{k}{2} - 1 + (k+1) \binom{k}{2} - 2 = 4(k+1) \binom{k}{2} \]

Now to calculate the number of words from \( (k+1) \binom{k}{2} \) words which contain only one sub-word “oo”. Here we will consider “oo” as a single letter so we have “n-1” letters and to calculate words containing only one sub-word “oo” we must know the positions between letters for this we know that one “e” must be at start and one at last. Now “k-2” “e”’s and “k-1” “o”’s are between these two “e”’s and there are “k-1” positions to put “o” or “oo” between each two “e”’s in a word because we are calculating the words which contain exactly one pair “oo” and not containing “ee”. So we can say that there are “k-1” words containing “oo”. Similarly we can count the words containing “ee” but not containing “oo” which will be same in number that is “k-1”. So we have \( (k-1) + (k-1) = 2k-2 \) Matrices avoiding partition “\( O_{2 \times 2} \)”
Hence total number of matrices avoiding “$O_{2 \times 2}$” is
\[
\chi(n,n; O_{2 \times 2}) = 4(k+1) \cdot C_k - 4 + 2k - 2 = 4(k+1) \cdot C_k + 2k - 6.
\]

**Theorem 3.5**

Let $M = \begin{bmatrix} m_{ij} \end{bmatrix}$ be a square matrix of order $n \times n$ where $n = 2k+1$, then the special binary matrices avoiding partition $O_{2 \times 2}$ are
\[
\chi(n,n; O_{2 \times 2}) = 2n \cdot C_k - 1.
\]

**Proof:**

Given that $M = \begin{bmatrix} m_{ij} \end{bmatrix}$ be a special binary square matrices of order $n = 2k+1$. Then according to the corollary 1 of theorem 3.2 we have \( \frac{(k+1)}{2} \cdot C_k + 1 \) number of total special binary matrices and according to theorem 3.2 we must have $n \cdot C_k$ words to label rows and columns. Now when we use one word which do not contain sub-word “oo” or “ee” together from $n \cdot C_k$ words to label the column and use all words one by one as row label we will get $n \cdot C_k$ matrices avoiding partition “$O_{2 \times 2}$”. Now when we use same word as row label and use all $n \cdot C_k$ words as column label one by one we will get $n \cdot C_k$ matrices again but one matrix avoiding $O_{2 \times 2}$ will be repeated so number of matrices avoiding partition $O_{2 \times 2}$ is
\[
(2k+1) \cdot C_k + (k+1) \cdot C_k - 1 = 2(2k+1) \cdot C_k - 2 = 2n \cdot C_k - 1.
\]
In all possible words “$n \cdot C_k$” there exist only one word which do not contain sub-word “oo” or “ee”. Hence total number of matrices avoiding “$O_{2 \times 2}$” is
\[
\chi(n,n; O_{2 \times 2}) = 2n \cdot C_k - 1.
\]

3. **Conclusion.** Different mathematicians worked on binary matrices and counted the number of matrices avoiding some matrices, we also worked in the same idea but we introduced the special binary matrices with their total count and also calculated the special binary matrices avoiding the null matrix of order 2. Special binary matrices avoiding some different matrices can also be calculated. This work can be took forward with different avoiding matrix or matrices.

**REFERENCES**


BEING A UNIVERSITY STUDENT IN A SMALL CITY: STUDENTS’ PERCEPTION OF RIZE/TURKEY

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ABSTRACT: Universities face a competitive environment all around the world. In Turkey, the number of universities has been increasing in the last decade which means attracting qualified students is ever more critical. There are many studies concerning the students’ perception of their host universities. In addition to universities, host city itself also plays a crucial role in term of students’ overall satisfaction of their university life. Therefore, this study aims to identify the attributes of the host university city, assess students’ satisfaction with the key attributes of the city, and get students’ ideas how to make the city more attractive to university students. This study is done in Rize which is considered to be a small city in Turkey. A focus study was conducted with 53 sophomore students who study Business Administration or Economics at Recep Tayyip Erdogan University. The findings indicate that the students perceive accommodation, socializing, cost of living and safety as the most important attributes of their host university city.

Keywords: destination image, host university city, perceptions university students, small city, Rize, Turkey, Recep Tayyip Erdogan University.

Introduction: University students who study in a city other than their hometown are temporary residents of the host university cities. These young adults constitute a significant population both socially and economically. They also shape the city where they study (Allinson, 2006). Recognizing their importance, some cities actively integrate student culture as part of their city brand identity (Insch and Sun, 2013: 176).

Universities seek the adequacy of their services so that they are provided based on criteria that meet the requirements and demands of their prospective students. However, it’s usually the location of the university that affects the choice rather than the university itself. Physical, social and cultural elements of a city influence students’ choice of where to study (Cubillo et al., 2006).

In Turkey there are 81 provinces; 109 public universities and 70 private (foundation) universities. In big cities, there is more than one university; in small cities, there is at least one public university. Therefore, the competition in the higher education market has made the search and adoption of strategies for prospect students vital. Both universities and the cities are trying to attract the attention of successful university students. The city and the university are interdependent; growth of the university is beneficial to the city; the growth of the city is also beneficial to the university.

Rize is one of the small provinces of Turkey located in the north-east in Black Sea Region. The city is built on a narrow strip of flat land between the sea and the mountains behind. It is a quiet city with very little entertainment. Rize University was founded in 2006 and renamed after the current Prime Minister Recep Tayyip Erdogan in 2012. Being new and located in a small city, attracting qualified students and academics is university’s biggest challenge. The university is growing with its new faculties, departments and activity centers. The city is also growing in terms of its transportation systems and hospitals. However, the city still does not meet the expectations of university students.

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The aim of this study is to identify the attributes of the host university city, assess students’ satisfaction with the key attributes of the city, and get students’ ideas how to make the city more attractive to university students.

**The Importance of Host University City:** University cities benefit from their highly educated, youthful populations, with greater diversity and cosmopolitanism than non-university cities of similar size and location (Monaghan, 2008). Many cities all around the world have been implementing marketing campaigns in order to develop a distinctive image (Petruzzelis and Romanazzi, 2010) for the purpose of attracting qualified students on both national and international levels. For example, Birmingham’s five universities teamed up through the “Student Birmingham” campaign which aimed to raise the profile of the city as a student destination. The Hauge also launched a campaign to attract more international students as part of its goal “to become a large-scale internationally orientated knowledge area by 2020”. Therefore, identifying which elements are most relevant to students is the first step in developing an effective marketing campaign to university students’ needs and satisfaction attract students and to maximize their satisfaction with their host city during the course of their study (Insch and Sun, 2013: 179).

There are some big cities in Turkey such as Istanbul (the most attractive), Ankara, Izmir, Bursa, Konya, Eskisehir, Bursa and Trabzon. Students try to do their best at the university entrance exam to go to a university located in big cities. Parents however, are hesitant to send their children away to big cities because cost of living is much higher in big cities. In the decision making process of the students, the city name plays a greater role than the university name in Turkey. The universities in big cities already have quite a number of qualified students; however the ones in small cities try much harder to attract qualified students and academics.

Rize is one of the smallest provinces of Turkey on the Black Sea coast built in an area where the bright green tea bushes cover entire mountainsides. It is considered to be a conservative, safe and quiet city. Despite growing in terms of its transportation, restaurants and new buildings, Rize offers very little to university students. The venues for cinemas, theaters and entertainment are limited, there isn’t a shopping mall, and there is no night life. So it’s the challenge of universities located in small cities such as Rize to attract these students. Since the foundation of the university in Rize (2006), the students have been bringing their social vibrancy to the city. The city is also growing together with the university.

**Research Process:** A focus study was conducted with 53 sophomore students who study Business Administration or Economics at Recep Tayyip Erdogan University in Rize/Turkey. These students were born and raised in the cities other than Rize.

The answers to the following questions were discussed with the students:

- Why did you choose to study in Rize?
- Which attributes of Rize are appealing and unappealing to you?
- Do you have any suggestions to improve your satisfaction with Rize?

City attributes were taken from Insch and Sun’s study (2013: 183) and asked about Rize to the students. These are: accommodation, accessibility, appeal and vibrancy, cultural scene, community assets, public transport, natural environment, personal and public safety, shopping and dining, socializing and sense of community and sports activities.

Despite the lack of trains, sea transportation, undergrounds or buses, majority of the students find public transport convenient since it’s a small city and minibuses are quite efficient. There are so many dormitory options at reasonable prices. The nearest airport is one hour away in Trabzon.

The students complain about the city’s design, appeal, vibrancy and energy. They also complain about the behaviors of local people. Despite so many shopping and dining options, they prefer going to Trabzon (the nearest city) to buy clothes and spend their leisure time. They find natural environment (the sea and the mountains) quite interesting. The city is also advantageous in terms of personal and public safety. Rize is a city where the crime rate is quite low. The students can go trekking, swimming and do various kinds of sports both in the city and at the campus.

When all the advantages and disadvantages are taken into consideration, students have a happy life at the university in Rize. However, they look forward to going back to their hometown after graduation. They spend their holidays in their hometown. They are usually absent in the first two weeks of academic year and they get away from the city whenever they have the chance.

The students usually apply for “Farabi Program” which is a scholarship that gives them the chance to study one year at a different university in Turkey. The ones with good English and high academic scores also apply for “Erasmus Program” which is a scholarship to study in Europe for one semester or year.
16 students have at least one relative in Rize and 37 students chose Rize to study because they couldn’t score enough -at the university entrance exam- to study in big cities. Majority of the students say that they like the university because of its qualified professors and program; however they will not recommend it because Rize is not an appealing city for university students.

There are so many suggestions in order to make the city more appealing. First they say they need a good movie theater and shopping mall since the city is rainy most of the days of the year. There should be festivals and concerts attracting the university students. There should be parks (where they can do sports and go on a picnic) and recreation centers (bowling, karting, etc.) in the city center. A seminar should be given to the local people especially the tradesmen how to be more polite to the students.

Results: Higher education institutions have always contributed to the social and cultural development of the places in which they are located (Chatterton and Goddard, 2000: 47) and universities are increasingly recognized as playing a key role in regional development (Charles, 2006: 117). From the focus group study with 53 university students (coming from different cities) studying at Recep Tayyip Erdogan University in Rize, it can be concluded that Rize is not an appealing city for prospective university students. Therefore, Rize should aim to fulfill the needs and desires of current students, since satisfied students are more likely to attract new students through positive word-of-mouth (Gruber et al., 2010).

There should be a group of students that represent the university and students’ expectations from the city. The administration of the university and the city council of Rize should meet with this group and listen to the needs of the students and take actions together. General idea is that being a university student in a big city is more advantageous than a small city. Small cities have their own advantages such as safety and cost of living. Rize is a city that has a great potential to offer a lot to both university students and tourists. There should be more research how to make the best of its potential.

At Recep Tayyip Erdogan University there are 15,000 students. This focus study was done with 53 students. The results from their responses can give an idea how to improve the city and university; however do not represent the whole university students’ ideas. For future studies, questionnaires should be done with the freshman, sophomore, junior and senior university students. Moreover, the same study can be conducted again with the same students over the years to analyze the progress of the satisfaction levels of the students. In addition, attracting qualified and dedicated academics is also a critical issue for the small universities so this should also be studied in the future. Questionnaires can be done with the academics coming from different cities. Adaptation process and sense of belonging are important issues that should be taken into consideration. Attracting qualified students and academics to the university will both improve the cultural, social and economic welfare of the universities and small cities.

REFERENCES

PREVALENCE AND ANTIBIOTIC SUSCEPTIBILITY PROFILE OF METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS (MRSA) ISOLATED FROM DIFFERENT CLINICAL SAMPLES IN DISTRICT PESHAWAR

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ABSTRACT: Purpose: Staphylococcus aureus is a flexible pathogen causing variety of infections in humans and other animals. The current investigation was aimed to study the prevalence rate and sensitivity profile of MRSA strains isolated from clinical samples to various antimicrobial agents.

Methods: Isolates from three different clinical specimens; pus, body fluids and blood were obtained from patients, belonging to various parts of District Peshawar of Khyber Pakhtunkhwa. Each sample was processed by conventional method using blood, MacConkey and CLED agar. Staphylococcus aureus was identified and confirmed by Gram staining, catalase test and coagulase test. Antibiotic susceptibility pattern of MRSA to different antibiotics was confirmed by standard Kirby-Bauer disc diffusion method.

Results: A total of 855 clinical samples were studied, out of which 45 (5.26%) were found positive for MRSA, among which 32 (71%) were from pus samples, 8 (18%) were from fluids samples and 5 (11%) were from blood samples. The frequency of MRSA strains was more in males (69%) than in females (31%). All MRSA isolates showed complete resistance to oxacillin, ampicillin and penicillin and complete sensitivity to linezolid, teicoplanin, and vancomycin. These MRSA strains also showed various degrees of resistance to other antimicrobials such as ceftriaxone (77.77%), cefoxitin (64.44%), erythromycin (82.22%), clindamycin (71.11%), co-amoxiclav (75.55%), fusidic acid (66.66%), and gentamycin (73.3%).

Conclusion: Our results show lower MRSA prevalence in Peshawar than the previous reports in Peshawar and other areas of Pakistan. However; since MRSA is multidrug resistant, proper culture sensitivity test should be carried out for proper choice of antibiotic/s to treat MRSA infections.

Keywords: Staphylococcus aureus; MRSA; Prevalence; Antibiotic susceptibility; Peshawar
Introduction: *Staphylococcus aureus* is a versatile human pathogen that causes diseases ranging from relatively mild infections of skin and soft tissue to life-threatening sepsis in humans (Lowy, 1998), and increases hospital and health system costs (Corriere & Decker, 2008; Hsin Huang, 2006; Lodise TP, 2005). *Staphylococcus aureus* causes both the hospital-associated infections (Pavillard R, 1982) and community-associated infections (Gregory J. Moran, 2005; Moore, 2009). MRSA was first reported in United Kingdom in 1961 (N.Rolinson, 1961), since then it is increasingly prevailing and poses a high therapeutic challenge (Erica S. Pan, 2003). Presently, more than 50% of the infections caused by *S. aureus* are due to methicillin-resistant strains of *S. aureus* (Drago, Vecchi, NicolaI., & Gismondo, 2007). It has been associated with many infection sites including bones and joints, lungs, and the urinary tract (McPhee, Papadakis, & Rabow, 2010). It also causes bacteremia which possibly leads to endocarditis and osteomyelitis (McPhee et al., 2010). Majority of MRSA affects skin and soft tissues of the body. MRSA is genetically adapted to such an extent that it poses considerable resistance to a greater variety of antibiotics like β-lactams (Arora, Singh, Kaur, & Jeet, 2007).

MRSA infections have recently become the focus of intense media attention. In 2005, the United States press described MRSA as the "superbug", because it killed more people than the AIDS did (Flynn & Cohen, 2008). MRSA was reported to has become totally resistant to gentamycin, erythromycin, penicillin, ceftriaxone and ampicillin in Trinidad and Tobago (Akpaka, E.Kissoon, Swanston, H.Monteil, & Michele, 2006). Similar results have been reported for oxacillin and penicillin among MRSA strains in some Latin countries of America such as Mexico (penicillin and oxacillin), Brazil (penicillin), Chile (oxacillin and penicillin) (de Sousa et al., 2001). The prevalence rate of MRSA is rapidly increasing worldwide. In 11 metropolitan cities of United States, community-associated MRSA caused more than 50% of all the suppurative skin infections (Moran et al., 2006). MRSA prevalence rate was 29% in 1997 which augmented to 74% in 2002 (Erica S. Pan, 2003) in San Francisco.

A prospective study was performed by Hafiz et al., in 2002, which reported percent prevalence of MRSA infection in some of the major areas of Pakistan like Karachi (57%), Lahore (61%), Rawalpindi-Islamabad (46%), Peshawar District (36%), Azad Jammu and Kashmir (32%), Quetta District (26%) and Sukkur (2%) (Hafiz et al., 2002). Some later studies reported a significant decrease in the prevalence rate of MRSA in some of these regions including in Karachi (43% in 2007 and 38.6% in 2010) (Samia Perwaiz, 2007; Taj Y, 2010) and Lahore (27.77% and 34.7%) (Ajamal, Mir, Aslam, Hafeez, & Attique, 2009; Siddiqi, Siddique, & Anwar, 2009). In this study the prevalence rate of MRSA was determined in District Peshawar and antimicrobial susceptibility of these MRSA strains isolated from blood, pus and fluids was checked. Our results show lower prevalence rate of MRSA in Peshawar as compared to previous reports.

Materials And Methods:

Sample Collection and Identification of Bacterial Isolates: Different clinical samples (including pus, body fluid and blood) were collected during August 2012 to March 2013 and brought to microbiology section of united Laboratory, Dabgari garden hospital Peshawar, Pakistan. A total of 855 samples, collected from patients throughout Peshawar District, were processed for isolation of MRSA. While collecting blood samples, a proforma was filled to collect medical/clinical information from all the individuals and obtain their written consent. No duplicate samples were included from a single subject. Blood agar, MacConkey agar and Cysteine Lactose Electrolyte Deficient (CLED) agar were used as growth media for culturing of samples. Each sample was inoculated on blood, MacConkey and CLED agar with the help of wire loop. The plates were then incubated at 37 °C for 24 hours to get the colonies growth. Positive samples were then processed further for identification using standard operating procedures. Gram staining was conducted to differentiate and identify gram-positive and gram-negative bacteria. For the confirmation of *Staphylococcus aureus*, biochemical tests including catalase test and coagulase test were performed (Forbes, Sahm, Weissfeld, Scott, & Bailley, 2002).

Detection of Methicillin Resistance: MRSA identification was carried out using oxacillin screen plates following the guidelines of NCCLS. Briefly, a suspension equivalent to 0.5 McFarland standards, prepared from each strain, was inoculated homogenously on the entire surface of the Mueller-Hinton agar plate (Oxoid-UK) containing 4% NaCl and 6 g/mL oxacillin, with the help of sterile swabs. All the plates were incubated at 35 °C for 24 hours. Indication of growth (>1 colony) identified the isolates as oxacillin/methicillin-resistant (AS et al., 2008).
Antibiotic Susceptibility Testing: Antibiotic susceptibility pattern of MRSA to different antibiotics was confirmed by standard Kirby-Bauer disc diffusion method (Drew, Barry, O'Toole, & Sherris, 1972). Muller-Hinton agar was prepared and sterilized by autoclaving at 121 °C for 15 minutes. 25 mL of media was poured in 90 mm sterile petri dishes and incubated at 37 °C overnight to check sterility. All the clinical isolates of MRSA were tested for their sensitivity against antimicrobials including ampicillin, penicillin, ceftriaxone, cefoxitin, erythromycin, clindamycin, oxacillin, co-amoxiclav, fusidic acid, gentamycin, linezolid, teicoplanin, and vancomycin of standard strengths. The plates were incubated at 37 °C for 18 hours and after incubation, plates were examined for zones of inhibition and reported the organism sensitive, intermediate, resistant according to national committee for control laboratory standards.

Results:

Prevalence of MRSA in District Peshawar: Eight hundred and fifty five different clinical samples were processed for isolation of MRSA during August 2012 to March 2013. Among these samples, forty five samples (5.26%) were found positive for MRSA (Figure 1). Out of forty five positive samples for MRSA, thirty one (69%) belonged to male subjects while fourteen (31%) were from females. Of these forty five MRSA positive samples, thirty two (71%) were from pus samples, eight (18%) from fluids samples and five (11%) were from blood samples.

Table 1: Distribution of MRSA isolates

<table>
<thead>
<tr>
<th>Total Samples (+ve)</th>
<th>Male</th>
<th>Female</th>
<th>Pus samples</th>
<th>Fluid samples</th>
<th>Blood samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>45</td>
<td>31 (69%)</td>
<td>14 (31%)</td>
<td>32 (71%)</td>
<td>8 (18%)</td>
<td>5 (11%)</td>
</tr>
</tbody>
</table>

Antibiotic Susceptibility Profile of MRSA: All MRSA isolates showed complete resistance to oxacillin, ampicillin and penicillin while complete sensitivity to linezolid, teicoplanin and vancomycin. These MRSA strains also showed various degree of resistance to other antimicrobials such as ceftriaxone (77.77%), cefoxitin (64.44%), erythromycin (82.22%), clindamycin (71.11%), co-amoxiclav (75.55%), fusidic acid (66.66%), and gentamycin (73.3%).

Table 2. Sensitivity profile of MRSA against selected antibiotics

<table>
<thead>
<tr>
<th>S/No</th>
<th>Antibiotics</th>
<th>Sensitive (%)</th>
<th>Resistant (%)</th>
<th>Intermediate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ampicillin</td>
<td>00 (00)</td>
<td>45 (100)</td>
<td>0 (00)</td>
</tr>
<tr>
<td>2</td>
<td>Penicillin</td>
<td>00 (00)</td>
<td>45 (100)</td>
<td>0 (00)</td>
</tr>
<tr>
<td>3</td>
<td>Ceftriaxone</td>
<td>03 (06)</td>
<td>35 (77)</td>
<td>7 (15.6)</td>
</tr>
<tr>
<td>4</td>
<td>Cefoxitin</td>
<td>04 (08)</td>
<td>29 (64.4)</td>
<td>12 (26.7)</td>
</tr>
<tr>
<td>5</td>
<td>Erythromycin</td>
<td>05 (11)</td>
<td>37 (82.2)</td>
<td>3 (6.7)</td>
</tr>
<tr>
<td>6</td>
<td>Clindamycin</td>
<td>08 (18)</td>
<td>32 (71.1)</td>
<td>5 (11.1)</td>
</tr>
<tr>
<td>7</td>
<td>Oxacillin</td>
<td>00 (00)</td>
<td>45 (100)</td>
<td>0 (00)</td>
</tr>
<tr>
<td>8</td>
<td>Co-amoxiclav</td>
<td>06 (13)</td>
<td>34 (75.5)</td>
<td>5 (11.1)</td>
</tr>
<tr>
<td>9</td>
<td>Fusidic acid</td>
<td>09 (02)</td>
<td>30 (66.7)</td>
<td>6 (13.33)</td>
</tr>
<tr>
<td>10</td>
<td>Gentamycin</td>
<td>05 (11)</td>
<td>33 (73.3)</td>
<td>7 (15.6)</td>
</tr>
<tr>
<td>11</td>
<td>Linezolid</td>
<td>45 (100)</td>
<td>00 (00)</td>
<td>0 (00)</td>
</tr>
<tr>
<td>12</td>
<td>Teicoplanin</td>
<td>45 (100)</td>
<td>00 (00)</td>
<td>0 (00)</td>
</tr>
<tr>
<td>13</td>
<td>Vancomycin</td>
<td>45 (100)</td>
<td>00 (00)</td>
<td>0 (00)</td>
</tr>
</tbody>
</table>

Discussion: The MRSA frequency observed in the current investigation is very small as compared to the previous reports about the MRSA pinnacle prevalence in Pakistan and throughout the world as well. There is a significant
variation in the prevalence rate of MRSA in Pakistan, ranging from 2% to 61% (Hafiz et al., 2002[1]) and throughout the world (Maple, Hamilton-Miller, & Brumfitt, 1989; Tiemersma et al., 2004; Voss & Doebbeling, 1995). However MRSA offer considerable resistance to various antibiotics here in Peshawar which is comparable to the other reports about the chemotherapeutic activity of various antimicrobials against MRSA. The observed frequency of MRSA in Peshawar is less than the previous reports in Rawalpindi (60.40%) (Perveen et al., 2013), in Johannesburg and Cape Town, the major cities of South Africa (33—43%) (CS, H, VT, & Group., 2004), in Trinidad and Tobago (12.8%) (Akpaka et al., 2006), in eastern Uttar Pradesh, India (54.85%) (Anupurba et al., 2003), in California (86.3%) (Hsue Huang, 2006), 69.1% in western Nepal (Tiwari, Das, Sapkota, Sivrajan, & Pahwa, 2009), 32% in Kuwait (Udo et al., 2008), 71.4% in Sudan (Kheder, Ali, & Fathelrahman, 2011), 13% in Sri Lanka (Corea, De Silva, & Perera, 2003), 42% in Iran (Aligholi et al., 2008), and 33.5% in Russia (Stratchounski et al., 2005). The prevalence rate of MRSA in various European countries is reported as; Austria (8.8%), Belgium (23.6%), Bulgaria (33.9%), Croatia (36.7%), Czech Republic (5.9%), Denmark (0.6%), Estonia(0.9%), Finland (1%), France (33.1%), Germany (13.8%), Greece (44.4%), Hungary (7.1%), Iceland (0.5%), Ireland (41.2%), Israel (38.4%), Italy (40.9%), Luxemburg (19.2%), Malta (43.8%), Netherlands (0.6%), Poland (17.7%), Portugal (34.7%), Slovakia (10.5%), Slovenia (18.4%), Spain (24.8%), Sweden (0.8%), and united kingdom (41.5%) with 20% overall prevalence rate of MRSA in Europe (Tiemersma et al., 2004). MRSA prevalence rate was 29% in the session 2001-2002 that rose to 64% in the session 2003-2004 in the county jail system of Los Angeles, USA (Moran, Amii, Abrahamian, & Talan, 2005).

Vancomycin, Teicoplanin and Linezolid showed excellent therapeutic activity against MRSA and no resistant MRSA strain was detected against these antibiotics in this study. Similar reports have been obtained in other areas of Pakistan for Vancomycin (Akpaka et al., 2006; Perveen et al., 2013; Samia Perwaiz, 2007), for Teicoplanin (Samia Perwaiz, 2007; Shagufta Hussain, 2005) and for Linezolid (Taj Y, 2010). MRSA has also been found as completely sensitive to vancomycin (Anbumani, Kalyani, & Mallika, 2006; Maple et al., 1989; Marais et al., 2009; Sharma, Pathak, & Srivastava, 2013; Song et al., 2011; Vidhani, Mehdiriaatana, & Mathur, 2001), teicoplanin (Maple et al., 1989; Marais et al., 2009; Song et al., 2011) and linezolid (Anbumani et al., 2006; Marais et al., 2009; Stratchounski et al., 2005). All MRSA strains were resistant to Ampicillin, Oxacillin and Penicillin and showed no therapeutic activity against MRSA infections. Similar results have been obtained in some of the major areas of Pakistan. MRSA is totally resistant to oxacillin and penicillin (Perveen et al., 2013; Samia Perwaiz, 2007). MRSA has also been reported resistant to Oxacillin and Penicillin in some of the Latin countries of America like Mexico (penicillin and Oxacillin), Brazil (penicillin) and Chile (Oxacillin and penicillin; (de Sousa et al., 2001). High degree of resistance has been reported for Ampicillin in India and Nepal (K Rajaduraiapandi, 2006).

Gentamycin, an amino glycoside, showed poor activity against MRSA showing 73.3% resistance. Variable degree of gentamycin resistant MRSA has been reported in other areas of Pakistan as; in Karachi (96.55% ) (Taj Y, 2010), in PIMS hospital Islamabad (100%) (Shagufta Hussain 2005), 67% in Kohat (Hussain et al., 2013) and 76% MRSA prevalence in Rawalpindi (Perveen, Majid et al. 2013. In India, a lower resistance (60%) has been reported (K Rajaduraiapandi, 2006).

In the current investigation, ceftriaxone, a third generation cephalosporin antibiotic, shows a high degree of resistance (77.77%), which is greater than that of Karachi where it is 45% (Taj Y, 2010), however, lower than Trinidad and Tobago where MRSA is completely resistant to ceftriaxone (Akpaka et al., 2006). Cefoxitin, a second generation cephalosporin antibiotic, showed a high therapeutic value than ceftriaxone. 82.22% of MRSA strains are found resistant to erythromycin, comparable to the previous reports in Rawalpindi (Perveen et al., 2013) [30] and Islamabad (Shagufta Hussain 2005), 95% resistance to erythromycin has been reported in Karachi (Samia Perwaiz, 2007) and 68.5% of MRSA have been reported resistant to erythromycin (Hussain et al., 2013). MRSA poses 80% resistance to erythromycin in Sacramento, California (Hsue Huang, 2006), and in rural southwestern Alaska, MRSA pose 80% resistance to erythromycin (Baggett et al., 2003).

MRSA shows considerable resistance to Fusidic acid (66.66%), which is higher than 2% in Karachi (Samia Perwaiz, 2007) and (20%) in Islamabad (Shagufta Hussain 2005), however lower than the previous reports (95.7%) in Riyadh Saudi Arabia (Baddour, Abueltreheir, Manal, Fatani, & Amal, 2006). However, Fusidic acid is a drug of choice in most of the countries (Lofflter et al., 2005; Marais et al., 2009; Stratchounski et al., 2005). MRSA shows 71% resistance to clindamycin, a lincomamide antibiotic, a higher resistance (90%) has been reported in Karachi (Samia Perwaiz, 2007). However, a lower resistance has been reported in UK (18%) (Lofflter et al., 2005), in Russia (27%) (Stratchounski et al., 2005)
The present study shows that the prevalence rate of MRSA is higher in males 31/45 (69%) than in females 14/45 (31%). In 2009 Rahman et al, have also reported the greater percentage of MRSA in males (58%) than in females (42%) in Peshawar (Shafiq Rahman, 2011). In Riyadh, Saudi Arabia, Baddour et al have also reported the greater frequency of MRSA in males (64.4%) than in females (35.6%) (Baddour et al., 2006). Tiemersma et al have also reported the higher rate of MRSA prevalence in males than female (Tiemersma et al., 2004),however in India S. Sharma and A. Mall have reported the greater rate of prevalence of MRSA in females 14/25 (60.86%) than males 9/25 (39.13%) (Mall, 2011). Maximum frequency of MRSA strains was found in pus samples (71%) and least number of MRSA strains was collected from blood samples (11%). Similar results have been obtained in India (Khadri & Alzohairy, 2010)[39], in European countries (Tiemersma et al., 2004) and in Pakistan (Perveen et al., 2013).

The implementation of preventive measures is recommended for the control and prevention of MRSA infections. “Cleanliness is next to Godliness”. Environment should be kept clean and hands should be regularly washed with soap. Awareness should be produced among the mob and self-medication should be discouraged. Proper antibiotic sensitivity tests should be carried out for MRSA suspected infections. Colonized/infected patients should be properly isolated/ treated. Vancomycin, teicoplanin and linezolid showed best chemotherapeutic activity against MRSA infections in this study, but their prescription should be kept limited, followed by antibiotic susceptibility tests.

**Conclusion**: The observed prevalence rate of MRSA in the people of District Peshawar is less than that of its previous reports. Vancomycin, teicoplanin and linezolid showed best chemotherapeutic activity against MRSA infections in this study, but their prescription should be kept limited, followed by antibiotic susceptibility tests.

**REFERENCES**


CELEBRITY ENDORSEMENT AND CONSUMER PURCHASE DECISION OF TELECOM SERVICES IN PAKISTAN

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ABSTRACT: This survey based study explores association between the concept of celebrity endorsement and consumer purchase decision in telecom sector of Pakistan. Relationship of credibility and attractiveness of celebrity endorsement with purchase pattern of consumers has been tested using the parametric and nonparametric tests. Employing the sample of 244 respondents, the study empirically finds the influence of celebrity endorsement on consumer’s purchase pattern and findings endorse Source Credibility Model [1] and Source Attractiveness Model [2].

Keywords: Celebrity Endorsement; Telecom Companies; Pakistan.

1. Introduction. In the era of increasing commercialization and competition, businesses endeavour to attract the potential customers. Consumers come across various advertisements everyday through magazines, billboards, websites, radio, newspapers and television. Every brand attracts the attention of the consumers through advertisement of their products and services. The marketers employ new ways to draw the attention of consumers (Taleja, 2005).

1.1 Background of the Study. According to [1] and [2], celebrities are people who enjoy public recognition and who often have distinctive attributes such as attractiveness and trustworthiness. Celebrity endorsement was first seen when Reverend Henry Ward Beeche was endorsed in Waltham watches print advertisement in 1870 in Harpers Weekly whereas celebrities from entertainment industry was first seen in Murad Cigarettes advertisement in 1905 [3]. Celebrity endorsement is considered to be a popular approach around the globe. For example, celebrities are endorsed in approximately 25% of advertisements in the United States [4]. In contrast to it, approximately 70% of advertisement in Japan and Korea are featuring celebrities to endorse their products [5]. Celebrity endorsement is considered as a billion dollar industry now a days [6]. Marketers are using celebrities in the advertisements because they think that celebrities can influence the customers by creating awareness and positive feeling about the brand [7].

The influence of celebrities on consumers endorsed in advertisements is evident from the many of the previous studies. Many characteristics are related to celebrity endorsement. Celebrities can be endorsed as brand face or brand ambassador [8]. Consumer behaviour and celebrity endorsement is a vast area. There is still room for the researchers to investigate. In the last few decades, researchers have investigated a lot on the celebrity endorsement phenomenon [9]. Many new problems related to celebrity endorsement have been explored by the researchers like effectiveness of celebrity endorsements, negative publicity of the endorsed celebrity and so on. Additionally various empirical studies are already been doing by focusing on major markets around the globe like United Kingdom, China and United States but according to the authors’ knowledge a few studies have been conducted with reference to Pakistani consumers. This study provides an understanding of the perception and attitude of Pakistani consumers towards celebrity endorsements, which may also reveal some interesting insights and directions for future research. Consumers are exposed to several new products every day followed by marketer’s differentiation and positioning techniques. Therefore it looks interesting to investigate the impact of celebrity endorsements on consumers purchase pattern in Pakistan. From a business perspective this research work would be useful in understanding the attitude and perceptions of Pakistani consumers towards celebrity endorsements.

1.2 Problem Statement. In recent past endorsing a celebrity in the advertisements has been extensively used due to their increasing influence, attraction to recall and drawing the attention of the consumers. Company’s advertisement creates awareness by the celebrity endorsement; it makes positive image of brand in consumer’s mind and they are more attracted towards such advertisements [7]. Choosing credible and attractive celebrity is
very essential but the effect on long term loyalty of consumers is yet debatable. With the help of celebrity endorsement businesses are able to achieve higher recall and attention from the consumers, even though it is not clearly identified and research is needed to find all the possible relationships and effects. There is a revolutionary change during the last one and a half decade in the telecom industry of Pakistan and the marketers are using celebrities at a larger scale. No quantitative study has been done in Pakistan to explore the relationship between celebrity endorsement and customer purchase pattern. This study seeks to examine celebrity endorsement in relation to consumer buying behavior in telecom sector of Pakistan.

1.3 Research Questions. This study attempts to answer the following research questions:
   1. How does celebrity endorsement influence the consumer purchase pattern?
   2. Do credibility and attractiveness of the celebrity affect the consumer intention to buy?

1.4 Overview of theoretical framework. Theoretical framework helps in determining the variables which are measured and describe as to the statistical association of these variables in the research [10]. The study has tested two models related to celebrity endorsement such as Source Credibility Model [11] and [12] and Source Attractiveness Model [13] to explore the effects on consumer’s purchase intentions. The model of this study consists of celebrity endorsement and consumer purchase pattern as the independent and dependent variables respectively. Celebrity endorsement is measured by two dimensions including credibility and attractiveness of the celebrity.

1.5 Overview of Research Methodology. The study follows the positivist paradigm. The unit of analysis for this research includes consumers of telecom companies of Pakistan. The target population of the study comprises of all the consumers of the telecom sector. Convenience sampling is used. For this research the sample size consists of two hundred and forty four (244) respondents. The questionnaire is designed to empirically test the hypotheses related to the research questions. The questionnaire attempts to solicit the opinions of people using the mobile telecom services of the various companies which, later in the study, are listed as Ufone, Telenor, Zong, Warid, and Mobilink.

2. Literature Review. Studies related to the different determinants of celebrity endorsement have been reviewed with reference to the consumers’ purchase intention. The source attractiveness and the source credibility models provide the basis for selecting determinants of celebrity endorsement following the study [14]. The determinants are categorized into credibility and attractiveness of a celebrity. Trustworthiness and expertise are the determinants of source credibility; whereas familiarity and liking are the dimensions of source attractiveness. The literature is organized according to these specifications of celebrity and purchase pattern of the consumers.

2.1 Celebrity Endorsement: A celebrity is the person whose market value is more than his services [15]. Celebrities are the persons who are known by the public and have distinguishing attributes of trustworthiness and attractiveness [2]; [1]. The term celebrity is used for the individuals who are recognized by the public as sport figures, actors, entertainers and people who have achievements in their fields [16]. These fields include television, movies, sports, business, politics, military personals and artists [2]. People have tendency to remember celebrity [17]. According to [18]marketing in the modern era animals and animated characters are also included in celebrities. Celebrity endorser is defined as an individual who is known to the public for his or her achievements in areas other than that of the product endorsed [19]. Advertisers mostly hire celebrities to provide the brand or product with their personality [20]. The reactions of the consumers by their emotions and attitude are provoked by employing celebrity [21], but for this purpose the celebrity should be credible to acquire attention of the consumers [18]. By this way the consumers buying intentions are promoted [22]. Changing intentions in favor of buying the product confirm the impact of celebrity endorsement on the consumers purchase pattern [23]. Previous studies also reveal that professional experts, typical consumers and company managers are less effective than the celebrities [16]. Dynamic and attractive celebrity effectively crack into purchaser’s symbolic association to desired reference groups [24], [25], [26].

Celebrities are classified as opinion leaders and heroes to become reference group. They are distinguished as successful endorsers because of their typical aspiration and reference bunch companionships [24] and [27]. They play significant role in creating consumers cognitive process through advertisements [28]. Celebrities have the potential to refine and shape existing cultural values and persuade the changes in cultural categories and values [24]; [25] and [26]. Irrespective of the background affiliation with a profession, the most common form of attachment of consumers is celebrities with effective image, self-identity or relationship with a personality or group [29]. Celebrities are socially and physically far from the consumers yet they have the ability to have an impact on consumers’ purchase intentions [30].
In the era of competitive advantage, it is essential for companies to design marketing strategies which create a differential effect. Marketing strategies are used to create a positive impact of the product in the minds of the consumers. Marketing is one of the communication strategies to achieve goals of high growth. For this purpose celebrity endorsement is a common tactic [14]. These celebrities also add much to the cost of the companies which advertise their products. The companies recover huge sums by their enhanced sales through image of the qualities of endorsing celebrities [25], [10], [31],[32] and [14]. In the beginning, it was considered that this marketing strategy has no risks but only profitable for the organization thus creating a win-win situation but later on it was discovered that it has some potential hazards as well. Severe results can be deduced by using this strategy. So it can be said that endorsing a celebrity in an advertisement is like a two-edge sword, which can destroy or create a brand.

2.2 Consumer’s Purchase Pattern: Purchase intention is defined as an increasing probability of consumer to buy a product [33]. Purchase intention of the consumer is an effort to plan consciously for buying a product in future [34]. It is also considered as part of cognitive behavior of consumers to purchase a particular service, brand or product. Purchase intentions of the consumers can also be measured by the expectations and consideration of the consumers while buying a brand. Purchase intentions are determined by customer’s information, interest, evaluation and physically observing the product [35]. External factors affecting the purchase intentions are through decision making process of the consumers. Customers are influenced by word of mouth during information search process. Customer’s perception about the endorsed celebrity, price and product features affect the purchase intentions during the buying process [36]. The image and popularity of the celebrity easily affects the attitude of the consumers towards the advertised services or products because promotional strategies influence the purchase intentions of the consumers. Particularly when the consumers want to copy the celebrities endorsed in the advertisement and consider them as reference group [37]. Consumers are exposed continuously to various brands by different marketing strategies in this competitive and vibrant environment. Every individual is attached with different nature of their needs which make consumer attitude complicated. The eventual objective of the companies is to satisfy the needs of the consumers. The producers develop the product accordingly. It is vital for the marketers to know about the consumer behavior [38].

Consumer behavior is the study of individuals, groups, or organizations and the processes which they select, secure, use, and dispose of their products. Marketing strategies can be better developed by the marketers if they have a clear understanding of consumer behavior by keeping in consideration their psychology as to the environment influencing consumers. The marketers should be familiar with causes and needs of the consumers and try to satisfy them accordingly [39]. There are four types of consumers’ buying behaviors which make the difference in decision making [40]. These types include complex buying behavior when product gets expensive it is bought infrequently; the consumers have fewer options available and they are highly involved in the buying process; the habitual buying behavior in which customer regularly buys the product and the involvement is low and the fourth type involves variety seeking behavior in which customers want to try different things [40].

2.3 Credibility: According to [41], credibility is the extent to which the recipient looks at the source having relevant knowledge, skills, or experience and trusts the source to give unbiased, objective information. Trust and expertise are the two essential aspects of credibility [12]. Celebrities are considered as credible sources of information [42] and the positive attributes generate credibility and the acceptance of message [14]. In the celebrity endorsement, the most essential determinant is credibility. Credibility is mainly significant when the image of the brand is negative among people and strong arguments are required to reduce them and change the attitude positively about the brand. Therefore, credible celebrities affect the message acceptance and persuasion [43]. Trustworthiness is defined as the honesty, integrity and believability of an endorser [4]. According to [12], trustworthiness is the level of confidence on the sender by the receiver. The consumers believe that the endorser is providing them the honest and true information that is objective in nature [22]. The celebrities who are mostly considered to be dependable, believable and honest; companies want them to endorse their products [44]. Additionally likability is considered as the essential component of trust [45]. Marketers can get the highest returns by enchanting trustworthiness and liking into account. It is believed that celebrity is liked by the consumer who trust what he or she endorses through advertisement [45]. It is essential for the effective endorser to be trustworthy. The message would be more effective and persuasive in the buying process if the consumers think that the endorser is trustworthy [46]. Additionally, the perceived expertise produce less change than perceived trustworthiness [47]. However, if the endorsed celebrity is blamed for negative events then it negatively affects the purchase intentions of the consumers [48]. It is not essential for the celebrities to be expert for the product they have endorsed [49]. In a selling context the salesperson who is an expert of the product have higher customers as compared to the less expert salesperson.
Perceptions about the product quality were influenced by the expert sources. The specialist sources were considered to be more persuasive [51] and increase the buying behavior [22]. Celebrities who are not experts engender lesser brand recognition than the celebrities who are expert in the area [52]. The effectiveness of the advertisement is determined by the level of expertise of the celebrity [53]. The level of expertise of the sender is supposed to be a source of suitable declaration. The articulacy of the consumers is increased by the professional skills and knowledge of the celebrities about the product. A number of researchers claim that the physical attractiveness of the endorser is less effective than the expertise of the endorser [54]. Expertise of the person is that he gives creditable and useful opinion or advice about the product to the consumers.

2.4 Attractiveness: Purchase interest of the people can be increased by the attractiveness of the celebrity. Attractiveness is not limited to the body size but also includes physical attributes. For example facial features, physical appearance and hair color attract viewers and the prospective consumers [8]. Studies related to the communication and marketing recommend physical attractiveness as a significant symbol of first sight judgment of the commodity. Beauty makes the first impression [22]. Additional characteristics of the celebrity include personality properties, intellectual skills, athletic performances, endorser’s skills and way of living of endorsers [14]. Attractiveness of the celebrities is established due to their great performance and achievements in their professional life. The companies also employ celebrities who are not considered much attractive to create an image for their company. This is because of the fact that the product and the celebrity match with each other and represents the customers an image which is required for the product [55]. The interpretation of attractiveness is affected by the receiver's perception about the likeability, personality, social values and similarity with the sender. Society, beliefs, thoughts and attitudes of the person can affect the endorser's attractiveness [8]. This is the reason for selecting a celebrity based on the attributes which resemble the consumers. Celebrities are also employed to create empathy for the companies. Empathy is used to create the bond between the consumer and the celebrity. Familiarity is used to increase the level of persuasiveness [43]. The affection of the people for the source because of the behavior and physical appearance is called likability [13].

2.5 Source Credibility Model: Hoyland [12] and his colleagues first proposed the source credibility model. According to this model, the effectiveness of a message depends on the perceived level of expertise and trustworthiness of an endorser [12]. In broad sense, source credibility refers to the positive characteristics of communicators on the receivers’ acceptance of message [49], and the basis of this study comes from the social psychology [12]. According to [56], the process of internalization is a credible source through which a celebrity can have the impact on consumer’s opinions, beliefs, behavior and attitudes. When the endorser is accepted by the consumers of their value structure and personal attitude, internalization occurs [14]. The endorser’s credibility is dependent on the brand they endorse along with the information they provide about the product and the perception of consumers regarding the right information [42]. The purchase intentions and attitude of the consumers can be changed by the trustworthiness and expertise of the endorsers [57]. Consumers assume that information provided by the endorser is true and credible. Consumers will have a positive attitude for the advertisement or brand when the endorsing celebrity is the expert in the field. The credible source is influential when the consumers have less knowledge about the product and have not formed an opinion about it. There is positive influence among the consumers about the product if they think that the endorsing celebrity is credible [53]. Expert source that is credible can easily persuade a consumer. When the product is of high involvement of consumers, the source credibility model is very helpful [58].

2.6 Source Attractiveness Model: Aristotle the famous philosopher beautifully quoted the meaning of source attractiveness model: “Beauty is a greater recommendation than any letter of introduction”. Aristotle emphasized that the most essential thing is attractiveness and beauty. There were lot of persuasive stories that can be told but this is a fact that consumers are eye centered. This is the reason as to the attractiveness as an important factor. Aristotle highlights that an attractive celebrity endorser and advertisement are recommended to establish brands.

Apparent resemblance between the respondent and the source is called similarity, the knowledge about the source to the respondent through experience is called familiarity and the level of care, affection and fondness in the respondents about the source because of physical behavior and attributes is likability. Other various characteristics like life style and intellectual skills are included in the attractiveness along with the physical attributes [14]. This model was applied by [55] in advertising.

The discussion reveals that customers form favorable and positive discernments about physically attractive endorsers [14]. The purchase intention of the customers and their belief about the product are influenced by the attractive celebrity [59]. For this reason most of the companies have attractive endorsers in their advertisements [60]. Attractiveness includes different dimensions of the endorser's life style instead of relating it to the physical attractiveness [14].
3. **Theoretical framework**: A collection of interconnected variables or concepts form the theory is depicted in the theoretical framework. Theoretical framework helps in determining the variables which are measured and describe statistical associations [10]. The study has organized, analyzed and structured a number of earlier empirical studies conducted by various researchers on celebrity endorsement. Theoretical framework is developed keeping in view the findings and method of the studies such as [61]; [2]; [1] and [43]. The study has applied two models related to celebrity endorsement namely Source Credibility Model [11] and Source Attractiveness Model [13] to examine the effects on consumer’s purchase intentions. The model of the study consists of total two variables (with different dimensions); celebrity endorsement and consumer purchase pattern as the independent and dependent variables respectively. Celebrity endorsement is measured by two perspectives such as credibility and attractiveness of the celebrity. Credibility is further divided into sub-dimensions; trustworthiness and expertise. Attractiveness is also divided into two further dimensions; familiarity and liking for the celebrity. Presented below is the theoretical model of the study.

![Theoretical Model](image)

### 3.1 Hypothesis Development

Theoretical framework discussed above lead to the generation of the following hypothesis for the study

**Hypothesis 1**

Purpose of this study is to find out as to the effect of attributes of celebrity on consumers buying behaviour. Therefore, the testable hypothesis is developed in the form of a statement.

H₁: Celebrity endorsed advertisements have positive influence on the consumer purchase pattern.

**Hypothesis 2**

Consumers are commonly motivated by the advertisement to trust, accept and like the product endorsed by the celebrity. Discussion helps in developing another testable hypothesis.

H₂: Credibility of the celebrity positively affects the purchase intention of the consumer.

**Hypothesis 3**

The interest of the people can be stimulated by the attractiveness of the celebrity. Findings of the previous studies creates another testable hypothesis.

H₃: Consumer intention to purchase is positively affected by the attractiveness of the celebrity.

4. **Methodology**: This section of the study includes brief discussion on the unit of analysis, target population, sample size, methods, measuring instruments, statistical techniques employed for the analysis and operational definitions of the variables.

#### 4.1 Unit of analysis:

All of the consumers of telecom companies of Pakistan make the unit of analysis for this study. The questionnaire is designed to empirically test the hypotheses developed in the previous sections; impact of celebrity endorsement on consumer purchase pattern. Objective of the study is to observe the association between celebrity endorsement and consumer purchase pattern in the framework of telecom sector of Pakistan. Therefore, the target population of the study comprises of all of the consumers of the telecom sector. Convenience sampling is used. This sampling technique involves selecting people randomly that are easiest to obtain. The respondents selected in this technique are on the basis of their readiness, easy accessibility and immediacy to participate. This study includes sample size of two hundred and forty four respondents.

#### 4.2 Measuring instrument:

A questionnaire is specially designed in order to measure the two variables with their dimensions according to the theoretical model. Questionnaires are considered to be the most frequently used technique for data collection in management and business research [62]. The questionnaire includes all the techniques of data collection by which each respondent is supposed to respond the same set of questions in a predetermined order. Questionnaire are considered to be the well-organized form of collecting data from large number of respondents as same questions are asked from each and every respondent. The questionnaire attempts
to solicit the opinions of people using the mobile telecom companies on the agreement or disagreement of the various key relationships presented by the model.

4.3 Methods for statistical analysis: The study is based on blend of parametric and nonparametric quantitative methods. At the first stage descriptive analysis is done to find the general trend of relation between the variables. The results of the descriptive tests are skipped for space saving in this paper. These results can be shared on request. The nonparametric and parametric tests have been employed by incorporating the qualitative variables which are assigned binary numbers.

\[
\text{Purchase Behavior} = \alpha + \beta_1 \text{ATTRACT}_D + \beta_2 \text{CREDIT}_D + \mu
\]

\[
\text{Purchase Behavior} = \alpha + \beta_1 \text{ATTRACT}_D + \beta_2 \text{CREDIT}_D + \beta_3 \text{ATTRACT}_D \times \text{MALE} + \beta_4 \text{CREDIT}_D \times \text{MALE} + \mu
\]

4.4 Operational Definitions

4.4.1 Credibility: The definition of credibility is adopted from [41] and [12] for this study. Credibility is defined as the extent to which the recipient looks at the source with relevant knowledge, skills, or experience and trusts the source to give unbiased, and objective information [41]. Another study [12] considers trustworthiness and expertise as the essential determinants of celebrity endorsement.

4.4.2 Trustworthiness: The definition of trustworthiness proposed by [4] is adopted for this study. Trustworthiness refers to the honesty, integrity and believability of an endorser. It is the degree of confidence in the communicator's intent to communicate the assertions which he or she considers the most valid.

4.4.3 Expertise: The definition of expertise for this study is adopted from Erdogan [14]. It is the extent to which an endorser is perceived to be a source of valid assertions.

4.4.4 Attractiveness: The definition of attractiveness is adopted from [14] for this study. The concept of attractiveness does not only entail the physical attractiveness but it also entails concepts such as intellectual skills, personality, way of living, athletic performances and skills of endorsers.

4.4.5 Familiarity: The concept of familiarity for this study is adopted from [14] and [43]. The familiarity resembles knowledge that a celebrity endorser possesses through exposure.

4.4.6 Liking: The concept of liking for a celebrity is adopted from [13]. Likeability is the affection for the source as a result of the source’s physical appearance and behavior.

4.4.7 Celebrity Endorsement: The concept of celebrity endorsement is adopted from [2]. A celebrity endorser is an individual who enjoys public recognition and applies this recognition on behalf of a consumer by appearing with the product in an advertisement.

4.4.8 Consumer Purchase Intention: The definition of consumer purchase intention is adopted from the studies of [33] and [63] for this study. It is the probability of consumer to buy a product or one’s conscious plan to make an effort to purchase a brand in the future.

5. Discussion: Five different options are given against each question in the questionnaire with the choice of strongly agree, agree, neutral, disagree and strongly disagree. The dominating responses are in favor of first two options (strongly agree and agree). After due deliberation, binary numbers 0 and 1 codes are assigned to the variables attraction and credibility. The binary number 1 is assigned to each high degree of attraction and credibility whereas 0 code is assigned to normal behavior of purchasing in response to the advertisement. Econometric model with qualitative variables has been estimated using least square method. Purchasing is the dependent variable; attraction and credibility are the two independent variables representing celebrity endorsement. Results are presented in the Table4.2.
Attraction and credibility of celebrity play significant role in the purchasing of telecom related services. However, negative sign of coefficients show that high degree of attraction and credibility of the celebrities does not increase purchasing more than the normal level. This finding is inferred from the positive sign of intercept (12.45) with t-statistics (33.28). The p-values of the independent variables also show significant results. Significant values of the two independent variables show significant difference between the effect of credibility on purchasing and the purchasing without considering the credibility of celebrity. The difference goes in favor of the situation of purchasing under normal circumstances. Similar comparison has been done between the attraction of the celebrity and the purchasing without consideration of attraction of the celebrity. It can be concluded that advertisements with celebrity have in general positive impact on purchasing but the attraction and credibility of celebrity play relatively less significant role in the increase of purchase intention of consumers of the telecom services of the telecom industries incorporated in this study.

The coefficient of determination (R²) is 15.2% which shows 15% of the variation in purchasing of telecom services is explained by the attraction and credibility of the celebrity employed in the advertisement of the telecom services. There are many determinants of purchasing behavior other than attraction and credibility of the celebrity. These factors may include pricing of the product; nature of need of the consumers; reliability of services; coverage; credit facility; internet facilities and many other factors at the micro and the macro level. These factors are beyond the scope of this study. That is why the R² is low. Nevertheless, F-statistic (21.63) with probability (0.00) significantly supports the model. Credibility and attraction of the celebrity are the variables very much relevant to the model.

In the Dummy Variable Model, for the attractiveness of the celebrity, the option of strongly agreed is coded as 1 and it is considered that celebrity is highly attractive. Agreed responses are coded as 0 and are considered as normal attractive celebrities; while the intercept (c) shows the option whose code is 0. The value of intercept for attraction is 12.45 which is greater than the highly attractive by 0.83. Therefore, attractiveness is although a significant variable but only attractiveness is not enough to change the perceptions of the consumers. Rather the advertisement as a whole influences the purchase pattern of the consumer. In the Dummy Variable Model, for the credibility of the celebrity the strongly agreed is coded as 1 and it is considered that celebrity is highly credible. Agreed responses are coded as 0 and they are considered as normal part of the advertisement (attractive celebrities); while the intercept (c) shows the option whose code is 0. The value of intercept for attraction is 12.45 which is greater than the highly credible option by 1.11. Hence, it can be concluded that the credibility plays significant role in the determination of purchase behavior but credibility is not enough to change the perceptions of the consumers. Advertisement in general affects the purchase pattern of the consumer. Attractiveness and credibility are the two dimensions of celebrity endorsement in the study. The discussion can be concluded that the celebrity endorsement affect the purchase pattern of the consumers but in the telecom sector the advertisements as a whole reveals an impact on the minds of the consumers. There is more significant effect of advertisements on the purchase decision of the consumers than the endorsement of celebrities only. These findings are different from most of the previous studies.

**Significance of Gender** : It is assumed that credibility and attractiveness of celebrity has identical effect on the purchasing behavior of consumers irrespective of characteristics of gender. The interactive model of gender with the attractiveness and credibility of the celebrity is tested and the results are presented in the table 2.

Results presented in the table 2 show that the two characteristics of celebrity are highly significant without the interactive term of ‘male’ as a variable. The variable ‘male’ carries value 1 for male gender and 0 for female. The findings of the study are quite interesting. Attractiveness and credibility of the celebrity more significantly affect the purchasing behavior of the female than that of male. Yet the intercept term is not only significant but
also carries positive sign. The results, ignoring gender as a variable, not different from those discussed in table 4.1.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>12.44965</td>
<td>0.376168</td>
<td>33.09601</td>
<td>0.0000</td>
</tr>
<tr>
<td>ATTRACT_D</td>
<td>-0.875572</td>
<td>0.427891</td>
<td>-2.046252</td>
<td>0.0418</td>
</tr>
<tr>
<td>CREDIT_D</td>
<td>-1.125798</td>
<td>0.283388</td>
<td>-3.972646</td>
<td>0.0001</td>
</tr>
<tr>
<td>ATTRACT_D*MALE</td>
<td>0.087416</td>
<td>0.282572</td>
<td>0.309360</td>
<td>0.7573</td>
</tr>
<tr>
<td>CREDIT_D*MALE</td>
<td>0.028631</td>
<td>0.391615</td>
<td>0.073109</td>
<td>0.9418</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.153146</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.138973</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S.E. of regression</td>
<td>1.498589</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F-statistic</td>
<td>10.80525</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prob(F-statistic)</td>
<td>0.000000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Postpaid and Prepaid Packages: The study also analyzes the nature of package offered by the telecom industries and their significance in the role of celebrity affecting the purchasing behavior. The prepaid package seems to have effect on the purchasing behavior of the customers of telecom services of the telecom industries under considerations of the present study.

6. Conclusions: Celebrities play a role in making the advertisement more effective in which they are endorsed. Findings of the study reveal that youngsters are more attracted towards the advertisement of Mobilink, Telenor and Ufone. They consider such advertisements as full of entertainment and celebrities endorsing these telecom brands. The celebrities of such brands are famous and they leave better image on the consumers of such brands. The education of the consumers also plays a role in the liking of the celebrity and the advertisements. As supported from the results that consumers who have high level of education are more attracted towards Mobilink. This may be because of their advertisements catering to the highly sophisticated consumers. Though relatively less but similar findings are in case of Zong and Warid whose advertisements are mildly showing some social issues.

The packages of the telecom companies used by the consumers are also dependent on the advertisement as well as the celebrities being endorsed in them. Mobilink has more sophisticated and corporate theme advertisements and their celebrities endorsing their product are also the famous personalities of their segment for their postpaid package. That is why their consumers are large in terms of using the networks. For the prepaid package the consumers are more attracted towards the Mobilink and Telenor because the endorsing celebrities for this package resemble them and the whole concept is liked by the consumers.

Expertise of the celebrity being endorsed in the advertisement affects the consumers in selecting the telecom brand. Consumers are attracted towards the brand but the impact of whole advertisement is more effective in telecom-related advertisements. Trustworthiness of the endorsing celebrities in the advertisement has shown relatively less impact on the selection of telecom brands by the consumers. The celebrities who are more trusted by the consumers do have more fans and followers. But statistically, significance of qualities of the celebrity could not be supported from the data in playing their role for the purchase behavior of the consumers. Customers buy telecom brands irrespective of the qualities of the celebrities. It is safe to conclude that overall theme of the advertisement is very important and attracts the consumers. The advertisements of Mobilink and Telenor are appreciated by the consumers than those of the other companies.

The celebrities who are more familiar to the consumers have more fans and followers. Buying behavior of such fans goes in favor of purchasing the product. Likability of the endorsing celebrities in the advertisement affects the selection of telecom brands by the consumers. The familiarity, physical attractiveness and likability are the dimensions of attractiveness. It can be concluded that attractiveness of the celebrity in an advertisement does have influence on the customer’s purchase pattern. From the results obtained from the sample it is evident that celebrities do impact the buying decision process but the overall theme of the advertisement is more important than individual features of the celebrities for the consumers.

Credibility and attractiveness of the celebrity are the two dimensions of celebrity endorsement in this study. From the results obtained from the sample and discussion it is concluded that even if celebrities influence the purchase pattern of the consumers and they follow the celebrity being endorsed in the advertisement but this is
not the only reason for attraction rather the advertisement as a whole attracts the consumers of the telecom sector in Pakistan. Telecom companies working on the development of their advertisements should take notice of findings of the present study while targeting the population of their existing and potential customers. An interesting finding of the study is that consumers are not attracted by the humorous advertisements for the purchasing of telecom services in Pakistan. The top management of Ufone must take into account of their marketing policy. Telecom companies are working hard on their advertisements to attract more consumers and attain maximum market share. All of the companies are providing almost identical services and packages with similar attributes of their services. Now is the time to focus on the building of their image in the minds of their customers. This can be done by advertising the product more effectively. The marketing techniques of Mobilink and Telenor are much successful followed by the Ufone, as per findings of the present study. Zong and Warid have less market share and they need to work on their marketing campaigns to acquire greater market share because only endorsing a celebrity is not enough but they have to work on the overall theme of the advertisements as well.

**Recommendations of the Study:** Marketing is one of the strategies for the sustainable growth of the business. Advertisement is effective marketing tool which is strongly used by the competitors who try to undermine or drive out the competing businesses from the market. Recommendations of the present study are based on findings of the study, constraints faced in terms of time, resources and the availability of data. Nevertheless, the study recommends certain measures related to future research, policy perspectives and the growth perspective of the telecom sector of Pakistan.

- Effective advertisement can be the policy instead of effective celebrities in Pakistani telecom sector.
- Celebrity endorsement is one of the determinants of purchasing behavior. These factors may include status of the consumers; purchasing power of the consumers; growth in earning sources in the economy; credit facilities; nature of the need; government policies regarding consumers and the businesses as stakeholders of the economic activities.
- The businesses in the telecom industries should focus on the age groups below 40 years of population while designing the advertisements and also in the selection process of celebrities to endorse the telecom related products.
- Though the interview based study is a time taking process yet qualitative study is need of the telecom services and telecom businesses in Pakistan. The qualitative study, while retaining the quality of the original variables points out real nature of the problem and its possible solutions. After conducting inductive research in such an area structured questionnaire may be quite helpful in finding very useful results. This needs a lot of work, resources and patience of the researcher. Further study or fully sponsored research is to be conducted in Pakistan not only in the telecom sector but also in other services sectors of the Pakistan Economy.

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VOICE CONTROLLED HOME AUTOMATION SYSTEM FOR THE ELDERLY OR DISABLED PEOPLE

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ABSTRACT. Home automation is one of the major growing industries that can change the way people live. Some of these home automation systems target those seeking luxury and sophisticated home automation platforms; others target those with special needs like the elderly and the disabled. Typical wireless home automation system allows one to control house hold appliances from a centralized control unit which is wireless. These appliances usually have to be specially designed to be compatible with each other and with the control unit for most commercially available home automation systems. The developed system can be integrated as a single portable unit and allows one to wirelessly control lights, fans, air conditioners, television sets, security cameras, electronic doors, computer systems, audio/visual equipment's etc. and turn ON or OFF any appliance that is plugged into a wall outlet, get the status of different sensors and take decision accordingly. The system is portable and constructed in a way that is easy to install, configure, run, and maintain. The perfect user interface still does not exist at present and to build a good interface requires knowledge of both sociology and technology fields. According to major companies that are involved in speech recognition researches, voice will be the primary interface between humans and machines in the near future. The problem lies with the situation of the elderly or disabled people, who cannot usually help themselves to move around, and might require external assistance. People who live alone might also need a helping hand at home. Therefore a voice controlled home automation system is designed, so that the users can perform certain tasks by just the use of their voices, moreover, the system is designed to have a hand-held device(remote) so that the user can easily speak their commands, otherwise they would have to walk over to the microphone to speak. Having a remote will make the system more user-friendly and portable.

Keywords: Home Automation, Voice Control, Smart Home, Ubiquitous Computing, Wireless Communication.
1. **Introduction.** Smart Homes systems are somewhat different from ordinary homes, where the different smart devices in the presence of communications network being installed that allows the devices to communicate with each other. Integrated communication systems provide the facility for monitoring and managing the performance of the home, and offer the choice support to the occupants for available facilities. The variety of systems are installed in today’s modern home such as central air conditioning and heating, fire and security alarms, and different other devices, such as home theater, televisions, lights etc. These systems and devices usually exist in total isolation from each other. Smart home provides the facility of passing information and commands among different installed devices and systems. Such facility and control not only provide better control locally and remotely but also supports special needs, particularly services that support the elderly. Smart home technology also greatly improves the usability and functionality of any home. It also allows to potentially reducing power consumption by preventing occurrences such as lighting and air conditioning being left on longer than necessary. A smart Home Automation system allows to save money and even save the environment.

The remainder of this paper is organized as follows: In next section, the related work done by other researcher on voice controlled systems is provided. In Section 3, proposed design is presented. The implementation details are discussed in Section 4. Results of system testing are presented in Section 5 followed by conclusions in the last section.

2. **Literature Review.** There are some project that have been completed which regard to the application of the voice in the controlling method. In [1], an intelligent intelligent home navigation system (IHNS) is proposed to facilitate the elderly and the physically challenged persons. It proposes an idea of an automated voice based home navigation system. The system comprises over a wheelchair, navigation module and voice module. It uses a speech recognition module SR-07 and a line follower module for navigation. The system has predefined voice commands relating to different rooms, and predefined routes relating to those rooms for the navigation. There is also a collision avoidance system installed in the project.

In [2], the intelligent access control system is developed that is based on SPCE061A voice recognition chip. The supporting software comprises of the voice training module, the voice recognition module, the voice data processing module and the voice-playing module. The system completes the functions of collecting the voice data, distilling character, special voice recognition and voice playing in terms of initializing the system and the identification training. The central processor of this system is the SPCE061A single chip. The talker confirmation that is relevant to text is realized on the chip, and then homologous order and operation are carried out.

The proposed system comprises over a voice controlled wheelchair. The system is built using low cost speech recognition board and a microcontroller. The speech recognition board utilizing HM2007 speech recognition chip. It uses an idea of paired-word for issuing a command to the system, so that if words similar to the voice commands are spoken within the vicinity of the voice recognition kit, they are not accidently detected. The system is speaker dependent and also an isolated speech system, to avoid further accidental voice detections [3].

The system presented in [4] is the voice controlled smart house. It works on the predefined set of voice commands for the defined areas in a house. The new commands can be added in as required. FIS, a pattern processing technology, is used that allows processing of complex patterns as experienced in speech and vision.

The project Voice Controlled House Automation System (VCHAS) uses an RF module and AVR Microcontroller. The previous systems have not been made handheld, and so do not require an RF module, since they do not employ a remote. In the developed project, device is made more portable, low cost and easy to use, by making it a hand-held device.
Table 1. Comparison chart for voice controlled systems available in the market [5]

<table>
<thead>
<tr>
<th></th>
<th>Automated Voice based Home Navigation System</th>
<th>Intelligent Access Control System</th>
<th>Voice Activated Wheelchair</th>
<th>Voice Controlled Smart House</th>
</tr>
</thead>
<tbody>
<tr>
<td>Navigation Module</td>
<td>✓</td>
<td>×</td>
<td>×</td>
<td>×</td>
</tr>
<tr>
<td>Voice Module</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Collision Avoidance</td>
<td>✓</td>
<td>×</td>
<td>×</td>
<td>×</td>
</tr>
<tr>
<td>Data Processing</td>
<td>×</td>
<td>✓</td>
<td>×</td>
<td>×</td>
</tr>
<tr>
<td>Voice Playing</td>
<td>×</td>
<td>✓</td>
<td>×</td>
<td>×</td>
</tr>
<tr>
<td>Speaker Dependent system</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>×</td>
</tr>
<tr>
<td>Finite inductive Sequence (FIS) system</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>✓</td>
</tr>
</tbody>
</table>

3. Proposed Design. The system is divided into three parts: Transmission block, controlling block and receiving block.

3.1. Basic Design Blocks. The system is divided into three basic design blocks namely:

1. Transmission block
2. Controlling block
3. Receiving block

An entire scenario of design will be presented as follows, by the help of these two figures. The first figure is representing the transmission block and the second representing the Control and Receiving block. Together they represent the flow of the entire system, and explain the way in which it will work.

a. Transmitting block

Voice input block. The Voice input block takes the voice of the speaker as an input signal, as the name implies. This block comprises of an input device, which might be a sensor, to detect voice as an analog input to the system. The analog input signal is then passed onto the block responsible for receiving and processing the input signal.
Signal receiving and processing block. The signal receiving and processing block is responsible for receiving the analog voice input signal, and converting it into a digital signal so that it is compatible with the rest of the system. This block is also responsible for storing the commands, which will be later termed as the preset commands. This block is trained according to human voice vocabulary, and it matches and identifies voice commands, relating to the function it is expected to perform.

Manual training block. The manual training block is used to train the signal processing block, for the commands needed to be set, so that later those commands can be used to match input signals and initiate the required tasks of appliance control.

Storage block. When the signal processing block is trained, through the manual training block, space to store input commands is required. Space is needed to retain predefined commands as addresses in the memory, and later match the spoken commands with the predefined commands to perform a function. In this block, first predefined commands are saved and later they are used for matching with the voice input to perform a defined task.

Controller block. The controller block is responsible for interfacing the rest of the circuitry with the upper part of the circuit; otherwise there is no other medium of creating a connection of the input and storage blocks with the display section, and the coding block.

Display block. The display block is included, since it was needed to make the system more user-friendly and easily accessible to all. The display block displays the command that have spoken, so that they can also be visualized, and also know the function that is going to be performed. In case of errors, it also notifies about the error. It is a medium of sense created to help the users.

Coding block. There is a need to code signal so that it become possible to interface the upper part of circuit with the transmitting block.
**Transmitting block.** It is to send signal from one point to the point of reception using suitable transmission technology.

**b. Controlling block**

**Receiving block.** This block will be used to receive signal serially from one point to the other.

**Decoding block.** A decoder is used at receiver, almost in a manner similar to the coding block, to interface receiver with the rest of the circuit.

**Controller block.** The controller block is responsible for interfacing the rest of the circuitry with the lower part of the circuit; otherwise there is no other medium of creating a connection of the received input with the safety section, and the switching block. The controlling block handles the processes to be able to select which appliance is supposed to be operated.

**Safety block.** It is necessary to create a safety circuit, so that the system is protected against damage, in case of any back EMF or high voltage etc. this block is responsible for a no-physical-connection route towards the rest of the circuit, preventing damage due to physical connections.

**c. Receiving block.** The entire receiving block is responsible for switching and operating the appliances or devices.

**Switching block.** The switching block is used so that it can be decided whether the device is to be switched ON or OFF, according to the signal received by the controlling circuit.

**Appliance block.** This block is the end of the system, and this is where the home appliances will operate.

---

![Diagram](image)

*Figure 1. Receiving and controlling block*
4. **Implementation Details.** VCHAS is a smart home system. This burgeoning industry has spawned a choice selection of products from several respected manufacturers. Home automation systems usually work on wireless technology, but very few are actually voice controlled. The proposed system is an innovation to this technology where the VCHAS is introduced to be more compatible and convenient by bringing a hand-held device to the consumers. VCHAS uses a transducer, keyboard, Integrated circuit for speech recognition, RF module, and AVR microcontroller primarily. Additional equipment such as the LCD is commonly added to expand the home automation system’s capabilities and make it more users friendly.

4.1. **System Architecture.** The system depends upon a transmitting section and a receiving section, that is apparent in system architecture diagram (refer to figure 3).

![System Architecture Diagram](image)

**Figure 3. Architecture of transmitting circuit**

The system is based upon the use of voice as a physical parameter, which is later conceived as a command by the VCHAS. The question is about interfacing voice commands with the rest of the system. To move ahead with the process, a transducer is used, for the purpose of converting physical parameter of voice into an electrical signal. HM2007 (Speech Recognition Chip) [6] is available with a pin, to which a microphone can be directly connected, for the purpose of speaking the command verbally into the circuit.
4.2. Voice based controlling requirements.

**Speech Recognition.** Speech recognition is becoming the method of choice for controlling appliances, toys, tools, computers and robotics. The voice controlled appliances like computer, TV, lighting system, security system, etc. become easier to use, while increasing the efficiency and effectiveness of working with that device.

Different Speech recognition integrated circuit are available in the market. The HM2007 speech recognition integrated circuit is one of them that provides the options of recognizing either forty .96 second words or twenty 1.92 second words. It allows either the .96 second word length (40 word vocabulary) or the 1.92 second word length (20 word vocabulary). The HM2007 stores the "trained" word patterns used for recognition in external memory. For memory, the circuit uses an on board 8K x 8 static RAM supported by coin battery. The main board has a coin battery holder that provides backup power to the static ram when the main circuit is turned off. This keeps all the trained words safely stored in memory (SRAM) so the circuit does not have to be retrained every time it is turned on [7].

**Speaker Dependency.** Speech recognition is classified into two categories, speaker dependent and speaker independent.

*Speaker independent* is a system trained to respond to a word regardless of who speaks. Therefore the system must respond to a large variety of speech patterns, inflections and enunciation's of the target word. The
command word count is usually lower than the speaker dependent however high accuracy can still be maintained within processing limits. Industrial requirements more often need speaker independent voice systems.

*Speaker dependent* systems are trained by the individual who will be using the system. These systems are capable of achieving a high command count and better than 95% accuracy for word recognition. The drawback to this approach is the system only responds accurately only to the individual who trained the system. This is the most common approach employed in software for personal computers. VCHAS employs the speaker dependent system, since it is one of the major characteristics of the IC HM2007 chip used.

**Recognition Style.** One of the constraints of speech recognition systems is the style of speech they can recognize. There are three different styles of speech that are isolated, connected and continuous [7].

*Isolated speech recognition systems* – It can only handle words that are spoken separately. This is the most common speech recognition systems. The user must pause between each word and command spoken. *Connected* – It is a half-way point between isolated word and continuous speech recognition. It allows users to speak multiple words. *Continuous* – It is the natural conversational speech people are accustomed to in everyday life. It is extremely difficult for a recognizer to shift through the text as the words tend to merge together. Isolated speech recognition system is another feature, of IC HM2007, and a characteristic of the system.

### 4.3. Training voice recognition module.

Before utilization of the system, it is required that the user should train the system according to their choice of words, to provide better accessibility to the user. The circuit can be fed with the commands desired by the user, and for that, HM2007 is interfaced with a microphone, keypad and 7-segment display, thus increasing user compatibility. When the system is switched ON to be trained, the 7-segment display shows “00” and the LED is turned ON. Suppose there is a need to record a command at number “24”, so the digits “24” on the keypad are pressed, and the LED turns OFF.

Now to train “#” is pressed, thus switching the LED ON. When the LED turns ON, it is time to speak command into the Microphone verbally, within 1.92 seconds (20 words). When the LED starts blinking, it means the word is being stored into the SRAM and VCHAS is successfully trained for the particular voice command, to be used again and again in the future. CLEAR ALL pattern is also available. If the key is pressed with number “99” and later “CLEAR” is pressed, all previous storage is erased [6].

### 4.4. The Voice input.

At the time of storing voice input as commands to the system, a 13 bit address is passed onto the memory, SRAM where the addresses are defined, containing information about what commands are stored where in the memory. Later, when the commands is spoken into the microphone, an 8 bit of data is sent to the SRAM from the HM2007 and the SRAM matches the command for the address where it is stored. If the input data of the command does not match the stored commands, then an error signal is generated, otherwise the command is passed onto the latch.
4.5. Microcontroller interfacing with LCD and Encoder. After the data is matched, the 8 bit of data is stored onto the latch, to be sent to the microcontroller. The Microcontroller interfaces a 16 x 2 LCD and an encoder to the circuit [8]. The LCD displays the command that have been spoken, as the microcontroller was previously programmed to display certain commands for certain numbers. 12 bits of data are sent from the microcontroller to the encoder. Encoder converts received parallel 12 bits of data (of which 8 bits are of address and 4 bits are of data) into serial and sends to the transmitter [9].

4.6. RF module. The RF module consists of a transmitter and a receiver. It will be operating within a range of 433MHz. The transmitter will transmit 12 bits of data serially, bit by bit, to the receiver. The receiver will receive the data one bit at a time, and serially.

4.7. Microcontroller Interfacing with Decoder and Buffer. At receiver, the decoder decodes the serial addresses and data received into parallel data and sends them to output data pins. The received data is compared with the local addresses three times. The data is decoded only in case no error or unmatched codes are found. High signal is generated at VT pin in case of a valid transmission. The 4 bits of data and 8 bits of address are now sent to the microcontroller. From the microcontroller the data is sent to the buffer. The buffer acts as a driving for current in the circuit [8][9].

4.8. Safety Circuit. The current is now passed on from the buffer to the Optocoupler. Optocoupler is used, so that there is no physical connection between the receiving part and the controlling part, in case there is ever a reverse current flow or leakage, and otherwise the circuit will be damaged. From the Optocoupler the current is passed onto the transistor.

4.9. Solid State Relay and Devices. The solid state relay used as a switch to which devices to be operated are connected. When the relay is switched on, the devices are also turned on.

4.10. Design Implementation of VCHAS. While implementing the design proposed for the voice controlled home automation system, three important sections of division have been brought under consideration, that were assumed for the sake of ease and understanding, which is nonetheless virtual.

The three important divisions are:
- The transmitter: Hand held device
- The receiver: Pluggable sockets
- The load operation: Appliance control

a. **Hand Held Device.** The voice controlled home automation system, has a unique design, where it uses a handheld transmitter section. The device is handheld and more accessible to the user. As the user may be a disabled person, or a patient, he can easily use the remote and speak his desired command. The handheld technique is potentially a new idea, and has not been previously implemented; hence it differentiates this implementation from the previous innovations of the system.

![Figure 6. Schematic of hand held device](image)

b. **Receiver and Control circuits.** The receiving section of the circuit, comprises of a pluggable socket, at the backhand of which, operates receiving section. Whatever load or domestic application devices are plugged into the socket, will then be controlled by the voice controlled home automation system, and a command pre-saved into the system will be used to control the device.
c. **Appliance control.** The aim is to control two basic home appliances at this stage, namely the light bulb and fan.

**Light bulb.** The light bulb has two states to be controlled, namely
- The ON state
- The OFF state
Fan. The fan has three states to be controlled, namely
- The ON state
- The OFF state
- The MEDIUM state
- The HIGH state

5. Results and discussions.
5.1. Methods of Testing. The voice controlled home automation system has been tested in different methods. It has been tested in both noisy and quite environments, and is found to give better results in quite environments, where it picks less or no noise signals. The hand-held device is also tested with multiple speakers, speaking onto the device at the same time and separately as well. The device responds to only the voice, which is used to train the IC HM2007, and not to any other voices. The system of VCHAS has also been tested with the range of the room it covers. Another method of testing was, to train IC-HM2007, with different commands to operate the same kinds of devices located in different rooms, example ‘Fan1-on’ for fan of room 1 and ‘Fan2-on’ for the fan of room 2, without the commands being mixed or confused by the device.

5.2. Limitations. While working on the system, several limitations are highlighted, such as the system produces error in response to environmental noise, and requires absolute silence and solitude to work properly, otherwise it can pick noise signals, and produce error in response to it. Another thing noticed about the system development is, that since IC-HM2007, sends out a unique address each time a command is spoken, it must have a separate decoder to match addresses with. This way, there is the requirement to use many different decoders for each approaching address, which makes the circuit design slightly complicated. The receiver and transmitter circuits will not work at 7V or below, so batteries used should be of good quality and be kept under check.

5.3. Results. Controlling of two devices of household appliances are successfully achieved, the fan and light bulb. The fan can be voice controlled for three levels of speed, full speed, and medium speed and off state. The bulb can be voice operated upon two levels of ON and OFF, and the same system can also be used to operating heavier loads in household, example, an air conditioner (refer to Table 2).

6. Conclusions. The purpose is to control some of the major household devices by voice. It is not only aimed at providing a healthy and comfortable lifestyle to the users, but also at aiding the sick or handicapped and people living alone, so that they can easily handle all their tasks at a convenience. Making the design sleeker and easier to handle, with a method to control more appliances at a time is the future requirement. We have so far achieved in controlling the same appliance, example, a light bulb, at the same time in two different rooms, and we have been able to control larger loads, for example, an air conditioner. The design of the voice controlled home automation system, is both portable and ready to be installed in your main household circuit. We have introduced portability in the entire system, both the voice controlling remote, and the application end.

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Table 2. Results

<table>
<thead>
<tr>
<th>TESTING METHODS</th>
<th>TESTING FACTORS</th>
<th>DEVICE RESPONSE</th>
<th>OUTPUT ACCURACY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AMPLITUDE OF VOICE</strong></td>
<td>Normal conversation 60dB</td>
<td>Device responds 3 out of 5 times</td>
<td>60%</td>
</tr>
<tr>
<td></td>
<td>Whisper 35dB</td>
<td>Device responds 1 out of 5 times</td>
<td>20%</td>
</tr>
<tr>
<td><strong>NUMBER OF WORDS</strong></td>
<td>Minimum 2 words</td>
<td>Device responds accurately 2 out of 2 times</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>Maximum 5 words</td>
<td>Device responds accurately 2 out of 5 times</td>
<td>40%</td>
</tr>
<tr>
<td><strong>DISTANCE FROM MICROPHONE</strong></td>
<td>Lesser distance 5 Inches</td>
<td>Accurate response 4 out of 5 times</td>
<td>80%</td>
</tr>
<tr>
<td></td>
<td>Greater Distance 2 Feet</td>
<td>Accurate response 2 out of 5 times</td>
<td>40%</td>
</tr>
<tr>
<td><strong>ENVIRONMENTS</strong></td>
<td>Quite</td>
<td>Accurate response 4 out of 5 times</td>
<td>80%</td>
</tr>
<tr>
<td></td>
<td>Noise</td>
<td>Accurate response 1 out of 5 times</td>
<td>20%</td>
</tr>
<tr>
<td><strong>MULTIPLE SPEAKERS</strong></td>
<td>Multiple speakers</td>
<td>Device responds accurately 1 out of 5 times</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>Individual speaker</td>
<td>Device responds accurately 4 out of 5 times</td>
<td>80%</td>
</tr>
<tr>
<td><strong>ROOM SIZE</strong></td>
<td>Small room</td>
<td>Accurate response 3 out of 5 times</td>
<td>60%</td>
</tr>
<tr>
<td></td>
<td>Large room</td>
<td>Accurate response 1 out of 5 times</td>
<td>20%</td>
</tr>
</tbody>
</table>

REFERENCES

CIVIC EDUCATION IN ALGERIA … HOW TO SHAPE THE ROAD FOR A MORE PRACTICAL CURRICULUM?

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ABSTRACT. The study examines the current curriculum of civic education in Algeria, along with the civic education course implemented in the United States of America, using the Community Based Learning (CBL) methods. We have interviewed a sample of young active leaders in the society, and asked them about the real impact of civic education course in their life choices. Instructors and educators were also involved in the study in order to have their feedback about the current curriculum and the possible ways of implementing CBL in Algeria. As a conclusion, this research suggests that the civic education course in Algeria can indeed be enhanced by using the modern methods of CBL, and in order to adapt it according to the Algerian customs and culture, the Algerian Muslim Scouts (AMS) should establish a partnership with schools, particularly with Civic education courses, in order to provide a real platform for students to practice the theories learnt in class.

Keywords: Civic Education; Algeria; Community Based Learning; Scouts; Nationalism; Civic Engagement

1. Introduction. Algeria, the country of martyrs and revolutions, has always been known by its great, ambitious and courageous youth. They are those who have completely devoted themselves for their country throughout its long bright history, starting from the French colonization era to the civil war in 1990. Indeed, the Algerian revolution in 1954, has always been a glorified symbol, across the world, of sacrifice, determination, bravery and loyalty to the nation. Such a national consciousness would not have been brought to fruition without the extremely effective role of Islamic Scouts at that time. In fact, Islamic Scout is the entity that fathered all Algerian combatants during revolution. It was the institution where youngsters usually gain a sense of patriotism and national ideology. One of its graduates said: “It’s hard to start a revolution. Even harder to continue it. And hardest of all to win it. But, it’s only afterwards, when we have won, that the true difficulties begin. In short, ... there’s still much to do” said Larbi Ben Mhidi in the movie of “Battle of Algiers” Ben Mhidi is one of the great young Algerian freedom fighters during the revolution [12]. Nowadays, the exact same spirit and consciousness are needed in order not to expel a colonist from the territory, but rather to expel passiveness and dependency from youth’s mentality. Today, after more than fifty years of independence, that flame of eagerness to serve the country, the nation and the community should not be extinguished, as it is imperatively needed.

However, the president of the republic Abdel Aziz Bouteflika, as declared by Echourouk newspaper, confessed in his speech to the nation, lack of youth civic engagement in Algeria. He called educators to put more efforts on restoring the values of nationalism and civic engagement for Algerian youth (Lakhal). This leads to the rise of a critical question about what methods of promoting civic education, Algeria should follow. Should educators leave the mission merely to Islamic Scouts and ask them for more efforts nowadays? Or should they start promoting civic education through schools and enhancing the curriculum? If it is the latter, what are the best methods of civic education that suit Algeria’s culture and context?
2. Analysis Approach. In order to investigate further the issue, we have interviewed a sample of 15 students who are actively engaged in the society today. The main question for students was: "Today, as an active young leader in the society do you think that it is the curriculum; of civic education which Impact your life choices to be actively engaged in the society? Or it is the effect of other factors? If so, what are they? (family, friends ..etc)

Furthermore, to ensure the credibility of the opinions we are getting, we have involved Algerian educators and Civic education instructors in the research, giving their opinion about the current curriculum and also providing possible ways of enhancing it. We asked instructors about their personal evaluation for the current curriculum plus their ambitions of developing the CEC course to be more of a practical course rather than a pure theoretical one.

The research contains also a simple comparison between the curriculum of CEC in Algeria and other countries, in order to use the strong points and detect the drawbacks in the national one. As part of the research, we have also investigated what the CBL is, and how it is actually implemented in other countries. Also, we consulted experts and experienced scouts to define the objectives and the great mission of the Scouts.

In an attempt to understand first the CEC, and to discover its implemented methods worldwide, we used various references. Dr. Elizabeth Beaumont, who has made a research paper about the best teaching pedagogies for civic education, emphasizes on the benefits of involving students in the learning process. Through the pedagogy of the intense interaction among students, peers and faculty all together; an environment of continuous and persistent activism is created. In fact, faculty gives the students some certain tasks, or some research topics, which directly affect the local society. In fact, faculty and CEC instructors coordinate previously with different NGO’s, in order to identify the problems and issues of local society, that need to be resolved. This way, students will not only take academic credit for completing these tasks given by instructors, but meanwhile they will have the opportunity to engage directly with NGO’s and tackle their issues and their society’s. This method enhances various aspects of civic responsibility on youth, such as: critical thinking, sense of social responsibility, tolerance and non-authoritarianism [5]. Therefore, having civic engaged youth will positively impact society, economy and even future nation strategies.

Indeed, this is what was highlighted by Jan Liss, the executive director of Project Perciles, and Ariana Liazos, a research assistant for the civic engagement project at Harvard University. In their article for the change magazine about their Civic Education Course (CEC), they have reserved a whole section for the benefits of civic education. Jan and Ariane mentioned that CEC has a direct impact on communities. They illustrated the example of Winder University’s social work student, where students created an annotated atlas for community assets map of Chester, PA. Such CEC project provided valuable information on local problems to community partners said Ariane.

Another example is the students at Ursinus College who preserved and promoted local historic sites [8]. Thus, to reach all these benefits, and to shape the road for the aim of a practical civic education, promoting effective bridges between college classrooms and community, the Algerian educational system should adopt new international methods for promoting civic education.

Most of these methods, such as CBL (Community Based Learning) and Experiential Learning are successfully used worldwide. Therefore, Algerian educators need to integrate Islamic Scouts in school programs as social partner, while implementing Community Based Learning. Such methods incorporate the academic and theoretical material given in schools with the real world experience, which enables student to practice their knowledge and enhance their skills in various fields. By interacting directly with society, and impacting it; educators will be able to develop the sense of citizenship in Algerian youth.

As stated before, one of the most active organizations in Algeria is the Algerian Muslim Scouts (AMS). It has a great impact on youth and society alike, through their numerous activities. In the newsletter published by the International Union of Muslim Scouts, which the AMS is a member of, the objectives of the organization are stated clearly. According to the newsletter, the mission of Muslim Scouts is to build a young generation who are able to impact their local society and contribute to making a better world. AMS believes that this mission will be achieved only through contributing to education of young people through a based value system, which focuses on the values and virtues of Islam. As for the activities of World Scouts Movement and AMS, they are stated in their official paper about methods and strategies of learning within Scouts. The paper is written by John May, the chairman of educational methods committees in the World Scout Movement. The objectives is to promote and coordinate social, humanitarian and relief activities through organizing many seminars and conferences about voluntary work [10].
Indeed, AMS and since its establishment in 1933 has participated in many voluntary activities during national crises, and also big spectacular shows in national ceremonies, such as the 50 anniversary of independence. As an illustration, the AMS released a report about their contribution in handling the national crisis of Beb El Oued earthquake in May 2003. According to the report, the AMS managed to gather more than 1500 AMS leaders and volunteers. They reached the affected area within less than 48 hours. Also, besides the hundreds of tons of aids delivered, more than 7000 AMS leaders and volunteers were physically involved in the process of the relief as a whole, collaborating with the ministry of social solidarity [1]. This alone shows the huge human potential AMS possesses, which is always ready when the country and the nation calls up. Indeed, the national general director of Algerian Muslim Scouts (AMS) announces clearly that their mission depicts on deepening the sense of nationalism in youngsters, so that they will be ready to serve the country in whatever way, when the country is need. Moreover, in his interview with El Masaa Newspaper, he emphasized that AMS trains its youth to be civicly engaged, and to be prepared for serving their community and their nation whenever and wherever [3]. Thus, AMS has proved that it is a school of well trained national leaders and volunteers, always ready to serve their nation.

As noticed, the role of AMS in Algeria is undeniably important for our youth and community. Yet, AMS values and experiences learned do not reach most of the Algerian youngsters. This is due to the fact that, only those who decide to join the AMS, are the ones whom these activities reach and touch. However, Algeria needs to spread the knowledge of civic education among all Algerian youth, not only part of them. Thus, school is the best appropriate place for such a mission. The school is where all Algerian youth must start their path of life. Their first steps in acquiring the knowledge needed for their future to be bright, are also in school. The minister of education Abubakr Benbouzid in his speech given in the international conference about CEC curricula, has emphasized on this point. He declared: ‘Building the sense of nationalism and civic engagement in our students’ minds is primarily the role of CEC curriculum’ [7]. As a result, it is not only the mission of AMS to promote civic youth engagement in Algeria, but it is also educators’ mission as well.

3. Results And Discussions. As a matter of fact, the Algerian school does not seem ready for such a big role alone. Actually, despite the existence of a CEC in the Algerian curriculum, experts could point out many drawbacks in it. First of all, the problem of using old teaching strategies and methods and not updating them for a long time. Since the independence of Algeria in 1962, the ministry of education has stated the objectives of CEC taken in the middles and elementary school. The objectives are mainly to prepare young Algerian citizens to be civically and politically active and engaged in their communities [2]. Although these objectives may remain the same after all these years, the methods in which these courses are implemented cannot continue to be the same in the 21st century. Courses are purely theoretical and do not involve much on-site activities, which sharpen students’ skills in many aspects. Indeed, Dr. Babahani Souad, a professor in Kasdi Merbah University and an active educator, expressed her frustration about the ways which CECs are implemented in the Algerian school.

Not only professors, but also the opinions of Algerian students about the CECs were investigated. The sample of students was carefully chosen. Mainly active youth were targeted. Those who are now involved in many programs of promoting civic engagement across the country, or taking some individual initiatives in their surrounding communities. Ten of the twelve interviewers expressed their dissatisfaction with the current methods implemented in teaching CEC. They all agreed about the point of asking for wider application of the knowledge received, so that they can enhance their skills and be able to apply it outside school. However, all the interviewers agreed on the fact that Algerian youth can be motivated easily. This is due to the typical values and traditions of the Algerian society derived from their customs and religious beliefs, as: harmony and charity. One of the interviewers pointed out that: ‘Algerian youth lack consciousness and awareness. They only need a trigger to unlock their great potential’.
After, he commented on the current method of teaching saying: Unfortunately, the civic course we receive in class is only pen and paper, we don’t get to practice. On the other hand, Aymen one of the twelve interviewers praised the current CEC, and claimed: Of course, the CEC we took in primary school were efficient and effective. I myself would not have participated in many charity activities that I did, if I had not learn about that in school. He also added: If we need to better our CEC, maybe having a practical part would be great. As noticed, the current CEC implemented in Algeria is perfect concerning theories and concepts conveyed to students. Whereas, concepts and theories are never enough. They do not last in youth minds and mentalities. That is why, it is high time for a new practical method to be adopted. One of the most successful methods used worldwide is Community Based Learning (CBL), known also as experiential learning or service learning.

"Tell me, and I will forget. Show me, and I will remember. Involve me, and I will understand” A Chinese proverb inspired the first writers of CBL and service learning programs [6]. Community Based Learning, known globally also as service learning is integrating the academic process at school with the experiential learning on the field. Both social partners and educators, work together to develop some projects according to the needs of community. These projects are presented to students who will work on them in class, to solve their community problems at the end [4].

Now that the need for CBL in Algeria is obvious, a logical question arises: How can this new method be implemented in Algeria? Taking into consideration its special cultural and social context. First of all, the ministry of education should start signing contracts with active social partners, including community associations and Non Governmental Organizations (NGO). The minister of education Benbouzid himself has confessed that the school absolutely needs the help of other institutions in order to achieve this mission together. The minister called families, mosques, society and media to play their role effectively and contribute to building the sense of civic engagement in our youth [7]. Therefore, there is an urge need to establish this coordination and collaboration between several entities of society to fulfill the mission.

In this concern, it is suggested to establish a long term coordination between the Algerian school and AMS as an active social partner. AMS has proved its strong impact on youth and society in general therefore it could be the start to fill the gap. Thus, what should be done in order to bring this initiative to light? As a first step in this project, it is recommended to give students generous credit for these projects, in order to encourage them taking this step. Moreover, the social partners should be aware and ready to receive students who aim to sharpen their skills in all fields. This cooperation between school and social partners should be sustained for the long term, and should not be only occasional initiatives. In this scope of the matter, Dr. Babahani Souad, a professor in Kasdi Merbah University, Ouargla, Algeria said supporting this suggestion: Our CEC need absolutely a real reform, to be more practical then theoretical. Students should be encouraged to go more often to the field and experience the problems on-site. Also new creative ways should be brought up to maintain the link between school and social partners.

As for the curriculum, educators should be creative and do not limit it in one single course. In fact, CBL is not limited only to the CEC. It can be also implemented in other courses as biology, history and geography [11]. Mainly all courses which have part of sociology, can be contained under the umbrella of CEC. As an instance, Dr. Moony presented an example in the United States, where students are encouraged in history classes to go to an environmental NGO and work on a biology or geology problem facing their community. They study about it in class first, and then they go to implement their proposed solutions on the filed with the help of theses NGO and school social partners [11].

The implementation of CBL in Algeria will have numerous benefits on students, society, nation and even future country planning. Indeed, by exposing students to the real life problems several times, and by interacting with NGO during their school experience, their solving problems skills along with many social and leadership skills will be greatly enhanced. Also, students who have the opportunity to engage with their community from an early age, will be able to develop communication skills. Moreover, while interacting with people in real situations, they will learn solving problems skills. Above all, they will be able to interact with many society leaders and active individuals, which will help them widen their personal as well as professional network. As for
the society, it will benefit at the first place from the projects implemented by both, students who have the academic background and NGO activists who have the experience and sufficient knowledge about society. Dr. Mason and in her paper explained how there is a mutual benefit between students and society in a closed circle. She explains how students start their research according to the community problems. Later at school, and thanks to the academic material they investigate some suitable solutions for these problems. Finally, students go back to the site and implement their solutions on the ground. Certainly, the fact of how community directs the research of students, and then how students in return impact their society is incredible [9]. Moreover, many economic benefits can be witnessed through these projects. Not only this, but also when citizens see that school is seeking the solution of community problems, a sense of community ownership and pride will arise within society [6]. Lastly, leaders of the nation would be able to plan for the future of the country and make proper strategies, once they ensure the existence of young future pillars of this nation. Indeed, students who start to engage with their community early, their allegiance to the nation will always be maintained. After school, they are most probably to engage more with their society and join community service NGO. According to a study conducted by Dr. Robert and a group of researchers, they concluded that graduates from such programs will have all three needed portions of a civic engaged leader. Thanks to CBL, they will be fully aware of their identity, and have appropriate educational experience, and a civic one [13]. Thus, they will have a great sense of belonging, nationalism and active citizenship. All this together, will certainly draw such a bright future for the country.

4. Conclusion. All in all, in order to prepare young leaders to hold the responsibility of building the country, Algerian youth civic engagement must be enhanced. This can be reached through implementing the methods of CBL in the current CEC courses. In fact, Algerian school can form a great cooperation with Islamic Scouts and other active NGO. This cooperation will allow students to practice academic theories, taken at school, onsite and in the real world. Therefore, using this approach, the Algerian school will prepare a great generation of qualified youth, who are well civically engaged and well prepared to hold on their shoulders, the responsibility of leading this nation to the highest peaks.

REFERENCES


DRINKING WATER SCARCITY IN RURAL COMMUNITIES OF SALT MINES REGION OF PAKISTAN & ITS INFLUENCE ON SOCIO-ECONOMIC STATUS OF LOCAL DEPRIVED PEOPLE.

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ABSTRACT. This study was carried out to know about the drinking water and sanitation challenges, its possible influence on socio-economic status of local communities and Government’s intervention to provide WASH services in the rural communities of salt mines region of Punjab Pakistan. Baseline survey was conducted in January 2014. Seven villages were selected as a targeted population and structured interview schedule, focus group discussion & personal observation approaches were used for data collection. 560 household head were interviewed in which 80 from each village with 50% women sample population. Data was organized & analyzed using Statistical Packages for Social Science (SPSS) and interpretation given on the bases of public opinion, information, knowledge & personal observation extracted from the local communities. There are limited water sources and which are not able to fulfil daily household needs. Local communities of salt mines region had been facing drinking water and sanitation poverty while government department develop rural water supply schemes to provide drinking water in rural communities but more than 80% rural water supply schemes had dysfunctional due to less interest and monitoring channel of Community Based Organization (CBOs). WASH poverty in these rural areas put very negative impacts on socio-economic, health and environment of local community.

Key Words: Salt mines range, rural communities, Government Intervention, Drinking Water Quality, Sanitation Poverty, open defecation, sanitation approaches, economic burden, Community Based Organization, water sources, dysfunctional, rural water supply schemes, Public-Health Engineering, Pakistan Public works & infrastructure development, sustainability, environmental problems, health hazardous

Introduction.: Access to safe drinking water and adequate sanitation is the basic human right. Almost 2.5 billion people do not have access to adequate sanitation, and 768 million people do not have access to safe water in the world almost 1 billion (15%) of the world still practicing open defecation (WHO / UNICEF, 2013). Due to poor water, sanitation and hygienic condition the disease rate in children less than five is much high & Less than five mortality rate is reported 85.9 per 1000 live birth. Equal access to sufficient safe drinking water &
sanitation considered a basic human need and right without any discriminating based on rural urban (World Water, 2009). Low income communities had to face very critical time to achieve the basic needs in developing countries (WHO & UNICEF, 2010). These people spend more of their time in fetching water to meet domestic needs (Cairneross et al, 2005). Women have to perform their duties in managing water and secure it from contamination at household (DeNormandle and Sunita, 2002). Women assumed a key factor of social change in all the sectors of development (Robert et al., 1989). But at the same time there found a huge level of gender based discrimination even in enjoying basic needs (Fahim & Javed, 2011).

International development community striving best to achieve MDGs in given time frame but there is a big gap to win it in developing nations (UN Water, 2011). Pakistan is facing low institutional capacity and political instability which playing very negative role in provision of WASH services in local communities (WWF, 2011). Sanitation poverty and unhygienic condition play their vital role in prevalence of communicable diseases and environmental hazardous at high level in the poor local communities of developing countries (Dilwara, 2002). Water supply & sanitation’s Project developed with local community engagement secure its sustainability and reduced water related vector born disease and improve environmental condition (Bilqis et al., 2002).

Community driven approach of WASH development always reported in cost effective and long term running with sustainability aspect as community considered it their own property which develop local communal project ownership. Community ownership of infrastructure ensures sustainability, affordability and accessibility of WASH services (Carol et al., 2008). Total population of Pakistan is almost 17.8 Million and 34.7% live in urban and 65.3% live in rural areas. Only 54% have access to drinking water and 78% have access to basic sanitation (WHO, 2012). Almost 20% of total population is children under age five in which 33.1% of total number of child take birth is underweight due to malnutrition and food insecurity while almost 9.5% of total population is unemployment (GOP, 2013). AIDS is also emerging disease and almost 130000 people are living with AIDS (UNICEF/WHO, 2012). Contaminated drinking water put severe effects on child & old age and almost 4.1% of total population is above 65 year age whereas population under 15 year is almost 33.4% of total. Inhaling the contaminated water effect human health and consume 2.5% of the GDP in term of treatment the diseases associated with drinking water (World Bank, 2013).

In Pakistan population is growing with the rate of 2.1 annually (Brooker et al., 2004). Every year 2.2 million people die due to diarrheal disease which directly related to inadequate drinking water and poor sanitation especially in developing countries (Koola and Zwane, 2014). About one billion people suffered hunger and malnutrition in 2009 due to food insecurity especially lack of drinking water and poor hygienic conditions which is great hindrance in the way to meet Millennium Development Goal (MDGs) target of halving hunger by 2015 (Tirado et al., 2010).

**Background of Study**: Pakistan is a developing country and God Almighty had blessed it with unlimited natural resources. It has a large scale mines range filled with many natural resources like salt, coal, gold, gases, platinum and diamond. Pakistan is a big exporter of salts in the world and earns a huge amount from salt trade. At the same time provision of safe drinking water & sanitation situation of Pakistan is not good and lagging far from achieving MDGs 7 target 9-10 envisaged by UNs 2000. Rural communities of Pakistan are facing very critical situation in term of accessing safe WASH services than urban localities. In the areas of salt mines range of Pakistan rural communities are facing drinking water & sanitation poverty due to less political well, stability, limited resource allocations, limited local sources of income, high temperature, environmental stress, arid agricultural land and limited ground/surface water sources. Kheyora Salt Mines is very popular in the world about its affluent characteristics of salt types, colours, taste, and production that is situated at Pind Dadan Khan of District Jehlum Punjab-Pakistan. Local communities surrounding its jurisdiction have very deep water table that is very brackish and not fit for drinking purpose. People of local area depend on the water of River Jehlum that is just one major surface water source for the people of these communities. In some areas there are few natural springs emerged from the rocks in which some have potable but many have saline water. Underground water table total depend on the river water surface and quantity but hence it found vary in its depth from 150-350 feet but in more than 80% areas ground water is salty and unfit for quenching thirst.
Public- Health Engineering Department (PHED) Punjab had developed almost 13 rural drinking water supply schemes in Pind Dadan Khan for provision of safe drinking water to its people but almost 10 schemes had dysfunctional and just 3 schemes are functioning which are meeting the daily water consumption of its proposed areas. People of these communities had to face very critical time in fetching drinking water from protected & unprotected springs which are far from residence areas. Women always remained busy in managing water at household for the family and do travel daily from 6-10 KM for collect water from drinking source which put severe threat to their health, security, dignity, life and matrimonial aspects. Mostly area of Pind Dadan Khan is arid and very high temperature in the summer season. Very limited area is used for cultivation where salts are not much in soil and mostly salt resistance crops used to cultivate in these areas. People have very limited sources of income, low education and hygiene knowledge which is also a sever challenge for the human life in the areas of salt mines range of Pakistan.

Objectives of Study: Major objectives & Goals of this study were
- To determine possible sources of drinking water in local areas
- To identify existing drinking water & sanitation situation in the salt range areas
- To examine the influence of water scarcity on socio-economic status of local communities
- To determine the Government intervention in provision of WASH service to local area

Methods & Methodology: All the communities of salt mines ranges of Pind Dadan Khan District Jehlum was the universe while 13 local rural communities in which Public-Health Engineering Department (PHED) had developed rural water supply schemes was the total population and 7 communities out of these 13 were the targeted population in which Ghreeb Wale, Syed Wale, Chack Hamid, Dharyala Jalap, Shadi Pur, Pinan Wale and Thill Ghora villages are very considerable. Structured interview schedule, focus group discussion (FDG) and personal observation approaches were practiced for the collection of both qualitative & quantitative data. 560 households were conducted interviewed as a Sample size on probability random sampling technique. 80 households interviewed from each communities with 50% women sampling population. Total 70 Focus Group Discussion (FDG) session conducted in which 10 sessions held in each village of target population. Personal observation practiced throughout the field visits and key information/ observation recorded in comprehensive manners. Government institutions responsible for providing WASH services also visited, reports & publication also collected and reviewed. Official of Public-Health Engineering Department (PHED) of Pind Dadan Khan Office also interviewed about the rural water supply schemes developed in the local communities and public behaviour & water demand situation from Government. Data was organized & analyzed using Statistical Packages for Social Sciences (SPSS) and interpreted on the bases of public opinion’s frequency distribution and percentages in a detailed form.

Results & Discussion: Rural communities of Pind Dadan khan have very limited sources of income and mostly people living their life in much miserable condition. People were engaged in different works for earning their livelihood and more than 85% population were associated in Mining, salts transportation, Gypsum, cement factories, coals and stone crushing. They earn very minute amount and spending their life hands to mouth. They were reported to unable for disease treatment as they had not enough money to even fulfil their bread needs. Almost 74% population denoted to unable bearing the expenditure of their children education expenditures. Community members have very low education level and almost 42% population expressed never go to school for getting education while 10% population determine draw out from school before primary level education and just 15% population expressed graduation rest proportion fall under completion of secondary level education. 18% and 15% of total population were children and old age respectively while 30% of total population were youngster both male & female.

Drinking Water Situation in Study area: Drinking water and sanitation conditions of local communities were very critical. Underground water table was very deep and due to salt range it was highly saline (Brine) water which was totally unable even to quench the thirst and use for domestic purposes. According to local
community people more than 79% land is arid and not fit for agricultural activities due to excessive salts in the soil, water scarcity, high temperature and low economic status of local communities.

People have live stocks at household but have not enough means to feed them and totally depend on the grazing openly in the land. Most of the time local people have to face water stress & starvation which leads to dehydration and skin disease in the area. People use to save rain water in the constructed ponds near each village and use it for domestic needs. In hot season of summer people of these areas use to migrate near to river Jehlum. Community peoples were not much satisfied with drinking water quality in all villages. There were different sources of drinking water in these communities in Ground water, Surface water; Natural springs and Constructed community Ponds are significantly considerable. Almost 48% population of all communities depend on the ground water, 22% rely on Surface Water and take it from river Jehlum almost 17% depend on Natural springs water and use to fetch water from these springs for daily life activities.

| Community Dependency on Different Water Sources in Pind Dadan Khan Jehlum |
|-----------------------------|---------------------|-----------------|-----------------|
| Ground Water                | Surface Water (River)| Natural Springs | Constructed Local Ponds |
| 48%                         | 22%                 | 17%             | 13%             |

Hence in some communities local people had constructed ponds which vary in depth & storage capacity where these people use to store rain water and use it for domestic purposes. Almost 13% of total population depend on Constructed Local Ponds in the village but some people had constructed their ponds at household level in which they use to store water and use it for their livestock and other daily activities.

People of each hamlet also vary in using different sources of water for their daily needs. Almost 49% population of Ghreeb Wale, 50% of Syed Wale, 65% of Chack Hamid, 40% of Dharyala Jalap, 55% of Shadi Pur, 33% of Pinan Wale and 44% population of Thill Ghora use and depend on the Ground water excavating from motor pumps, tube wells and hand pumps. River Jehlum was a major source of water for the local communities of Pind Dadan Khan and almost 31% population of Ghreeb Wale, 27% of Syed Wale, 19% of Chack Hamid, 20% of Dharyala Jalap, 15% of Shadi Pur, 35% of Pinan Wale and 11% population of Thill Ghora depend on Surface water source and mostly river Jehlum was performing a key role in this manner.

There were some natural springs in the area which was the sign of life for local communities to provide them with sufficient drinking water. According to local communities there were large springs in the area having 16
inches & 4.5 cusec with gravity flow in the Pind Dadan Khan which water is potable. This spring is considered a biggest gravity flow source of drinking water in Punjab. 15% population of Ghreeb Wale, 13% of Syed Wale, 11% of Chack Hamid, 23% of Dharyala Jalap, 17% of Shadi Pur, 25% of Pinan Wale and 20% population of Thill Ghora depend and use Natural Spring’s water for their daily needs. Construction of local household & community based Ponds for storage of rain water and use it in daily life’s activities was a common habit. Almost all the local villages have constructed Pond in which they store water both from rain & tube well and use it for meeting daily needs like bathing, washing, livestock and kitchen gardening. Storage capacity of pond mostly depend on the land slop and soil profile of the village but mostly villages have 10-15 inches (Depth) water storage capacity and 12-18 feet dia (Width) of ponds.

Dysfunctional (Dried) Pond Integrated dug Well at Thill Village of PDK.

In the local communities of Pind Dadan Khan People use to dug well varying in depth & width integrated with locally constructed Ponds for storing water and use it for domestic purposes. Rain water stored in the ponds and when precipitation rate found very low then it filled it with tube well water. Here a long time give to water for retention and sedimentation of excessive salts. After a long detention time period this stored water used to cult the daily household activities. Almost 5% population of Ghreeb Wale, 10% of Syed Wale, 14% of Chack Hamid, 17% of Dharyala Jalap, 13% of Shadi Pur, 7% of Pinan Wale and 25% of Ghora Thill village use and depend on the locally constructed ponds for storing water to use it in daily activities.

Thill Ghora village is at top end of Jurisdiction of Pind Dadan Khan and have very limited access to drinking water as compare to other communities so people of this village use to collect water from rains, tube wells and other sources for fulfilling the needs of their animals and kitchen gardening including their self. In the village Thill Ghora local community had dug a 40 feet deep well which was integrated with a pond to store water and use it for domestic needs. But it had dried due to unavailability of ground water and less precipitation rates. People of this community live very close to the Hilly station of salt mines. Underground water is very brackish and unable to use for drinking, washing, bathing purposes. They have a one common water source that is less salty carried by a pipeline which collect water far 5KM from this community and attached with a natural springs that is at very height and water supplied with gravity flow. Water scarcity, sanitation poverty, unhygienic condition, limited resources and source of income, low level of education system, arid and uncultivated lands put very severe negative effects on the health of this community.

Drinking Water Quality PDK: Mostly ground water of these communities of Pind Dadan Khan is very brackish and not fit for the drinking purpose. People of local areas have very limited access to safe drinking water and use different sources of water to meet daily activities & sustain life in smooth way. Ground water found highly saline due to excessive amount of naturally occurrence salts in the soil which contaminates both soil & soil water. Mostly people did not agree & satisfied with its quality and almost 86% population of these communities expressed their dissatisfaction with its quality and consider it a major disease spreading agent in the local area.
Dissatisfaction level varies on the village to village drinking water sources, its qualities, education, knowledge & information about Drinking water, gender, age and sex groups. Almost 81% population of Ghreeb Wale, 85% of Syed Wale, 79% of Chack Hamid, 91% of Dharyala Jalap, 83% of Shadi Pur, 90% of Pinan Wale and 95% population of Thill Ghora village expressed their highly dissatisfaction level with the drinking water quality both ground & surface water sources.

**Water Quantity Issues in Study Area:** Rural communities of Salt mines ranges have not only water quality problems but they are also facing water quantity issues. There are very limited water sources in which river Jehlum, some natural springs, constructed dug well integrated with ponds and ground water. Underground water is totally brackish and not fit for drinking purpose. As these villages situated in the rocky area so spring water & dug well approaches not much suitable and sustainable for meeting the daily domestic needs while due to high temperature in summer and low precipitation rate ponds dried and community members had to travel a lot for fetching water far from their house door.

People of these communities had to face starvation due to insufficient availability quantity of drinking water and almost 78% population of these villages found highly dissatisfied with drinking water quantity while just 22% population was satisfied with an adequate amount of water available to them for drinking purpose.
Figure 1.4. Communities Satisfaction with Sufficient (Availability) Quantity Water.

Unavailability of good amount of drinking water put very serious threat to human and animal life in these areas. More of the time human and animals had to share a common source of drinking water in summer like ponds. People use to take bath, wash their cloth in these ponds while animals also use this water for quenching thirst and taking a bath in the hot season of summer whereas sometimes animals, dogs, human found in same ponds at same time for bathing in these areas as water quantity problem are very high. Satisfaction level with adequate drinking water quantity vary from village to village mostly depend on the population of area, source of water, water management at household and rationalization about water conservations. High proportion of population of Ghreeb Wale, Syed Wale, Dharyala Jalap & Thill Ghora villages expressed their dissatisfaction with drinking water quantity while more about one third population of the Syed Wale, Chack Hamid, Shadi Pur & Pinan Wale village showed their satisfaction opinion with drinking water quantity as compare to other villages.

Figure 1.4: Showing Women Stress in Fetching Water in local communities.

Women of local communities had to face a very serious time and critical situation in collection drinking water for their families and meet daily life activities. In these villages community ladies have to travel almost 5-10KM daily for fetching water two times from nearby suitable water source that put very negative impacts on the socio-economic and health status of local women. Women are not just responsible for fetching drinking water but they had to work at household for serving their family members in term of cooking, cleanliness, cloth washing, caring of children & old age which add work load on the local ladies and compel them to work all the time for their family that assumed gender discrimination in the world. Women have limited chances & timing for relax and serve them for their self respect & dignity.

These villages were associated in the middle & close to river Jehlum and Natural Springs which provide them a little bit sufficient water for their daily needs. Almost 89% population of Ghreeb Wale, 76% of Syed Wale, 66% of Chack Hamid, 91% of Dharyala Jalap, 61% of Shadi Pur, 71% of Pinan Wale and 93.5% population of Village Thill Ghora found dissatisfied while 11% of Ghreeb Wale, 24% of Syed Wale, 34% of Chack Hamid, 9% of Dharyala Jalap , 39% of Shadi Pur, 29% of Pinan Wale and 6.5% population of Thill Ghora showed their satisfaction with the sufficient amount of drinking water available all the time for their daily needs.

In some areas of Pind Dadan Khan Public-Health Engineering Department (PHED) and Pakistan Public Work & Building Department launched rural drinking water supply schemes but more than 80% of these schemes are not running successfully. The infrastructure of all the water supply schemes, their machinery, rising main, piping networks, over head reservoir (OHR) , household water connection , revenue reports, recovery rates records indicated that these rural water supply schemes are developed very long period before and mostly found in dysfunctional form. Some schemes were supplying water but its quality & quantity was not much considerable and community members noticed in complaining the smell, colour, turbidity and very limited amount of water that was totally unable to meet daily household needs. These schemes were developed on the philosophy of local communal participation. Community Based Organizations (CBOs) developed in each village where water supply scheme launched and all the infrastructure of the concerning scheme use to hand over to local CBOs.
Mostly CBOs also found dysfunctional and members of these organizations were not more available to run these schemes successfully as some of them die, some migrated, some separate from board due to conflict emerged within the communities.

According to local people these water supply schemes were running successfully in the starting time period but after handing over to local CBOs these become dysfunctional as latter on members of CBOs lose their interest and took very less care of these schemes. Nobody monitor & evaluate working of CBOs nor asked them about the revenue, billing system, theft of its infrastructure, problem of Overhead Reservoir, rising main and piping networks in the result these schemes become dysfunctional and a huge amount of Government invest but not reasonable outcomes in the return.

**Sanitation Approaches in the Salt Mines Range of Punjab (Pakistan).** Provision of safe sanitation service is prime objective & target of state as envisaged and declared in the National Sanitation Policy of Pakistan. But unfortunately Pakistan is lagging far behind in the field of winning sanitation target within due time framework. People of rural communities of salt mines region of Punjab facing very critical situation about sanitation services and many villages are facing sanitation poverty even at this time. There is not any suitable safe sanitation system developed for the rural communities of Pind Dadan Khan.

<table>
<thead>
<tr>
<th>Open Defecation</th>
<th>Drop &amp; Store</th>
<th>Flush &amp; Forget</th>
<th>Flush &amp; Discharge</th>
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<td>34%</td>
<td>25.5%</td>
<td>23.5%</td>
<td>17%</td>
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More than one third population of rural communities of Pind Dadan Khan practicing open defecation and use to do it in open fields, bushes which show their poor socio-economic status and limited knowledge about safe sanitation. Almost 25.5% of total population construct septic tank at household level for the collection of black water (Feaces & urine). People have to pay for digging these septic tank and also emptying them at the time of its filling which increase economic burden on household and also play its an active role in contamination of ground water at high level.

Almost 23.5% population practicing flush & forget in which they just flush the toilet water but not know about its destination while 17% population had approaches of flush & discharge in which they flush their toilet water and lead it toward a locally mini drain line and collect it outside of concerning villages. In the village of Dharyala Jalap people construct a big pond on the land of graveyard for collection of domestic sewage water and mostly people were not satisfied with this unethical behaviour as they consider it against their religious aspects.
Sanitation approaches & practices vary in all the local communities based on their socio-economic status, education, employment and source of water. Almost 31% population of Ghareeb Wale practiced open defecation while 24%, 19% and 26% population of had been practicing Drop & Store, Flush & Forget and Flush & Discharge approaches respectively. In Syed Wale 37%, 20%, 23% and 20% population of total had been using Open Defecation, Drop & Store, Flush & Forget and Flush & Discharge approaches respectively. In Chack Hamid 29%, 34%, 27% & 10% of total population practicing Open Defecation, Drop & Store, Flush & Forget and Flush & Discharge approaches respectively.

In Dharyala Jalap 21%, 29%, 31% & 19% population of total had been using Open Defecation, Drop & Store, Flush & Forget and Flush & Discharge approaches correspondingly. In the village of Shadi Pur 34%, 40%, 17% & 9% population of total had been using Open Defecation, Drop & Store, Flush & Forget and Flush & Discharge approaches in that order. In the rural community of Pinan Wale Village 40%, 20%, 25% & 15% population of total had been using Open Defecation, Drop & Store, Flush & Forget and Flush & Discharge approaches respectively while in the Thill Ghora 45%, 12%, 23% & 20% population of total had been using Open Defecation, Drop & Store, Flush & Forget and Flush & Discharge approaches respectively. Open defecation practicing was very high in the village community of Thill Ghora due to very poor socio-economic condition and very limited water sources around the community.

Drop & Store sanitation approach was very high in the village of Shadi Pur while Flush & forget sanitation approach was more high & common in Dharyala Jalap. In the village of Ghareeb Wale flush & Discharge sanitation approach found at high level as compare to other village. These sanitation approaches & practices put very serious bad impacts on the socio-economic, human health and environment of local community. Almost 81% population of these rural communities dissatisfied with the existing sanitation services in the local areas but they had to bear it due to unavailability of sufficient economic power to develop it separately while just 19% population expressed their satisfaction with the existing sanitation service in rural areas of salt mines region of Punjab.
Satisfaction & Dissatisfaction level vary in different villages based on the education, age, gender, economic and hygienic information. Almost 89% population of Ghreeb Wale dissatisfied with the sanitation practices currently being done in this community while 84% population of Syed wale, 79% of Chack Hamid & 76% population of Dharyala Jalap expressed their dissatisfaction level with the existing sanitation approaches available in the areas hence at the same time 81%, 73% & 87% population of Shadi Pur, Pinan Wale and Thill Ghora dissatisfied with the sanitation practices which were in common use of local peoples.

**Socio-Economic Aspects of Drinking Water Poverty in Salt Mines Range.** The Local communities of Pind Dadan Khan District Jehlum are facing very critical situation about Drinking water. There are very limited sources of water which contains severe quality problems as underground water is brackish and not fit for the drinking purpose. People have to pay a lot in term of spending time, money in fetching water far from household door. There are very limited sources of income and employment opportunities for the local people in these areas. Almost more than 60% population earn their livelihood from daily wages and have to work in different locally factories of salt, cement while 10% of total population employees in different Governments departments. Mostly people belong to poor class and almost 27% of total population did not earn even 1.5 US dollar daily and living under poverty line.

People of these villages segregated & divided into different social groups based on economic, caste and class. There is great conflict in these areas but strong cohesion within the groups and they remain ready to help each other all the time in every aspect. People of these communities are not much educated so they always exploited by local Political leaders. People have to suck water electric motor pumps, tube well from very deep aquifer which consume high amount of power and put extra economic burden on local peoples.

Women always considered responsible to manage water at household for the family members but here in these areas as mostly communities have not a suitable water source surrounding local communities so women have to travel a lot for fetching water to meet household need which put negative effects on their social & personal life. It put a sever challenge to dignity , privacy and personal security of women. Water related vector born disease profile was very high due to inadequate drinking water & poor sanitation. Mostly people reported Diarrhoea, gastro, Hepatitis, abdominal pain, skin and hair fall disease at high rate in the rural communities of salt mines region of Punjab. Open defecation practices were common and more than one third population found doing practicing open defecation in the fields which increase the contamination of available water source in faecal-oral route. In some areas where water supply schemes had developed sewage water use to mix with the drinking water as water supply pipeline passed through from the sewerage drainage courses. Due to unethical behaviour
of sanitation and poor drinking water quality local communities have to pay much in the treatment of emerging disease mostly associated with water & sanitation. It put very negative impacts on the economic life of local communities.

There was not any safe sanitation approach established for the rural communities of Pind Dadan Khan. Open Defecation, Drop & Store, Flush & Forget and Flush & Discharge are common sanitation practices and there was not any suitable sanitation system for the treating domestic sewerage water to protect other water bodies and sources from contamination. According to local communities water holding capacity of local soil was not much high so fluid use to flow but not observed by saturation zone of soil while soil is enriched with natural occurrence salt which effect soil water quality. Poor sanitation practices & approaches put very negative impact on the environment of local communities. Street condition was not so good and solid waste management condition was also very poor which were severing threat to environmental sustainability, human health and socio-economic status of local people.

Conclusion. Drinking water and sanitation condition are much worst in the rural communities of salt mines range District Jehlum of Punjab. Underground water is very deep & totally brackish which cannot be use for quenching thirst and meeting household needs. Land of mostly villages is arid where agricultural activities unable to do as highly salts in the soil. Local Soil have very minute water holding capacity which increase water percolation into soil and contaminate it when drop & store sanitation practices carried in the local communities. Local communities had to face severe problem about drinking water quantity & quality. Mostly rural people have a habit to do open defecation in the fields as much of them have not enough sources to construct toilets at household due to very low socio-economic status. Flush & forget, flush & discharge sanitation approaches were also being practiced which effect both surface and ground water quality and create environmental hazardous. WATSAN poverty influence on socio-economic, human health and environment drastically which increase extra economic burden on household expenditure.

There were some limited sources of water for the local communities. River Jehlum is a big water source for Pind Dadan khan but much closed communities just can take benefits from it and all the communities which were far from this source still face very tough condition about carrying water for domestic purposes. More than one third population rely on the spring water which not protected from external contamination but people use it for daily needs at household level. In some communities villagers had dug well and integrate it with the locally constructed pond to store rain water or tube well water and use it for the washing, bathing. They use it for their animals and kitchen gardening at small level.

Public Health Engineering (PHED) & Pakistan Public works and infrastructure development department launched their rural water supply schemes in some of these communities to provide safe drinking water for local people. These schemes were handed over to Community Based Organization (CBOs) for running successfully but more than 80% of these schemes become dysfunctional due to lack of interest of CBOs, clashes & conflicts arising among different village and within members of CBOs. There was very weak monitoring mechanism of Government on CBOs which lead people to loss interest and care of infrastructure resultantly schemes become dysfunctional. Some schemes were running and providing drinking water at doors step of people but most of the time complaint noticed about colour, taste, turbidity which was very repulsive stuff for the local communities. At the village of Dharyala Jalap water supply was done just 45 minute in every week and people have to store water at household level for domestic uses which enhance extra economic burden on community in term of arranging household water reservoir. Women have to travel a lot for fetching water far from house door step usually they had to cover almost 5-10 KM every day in term of collection water for family members. It was a serious challenge to women dignity, privacy, security and health at the same time.

People of these communities divided into many different social groups based on political affiliation, economic class, caste and education but were strongly closed and loveable for the people of same group. There was high rate of inequality & discrimination in access to drinking water sources and many time conflicts arise within communities on access to drinking water as communities situated on slop. People of high elevation used to store
& stop water for their communities and people of low elevation use to struggle hard for getting equal access on water sources.

People of these areas have very limited source of income and living hands to mouth. They had even not enough to fulfil their daily needs hence were not able to maintain their private water source. Sanitation poverty and drinking water scarcity put very negative impacts on life style local communities and contributed a lot in destruction of socio-economic, political, human health and environmental stuff of these communities.

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DOES DEVOLUTION ENHANCE RESPONSIVENESS TO PEOPLE’S NEEDS? EMPIRICAL EVIDENCE FROM PAKISTAN

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ABSTRACT: The paper aims at investigating the impact of Devolution Plan on social service delivery in Pakistan. A large scale Devolution reform policy was launched in 2001 that devolved substantial fiscal and administrative powers to local governments after restructuring them. The paper uses a panel dataset from 1975 to 2008 from four provinces of Pakistan in order to detect the efficacy of local governments in providing the essential social and economic services common people particularly to the poor. The empirical results suggest that after the Devolution Plan expenditures on social and economic services increased manifold. This, therefore, indicates that the Devolution Plan despite its loopholes was an essential structural reform with positive impact on sectors and subsectors that believed to be pro-poor.

Keywords: Devolution Plan; Social Services Delivery; Pakistan

1. Introduction: The Devolution Plan launched in 2001 brought large scale changes to governance and public finance of Pakistan, where several important social and economic services were devolved to local governments. Such drastic changes were expected to bring a widespread transformation in nature, extent and magnitude of essential social and economic services delivery to common people. Presumably, the local governments because of their proximity and accountability to local people were more efficient and effective in increasing those services that should benefit the local community particularly the poor and disadvantaged social groups. Nonetheless, in spite of the importance of the matter, to best of our knowledge, the related literature has not provided a systematic research to evaluate the efficacy of the Devolution Plan in critical services provision in Pakistan. This paper aims to fill this gap in the literature.

After brief description of the local government system and its evolution in Pakistan, the paper provides an empirical evaluation of the effectiveness of the Devolution Plan in terms of improved social service delivery. A systematic empirical method is employed by using a panel dataset from four provinces of Pakistan. Various regression techniques such as the standard ordinary least squared (OLS), fixed effect (FE) and random effect (RE) models, and the Tobit model are used to assess the impact of Devolution Plan on social services. The empirical results show that after the Devolution when these social and economic services were devolved to local governments, their provisions were augmented and improved.

Rest of the paper is organised as follows: Second Section provides a historical discourse on the development of local governments and their evolution in Pakistan. Third Section discusses the impact of Devolution Plan on social services provision. Fourth Section presents the data, methodology and hypothesis, whereas Section five describes empirical results. Section six concludes.

2. Historical Background of Local Government System In Pakistan: The local government system was first introduced in the Sub-Continent in 19th century by the British India government aimed primarily to privilege local elites. The local government under the British Raj was not empowered, as it was not democratically elected. Instead the representatives of the local governments were nominated by the central bureaucracy (Venkatarangaiya and Pattabhiram, 1969). The system was run through an extreme ‘top-down manner’ with circumscribed functions of local representatives. The key administrative role at the local level was performed by
the agents of the central bureaucracy, the Deputy Commissioner, and other bureaucratic operatives, such as the Assistant Commissioner, Tehsildars, Naibdehsildars and Patwaris (Tinker, 1968; AERC, 1990).

After the independence, numerous social and economic problems such as a dysfunctional economy, primitive agriculture, communal tensions and massive influx of refugees, necessitated the country to adopt a strong central governance system. This state of affairs later on cemented the tendency towards a strong central government at the expense of sub-national governments. Hence, during late 1940s and entire 1950s an ever increasing centralisation gave birth to a powerful military bureaucracy that diluted the already limited sub-national governments (Waseem, 1994; Jalal, 1995; Talbot, 1998).

In 1959 the military regime of Ayub Khan (re)introduced the local governments after the dissolution of both central and provincial governments. Similar to pre-partition style, local bodies system in Ayub era was overwhelmingly controlled by the central bureaucracy through its appointed officials at the local level who had the discretionary power to restrict any kind of action the elected representatives might desire to pass or implement. During 1971-1977 when the federal and provincial level governments were run through elected representatives, the local governments however were pushed to the background and remained dysfunctional.

With the arrival of the military dictatorial regime again in 1979, the local government system was revived with the political and administrative structure similar to the 1960s of over centralisation of administrative and economic power at the provincial and federal levels. The new Local Government Ordinance was promulgated simultaneously in 1979 from Punjab, Sindh and KP, while in Balochistan the same ordinance was implemented in 1980 (Cheema and Mohmand, 2003).

It is interesting to note that with the death of Zia-ul-Haq and subsequently with the advent of democracy in 1988 after party-based general elections for both federal and provincial governments, the local governments were dispensed with. Thus, till 1999 both Pakistan Peoples’ Party and Muslim League led governments put the local governments in dormancy.

However, after the 1999 military coups d'état, the local government system was once again reinstated but this time with entirely different structure, functions and responsibilities under the auspices of the Devolution Plan of 2000-01.

The Local Government Ordinance clearly spells-out the expenditure and revenue raising powers and responsibilities of all three tiers of local governments. They were entitled to allocate and disburse resources according to their own priorities ostensibly without strong interference or direction from the upper tiers of governments (federal and provincial). However, Bahl and Cyan (2009) believe that in practice the provincial governments very often exercised control over certain expenditure areas, particularly on expenditures which were undertaken by the conditional transfers from the provinces.

Another significant change accompanying the Devolution Plan was the introduction of a formula-based system of resource sharing between the provincial and local governments. All four provinces constituted their respective Provincial Finance Commission (PFC) in 2001 to formulate the resource transfer mechanism and distribution of finances between provincial and local governments. The PFC is a formula-based resource distribution mechanism which is different from one province to another and each province constitutes its PFC according to the financial conditions of the local governments and the socio-economic and political needs (Ahmed and Lodhi, 2008). The PFC was a statutory body. The finance minister of each province was the chairman, three district nazims, the finance and Planning & development departments’ secretaries as well as three independent members nominated by the Governor of that province were the members of the PFC. The PFC having both development and recurring transfers ensured the allocations of resources between the provincial government and local governments. Under which the provincial governments disbursed resources to local governments out of the proceeds of the Provincial Consolidated Fund (PCF) and Provincial Allocable Amount (PAA).

The PAA was distributed under the PFC ruled-based transfer mechanism in a similar head of the account, while the PCF was not defined (Cheema and Ali, 2005). The PAA fixed for local governments were determined and distributed on the basis of the criteria elaborated in Table 1.
As illustrated in Table 1 population was the most important criterion used by all provinces in resource distribution. Under the Local Government Budget Rules (2002) the local governments had the power to formulate their budgets and prioritise public expenditures without the legal consent to the provincial governments. The same rules categorically elaborated the procedure for budget making and its approval from the concerned local council. The local governments’ budget was made once the provincial government informed the former about their share under the PFC. It was mandatory for the local councils to budget both development and non-development expenditures. The funds allocation for development expenditures was undertaken once the expenses of non-development expenditure were met.

A substantial descriptive literature is available that addresses the effectiveness of the Devolution on social service provision. Parallel to this there is a need for a systematic empirical research. However, to evaluate the efficacy of local governments in services delivery after the Devolution Plan is a critical question that warrants an empirical investigation. Hence, the scope of this paper is to critically evaluate whether the performance of key public sectors that directly or indirectly affect the livelihood of people especially the common.

3. Social Service Provision and The Devolution Plan: Expenditure on social services particularly on education and health has been recognised as an important source for the human development and poverty reduction. Countries like Pakistan with compelling fertility rate, widespread and chronic poverty and increasing rate of unemployment need to enhance efficiency of its public expenditure on social services.

Despite having relatively a decent economic growth over the last five decades human development record of Pakistan has been very dismal. Many social sector indicators, chiefly health and education, lag far behind some of the neighbouring South Asian and South East Asian countries. For instance, in 2009 indicates except Bangladesh, Pakistan records the lowest HDI (0.499) amongst all seven countries in the region included in the sample (table 2). Pakistan spent only 0.9% and 1.8% of GDP on health and education which is far below than other regional countries. For example, on health and education Iran spent 2.9% and 4.685% of her GDP, Malaysia 2% and 5.789%, and Bangladesh 2.234% of the GDP on education. Similarly literacy rate in Pakistan (56.53%) was less than the average rate of Least Developing Counties (60%). And the Infant Mortality Rate (IMR), a barometer for healthcare facility, was high compare to other countries included in table 2. Part of the reason for this abysmal social sector performance was the inadequate and ill-targeted public sector expenditures on social services.

Table 1: Intergovernmental Resource Transfer Criteria

<table>
<thead>
<tr>
<th>Total pool and distribution criteria</th>
<th>Punjab</th>
<th>Sind</th>
<th>NWFP</th>
<th>Balochistan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local share of the Provincial Divisible Pool</td>
<td>39.8%</td>
<td>40%</td>
<td>40%</td>
<td>31%</td>
</tr>
<tr>
<td>Formula factors with weights</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Population</td>
<td>75%</td>
<td>50%</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>Backwardness of district</td>
<td>10%</td>
<td>17.5%</td>
<td>25%</td>
<td></td>
</tr>
<tr>
<td>Tax collection effort</td>
<td>5%</td>
<td>7.5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fiscal austerity</td>
<td>5%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Area</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Development incentive/ infrastructure deficiency</td>
<td>5%</td>
<td>25%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>District governments’ deficit transfers</td>
<td>25%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


As illustrated in Table 1 population was the most important criterion used by all provinces in resource distribution. Under the Local Government Budget Rules (2002) the local governments had the power to formulate their budgets and prioritise public expenditures without the legal consent to the provincial governments. The same rules categorically elaborated the procedure for budget making and its approval from the concerned local council. The local governments’ budget was made once the provincial government informed the former about their share under the PFC. It was mandatory for the local councils to budget both development and non-development expenditures. The funds allocation for development expenditures was undertaken once the expenses of non-development expenditure were met.

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Table 2: Selected Social Indicators (2009)

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Pakistan</th>
<th>Bangladesh</th>
<th>India</th>
<th>S. Lanka</th>
<th>Iran</th>
<th>Malaysia</th>
<th>Thailand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life Exp.</td>
<td>63</td>
<td>65</td>
<td>64</td>
<td>71</td>
<td>71</td>
<td>74</td>
<td>68</td>
</tr>
<tr>
<td>IMR</td>
<td>78</td>
<td>48</td>
<td>55</td>
<td>15</td>
<td>35</td>
<td>35</td>
<td>55</td>
</tr>
<tr>
<td>Health Exp. (% of GDP)</td>
<td>0.9</td>
<td>0.8</td>
<td>1.4</td>
<td>1.8</td>
<td>2.9</td>
<td>2</td>
<td>3.1</td>
</tr>
<tr>
<td>Literacy Rate (%)</td>
<td>56.53</td>
<td>55</td>
<td>N/A</td>
<td>90.6</td>
<td>85.02</td>
<td>92.1</td>
<td>96.2</td>
</tr>
<tr>
<td>Pupil-Teacher Ratio</td>
<td>39.69</td>
<td>45.76</td>
<td>N/A</td>
<td>23.15</td>
<td>20.34</td>
<td>13.25</td>
<td>18.44</td>
</tr>
<tr>
<td>Education Exp. (% of GDP)</td>
<td>1.8</td>
<td>2.234</td>
<td>4.1</td>
<td>2.08</td>
<td>4.685</td>
<td>5.789</td>
<td>4.126</td>
</tr>
<tr>
<td>Human Dev. Index</td>
<td>0.499</td>
<td>0.448</td>
<td>0.542</td>
<td>0.538</td>
<td>0.703</td>
<td>0.658</td>
<td>0.673</td>
</tr>
</tbody>
</table>

Source: WDI, World Bank (accessed on 3/07/2012) & UNDP (accessed on 3/07/2012). N/A: Not available
4. Hypothesis, Data And Methodology: We postulate that since the local governments are more responsive to local people needs because of being accountable them the pattern of investment may be in the favour of those sectors that can incur benefits to the poor. Given this the paper empirically tests the following hypothesis:

Hypothesis: Ceteris paribus, after the Devolution pattern of public investment changes and sectors related to social services provision receive more expenditure.

Data are reported in Table 3. Data for most of variables are drawn from the FBS (various issue); provincial governments budget documents (various years); SPDC (2000; 2007; 2012); State Bank of Pakistan (2010); Pakistan (various Issues). At the provincial level population estimates are obtained by dividing the total population on all four provinces based on their share in 1998 census. Provinces in Pakistan are largely demarcated on ethnic/linguistic bases and inter-provincial migration is negligible. So, it is plausible to expect that the population share of the provinces is virtually time-invariant. Besides the population being incorporated as an independent variable, the same variable is used to obtain per capita expenditures of the provinces.

In order to get public expenditures, per capita income and other variables in real terms, their nominal values are deflated with the Consumer Price Index (CPI). An annual time series dataset from 1975 to 2008 is constructed that span. Using 2008 is that the local governments completed their four year tenure in 2008 and next elections have been suspended till the time of writing. The reported data are annual because budgetary allocations to both provincial and local governments were undertaken annually therefore concerned data were made available on annual basis. The cross section comprises all four provinces of Pakistan. The data are summarised in Table 3.

Table 3: Descriptive Statistics

<table>
<thead>
<tr>
<th>Variables</th>
<th>Obs.</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Devolution reform (dummy)</td>
<td>136</td>
<td>0.235294</td>
<td>0.425751</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Population (in millions)</td>
<td>136</td>
<td>28.08185</td>
<td>23.86578</td>
<td>3.59</td>
<td>90.07</td>
</tr>
<tr>
<td>Per Capita GDP</td>
<td>136</td>
<td>4008.559</td>
<td>2239</td>
<td>696.9466</td>
<td>1948.867</td>
</tr>
<tr>
<td>Agri. Value Add.*</td>
<td>136</td>
<td>1136.948</td>
<td>0.3527</td>
<td>842.806</td>
<td></td>
</tr>
<tr>
<td>Civil Work *</td>
<td>136</td>
<td>20.8603</td>
<td>85.585</td>
<td>0</td>
<td>39.68176</td>
</tr>
<tr>
<td>Pop. Per Bed</td>
<td>136</td>
<td>1508.684</td>
<td>171.6524</td>
<td>1269</td>
<td>1963</td>
</tr>
<tr>
<td>Welfare Expenditure*</td>
<td>136</td>
<td>0.731106</td>
<td>0.00322</td>
<td>6.941837</td>
<td></td>
</tr>
<tr>
<td>Public Health Expenditure*</td>
<td>136</td>
<td>2.116858</td>
<td>3.431105</td>
<td>0</td>
<td>19.11971</td>
</tr>
<tr>
<td>Social Sector Expenditure*</td>
<td>136</td>
<td>43.49989</td>
<td>50.24139</td>
<td>1.191492</td>
<td>249.2615</td>
</tr>
<tr>
<td>Education Expenditure*</td>
<td>136</td>
<td>44.64446</td>
<td>47.66713</td>
<td>0</td>
<td>223.6559</td>
</tr>
<tr>
<td>Health Expenditure*</td>
<td>136</td>
<td>9.672765</td>
<td>10.01052</td>
<td>0</td>
<td>40.75399</td>
</tr>
<tr>
<td>Irrigation Expenditure*</td>
<td>136</td>
<td>5.469899</td>
<td>4.801413</td>
<td>0</td>
<td>24.1072</td>
</tr>
<tr>
<td>Rural Development Expenditure*</td>
<td>136</td>
<td>1.794452</td>
<td>5.016514</td>
<td>0</td>
<td>39.68176</td>
</tr>
</tbody>
</table>

* Value Expressed in Per Capita term

The data limitation at district level and beyond restricted our analysis to provincial level. But the local governments’ expenditures are aggregated at provincial level, so the latter reflects former’s expenditure. Further, the financial and expenditure at provincial level provided similar information for both pre and post Devolution thus enabling us in detecting the impact of the Devolution Reform.

Following Faguet (2004); Faguet and Sanchez (2008); Aslam and Yilmaz (2011) we identified nine sub-sectors of public sector which could impact the living standard of local communities in general and the poor and marginalised social groups in particular. (These sectoral variables are described in appendix A). Normally the social service/public good provision is ‘measured in quality adjusted units of output, separated by the type’ (Faguet, 2004: 876). Given the data constraint we measured the real investment quantity in terms of public
expenditures on these sectors. This approach, although restricted us from analysing whether the Devolution enhanced the quality of delivery of the public goods (for example, in case of education, adequate supply of school text books, teaching equipments and teacher training courses), it enabled us in comparing pre and post Devolution in terms of the inter-sectoral resource allocations, as well as the pattern of public sector investments.

The dependent variable is the inflation-adjusted annual per capita amount of investments undertaken in each sector. ‘Population per bed’ variable is not expressed in per capita term. The primary independent variable is the Devolution reform, which is captured by a dummy variable that takes 1 on 2001 and afterward (2001 to 2008) and 0 otherwise (i.e. from 1975 to 2000). Following Neyapti (2010) per capita GNP is used to proxy for the overall level of development. Arguably population - which is an important time-variant factor - can affect the extent and magnitude of the social services (Aslam and Yilmaz, 2010), and regions/provinces with larger population receive better treatment than less populated ones.

Variables institutionalisation and distribution of land and tenancy reforms, equality among the various communities, ethnic harmonisation and openness to trade are likely to increase the accessibility of communities to social services (Ali et al., 2005). But due to data limitations these variables are treated time-invariant so not included in analysis. It is important to note that the socio-economic structure remained almost same during both dictatorial and democratic regimes, thus the findings of this paper may not be affect because of not including these variables.

Any systematic change in politics or economic system in Pakistan, such as external shocks, donor funding or any national policy initiatives that have similar effect on all provinces or any other time-specific variations are captured by the year dummies. Punjab and Sindh’s with much higher share in federal resource allocations to provinces may have a better fiscal capacity to allocate resources to local governments after the Devolution and hence more funds for social service sector. Following this proposition a dummy variable is used to capture the Punjab and Sindh effect.

The following model is constructed and statistically estimated using a panel dataset (34*4):

$$\text{Sec}_it = \alpha + \beta_1 (\text{PDum}_it) + \beta_2 (\text{YDum}_it) + \beta_3 (\text{Dev}_it) + \beta_4 (\text{Pop}_it) + \beta_5 (\text{GDP}_it) + \epsilon_i + \mu_t$$ (1)

The subscripts (i,t) stand for province i at time t. (S among other things. The relationship of province level per capita GDP and expenditure on social and economic services is expected to be positive: higher average per capita income of one province may lead to increase the expenditures on above services because of the additional resource availability to that province from own revenue sources.

In above equation the positive coefficient of $E_i$ ($\beta_2$) suggests that the expenditure on that service have increased at a faster rate compare to the pre Devolution period, ceteris paribus. This leads us to conclude that the Devolution has been effective in terms of increasing the expenditures on social and economic services. Conversely, the negative coefficient suggests an adverse impact and the zero or very close to zero shows no impact. In other words, the expenditures on these services which thus far were undertaken by provincial governments remain persistent and increasing with the same rate irrespective of being devolved to local governments.

We may have unobservable province specific time-invariant characteristics with independent effect on the level and magnitude of the social and economic services delivery. Then the use of the standard OLS would cause unobserved heterogeneity and produce biased results. Thus, a firsthand remedy comes to mind is the FE and RE estimations method that allows us accounting for unobservable province-specific effects. For the sake of comparison we report the OLS results alongside FE and RE models in Table 4, 5 and 6. As the majority of the right side variables are in dummy form (including year dummies), Tobit estimation method is also used to strengthen our regression analysis and check for robustness. The last column of result outputs are Tobit
Empirical Results and Discussion: For each service four models (standard OLS, Random and Fixed effects and Tobit) are estimated separately and their results are reported in Table 4 through 6. We find that the Devolution indicator is significant and positive (negative sign for population per bed as expected) sign across all social and economic indicators in all models. It therefore suggests that the Devolution on average has been effective in provision of social and economic services provided to local communities. Thus, it is plausible to conclude that following the Devolution, the magnitude of all nine vital socio-economic services has increased.

As the major objective of the Devolution was to make the local public services accessible to the local people and the improvement of social infrastructure, it is reasonable to group the included services into two broad categories: 1. economic services and 2. social services. The economic services include development expenditures on sectors such as agriculture, civil work, water management and rural development, whereas the social services include health, education, water supply and sanitation facility, and social welfare and recreational services.

The public expenditure on education is strongly correlated with the Devolution indicator with positive coefficient significant at less than 1%. It is important to highlight that the level of significance and sign of coefficient remains persistent regardless of model is used, though the magnitudes of differ with differ model. Healthcare variables (annual expenditures on healthcare and population per bed) maintain positive (negative) and strongly significant coefficient vis-à-vis the Devolution reform variable, suggesting that health services have increased in both quantity-proxy by expenditures-and quality-proxy by population per bed after the Devolution reforms.

The impact of Devolution is not limited to social services. Rather the economic services such as agriculture, infrastructure development (proxy by civil work) and water management have registered a mark improvement after the Devolution. Similar to the social indicators, the Devolution coefficient has a strong and positive association with the agriculture value addition, expenditure on civil work and others. Again, the nature of the relationship and the level of significance are not changing while applying different models.

Interestingly, these outcomes are in accordance with our theoretical prediction; that is, socio-economic services may be better provided by the sub-national government compare to their central counterpart. In the same vein it is also in the line of the empirical literature (for instance, Faguet, 2004) that shows local governments because of the better local knowledge are more effective in providing these social services.

As for the other exPlanatory variables in the regressions analysis are concerned, the per capita GDP is positively correlated to education expenditures, although with the coefficient close to zero. However, the association of the per capita GDP and the health indicator is mixed. For instance, for the OLS and GLS (RF) the relationship between the population per bed and the GDP per capita is negative which is of course what was predicted. Nevertheless, when it comes to the GLS (FE) and Tobit estimations – that basically are the actual models for final analysis based on the exPlanation given above – the coefficient of per capita GDP maintains a positive and statistically significant slope vis-à-vis health indicator.

Similar to the education and health indicators, the GDP per capita’s association with other included outcomes variables – economic and social alike – is mixed. The variable either appears irrelevant in explaining any change in the services or if relevant in some of the cases, the agriculture for instance, is not consistent across different models or if both significant and consistent then retains a coefficient that is close to zero. But the relationship between the per capita GDP and the services is somewhat not unexpected.

That is because considering the geographical conditions and the demographic composition of the provinces in Pakistan the per capita GDP is unlikely to capture the overall development level of provinces. Hence, the expenditures on these services may not follow an identical trend. For example, Balochistan and Sindh due to the numerous political and economic reasons witnessed a sharp decline relative to the per capita GDP compare to Punjab (Bangali and Sadaqat, 2000). However, the rate of change in public expenditures on socio-economic services has been increasing more or less with the similar rate as in other two provinces.
Of the other control variables, the population has either showed unexpected (negative) sign or appeared insignificant vis-à-vis all socio-economic services except health indicators. The negative coefficients of the population in relation to services like education, water & sanitation and civil work suggest that the per capita investment on such services were higher in Balochistan. This may explain that in Balochistan with very vast land and disperse population the per capita cost of providing a certain social or economic service remains much higher compare to other provinces.

Similarly, the Punjab-Sindh dummy variable was positive and statistically significant association with most of the outcomes variables. For those services where it maintains a negative relationship, its coefficients are not reported. This finding perhaps reflected the differential effects of the Devolution reform between bigger (more populous), socio-economically better developed and more influential in national polity province(s) compared to the other two provinces, particularly Balochistan where the Devolution has not been as affective as in its counterparts.

In general, the overall fit of the regression models is consistent with the decentralisation literature because it explains up to 70% or more of the variation in social service delivery (reflected by the R-squares of each model).
Table 4: Determinants of Public Expenditures on Rural Development, Agriculture and Civil Work

<table>
<thead>
<tr>
<th>Variables</th>
<th>Public Exp. on Rural Development @</th>
<th>Agriculture Valued Addition</th>
<th>Annual Public Exp. on Civil Work@</th>
</tr>
</thead>
<tbody>
<tr>
<td>Models</td>
<td>OLS</td>
<td>RE</td>
<td>FE</td>
</tr>
<tr>
<td>Devolution Reform (Dummy)</td>
<td>9.951</td>
<td>8.918</td>
<td>10.69</td>
</tr>
<tr>
<td></td>
<td>(5.323)</td>
<td>(4.353)</td>
<td>(5.068)</td>
</tr>
<tr>
<td>Punjab-Sindh (Dummy)</td>
<td>0.748</td>
<td>0.748</td>
<td>4.625</td>
</tr>
<tr>
<td></td>
<td>(0.090)</td>
<td>(0.092)</td>
<td>(18.290)</td>
</tr>
<tr>
<td>Population</td>
<td>-0.126</td>
<td>-0.128</td>
<td>0.0474</td>
</tr>
<tr>
<td></td>
<td>(0.056)</td>
<td>(0.074)</td>
<td>(0.379)</td>
</tr>
<tr>
<td>Per Capita GDP</td>
<td>0.00524</td>
<td>0.00507</td>
<td>0.00148</td>
</tr>
<tr>
<td></td>
<td>(0.002)</td>
<td>(0.002)</td>
<td>(0.004)</td>
</tr>
<tr>
<td></td>
<td>(5.803)</td>
<td>(6.675)</td>
<td>(12.901)</td>
</tr>
<tr>
<td>Year Dummy</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
</tr>
<tr>
<td>N</td>
<td>136</td>
<td>136</td>
<td>136</td>
</tr>
<tr>
<td>R² (Within)</td>
<td>0.1633</td>
<td>0.1678</td>
<td>0.8656</td>
</tr>
<tr>
<td>R² (Between)</td>
<td>0.9968</td>
<td>0.1693</td>
<td>0.8848</td>
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<tr>
<td>R² (Overall)</td>
<td>0.213</td>
<td>0.2202</td>
<td>0.1693</td>
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<tr>
<td>F/WaldChai2</td>
<td>2.544</td>
<td>33.88</td>
<td>1.57</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.005)</td>
<td>(0.09)</td>
</tr>
</tbody>
</table>

@ Value expressed in log form; Δ values are in million Rs.; Panel regressions robust standard error in parentheses
* p < 0.10, ** p < 0.05, *** p < 0.0

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Table 5: Determinants of Expenditures on Education, Basic Healthcare Indicators

<table>
<thead>
<tr>
<th>Variables</th>
<th>Annual Public Exp. Education@</th>
<th>Annual Public Exp. on Basic Health@</th>
<th>Population Per Bed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(OLS)</td>
<td>(RE)</td>
<td>(FE)</td>
</tr>
<tr>
<td>Devolution Reform (Dummy)</td>
<td>1.926***</td>
<td>1.926***</td>
<td>3.733***</td>
</tr>
<tr>
<td></td>
<td>(0.490)</td>
<td>(0.233)</td>
<td>(0.192)</td>
</tr>
<tr>
<td>Punjab-Sindh (Dummy)</td>
<td>-0.00439*</td>
<td>-0.00439</td>
<td>-0.0176***</td>
</tr>
<tr>
<td></td>
<td>(0.003)</td>
<td>(0.003)</td>
<td>(0.006)</td>
</tr>
<tr>
<td>Per Capita GDP</td>
<td>0.000128**</td>
<td>0.000128**</td>
<td>0.000183**</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.0433)</td>
<td>(0.0334)</td>
</tr>
<tr>
<td></td>
<td>(0.510)</td>
<td>(0.278)</td>
<td>(0.217)</td>
</tr>
<tr>
<td>Year Dummy</td>
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<td>Included</td>
<td>Included</td>
</tr>
<tr>
<td>N</td>
<td>136</td>
<td>136</td>
<td>136</td>
</tr>
<tr>
<td>R² (Within)</td>
<td>0.7452</td>
<td>0.9563</td>
<td>0.9696</td>
</tr>
<tr>
<td>R² (Between)</td>
<td>0.0282</td>
<td>0.492</td>
<td>0.8594</td>
</tr>
<tr>
<td>R² (Overall)</td>
<td>0.73</td>
<td>0.729</td>
<td>0.9027</td>
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<tr>
<td>F/WaldChai2</td>
<td>185.04</td>
<td>296.77</td>
<td>81.34</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
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</tr>
</tbody>
</table>

@ Value expressed in log form; Δ values are in million Rs; Panel regressions robust standard error in parentheses
* p < 0.10, ** p < 0.05, *** p < 0.01
Table 6: Determinants of Expenditures on Water and Sanitation, Social Welfare and Water Management

<table>
<thead>
<tr>
<th>Variables</th>
<th>Annual Public Exp. On Water and Sanitation@</th>
<th>Annual Public Exp. On Social Welfare@</th>
<th>Annual Public Exp on Water Management@</th>
</tr>
</thead>
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<tr>
<td></td>
<td>(OLS) (RE) (FE) (Tobit)</td>
<td>(OLS) (RE) (FE) (Tobit)</td>
<td>(OLS) (RE) (FE) (Tobit)</td>
</tr>
<tr>
<td>Models</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Devolution Reform Dummy</td>
<td>39.55***</td>
<td>39.55***</td>
<td>4.499***</td>
</tr>
<tr>
<td></td>
<td>(10.151)</td>
<td>(7.309)</td>
<td>(0.505)</td>
</tr>
<tr>
<td>Punjab-Sindh Dummy</td>
<td>44.67***</td>
<td>44.67***</td>
<td>0.760</td>
</tr>
<tr>
<td></td>
<td>(7.705)</td>
<td>(8.692)</td>
<td>(0.583)</td>
</tr>
<tr>
<td>Population</td>
<td>-1.231***</td>
<td>-1.231***</td>
<td>-0.0204*</td>
</tr>
<tr>
<td></td>
<td>(0.175)</td>
<td>(0.175)</td>
<td>(0.111)</td>
</tr>
<tr>
<td>Per Capita GDP</td>
<td>0.0012</td>
<td>0.0012</td>
<td>0.0001</td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.002)</td>
<td>(0.000)</td>
</tr>
<tr>
<td>Constant</td>
<td>6.589</td>
<td>6.589</td>
<td>-1.956***</td>
</tr>
<tr>
<td></td>
<td>(4.897)</td>
<td>(6.390)</td>
<td>(0.481)</td>
</tr>
<tr>
<td>Year Dummy</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
</tr>
<tr>
<td>N</td>
<td>136</td>
<td>136</td>
<td>136</td>
</tr>
<tr>
<td>( R^2 ) (Within)</td>
<td>0.6918</td>
<td>0.7105</td>
<td>0.8829</td>
</tr>
<tr>
<td>( R^2 ) (Between)</td>
<td>0.9761</td>
<td>0.8347</td>
<td>0.5224</td>
</tr>
<tr>
<td>( R^2 ) (Overall)</td>
<td>0.788</td>
<td>0.6430</td>
<td>0.85</td>
</tr>
<tr>
<td>F/WaldChai2</td>
<td>14.09</td>
<td>369.00</td>
<td>31.91</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
</tr>
</tbody>
</table>

@ Value expressed in log form; Δ values are in million Rs; Panel regressions robust standard error in parentheses. *p < 0.10, **p < 0.05, ***p < 0.01
6. Conclusion: After outlining a brief history of the system of local government in Pakistan, the paper discussed the Devolution. This was followed by critical examination of the impact of the Devolution on selected number of the essential social and economic services.

The empirical evidence shows that the Devolution significantly changed the size and magnitude of social and economic investment. The relationship between the Devolution indicator and the majority of socio-economic variables is robust and insensitive to the use of different specification techniques implying that the public investment in human and social services that by and large improved the living conditions of poor have increased significantly following the introduction of the reforms since 2000-01.

To sum up, the regression results show that the Devolution has increased the overall delivery of services. The efficacy of the Devolution is evident much more in services like rural development and water management facilities than the education. This to indicates the presence of the local elite capture on which a whole range on fiscal federalism literature (permanent among them is Bardhan and Mookherjee, 2005) suggests. Because establishments in the shape of irrigation projects and small size physical infrastructure investments in rural areas may be given to local elites from the local representatives as political patronage.

Constraint experienced with data made it difficult to draw a definite conclusion on the skewness of the social service provision. The data issue also limited this research from measuring and analysing the quality of these services in terms of units of output rather than sticking only to the supply of such services measured through public expenditures. More research is required to investigate the effectiveness of the Devolution Plan in enhancing the quality of ‘untargeted services’ that potentially affect the local communities without any differentiation. Theoretically not skewed and untargeted pattern of service distribution is likely to impact positively the poor and disadvantaged communities more compare to their rich counterparts.

REFERENCE


APPENDIX A

Table A: Variables Used to Determine Sectoral Allocation Public Resources

<table>
<thead>
<tr>
<th></th>
<th>Police</th>
<th></th>
<th></th>
<th>Agriculture</th>
<th></th>
<th></th>
<th>Irrigation</th>
<th></th>
<th></th>
<th>Rural Development</th>
<th></th>
<th></th>
<th>Transport and Communication</th>
<th></th>
<th></th>
<th>Civil Work</th>
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<td>1</td>
<td>Police</td>
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<td>Agriculture</td>
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<td></td>
<td>Irrigation</td>
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<td></td>
<td>Rural Development</td>
<td></td>
<td></td>
<td>Transport and Communication</td>
<td></td>
<td></td>
<td>Civil Work</td>
</tr>
<tr>
<td>2</td>
<td>Public health</td>
<td></td>
<td></td>
<td>Irrigation</td>
<td></td>
<td></td>
<td>Rural Development</td>
<td></td>
<td></td>
<td>Transport and Communication</td>
<td></td>
<td></td>
<td>Civil Work</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Social Services</td>
<td></td>
<td></td>
<td>Rural Development</td>
<td></td>
<td></td>
<td>Transport and Communication</td>
<td></td>
<td></td>
<td>Civil Work</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>4</td>
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<td>Transport and Communication</td>
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<td>Civil Work</td>
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<tr>
<td>5</td>
<td>Health</td>
<td></td>
<td></td>
<td>Civil Work</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>6</td>
<td>Social Security and Welfare</td>
<td></td>
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<td>Civil Work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>
عنوان المقال:
فاعلية تكنولوجيا المعلومات كأحد تقنيات التعلم عن بعد
في تنمية الاتجاهات العلمية لدى طلبة المرحلة الجامعية

تأليف:
1- الأستاذة الدكتور شجفة نسر
2- الأستاذ الدكتور موفق عبد العزيز الحساوي
3- الدكتور نسر أختير

ملخص البحث:
للطالب الجامعي أهمية كبيرة في الحياة الاجتماعية ، حيث ان له الدور القيادي والريادي المستقبلي في بناء المجتمع وساهمته في تطويره من اجل الارتفاق به الى مصاف الدول المتقدمة . فهو عنصر اشعاع مؤثر في الحاضر . وعنصري قيادي فاعل في المستقبل.
ومن هنا كان لابد من الاهتمام بالطالب الاجتماعي ومحاولة تطور امكانياته المعرفية واتجاهاته العلمية أثناء تواجده في المؤسسة الجامعية وجعله قادرًا على التعامل مع مطابقات التقدم العلمي والتكنولوجي ونتائجه بفاعلية وكفاءة والاستجابة لمتطلباتها.
ويأتي هدف البحث في معرفة امكانيات تنمية الاتجاهات العلمية عند طلبة المرحلة الجامعية من خلال استخدامه لتكنيولوجيا المعلومات متمثلة بشبكة الإنترنت كأحد تقنيات التعلم عن بعد لمساعدتهم في عملية التعلم بالتكامل مع المحاضر الاعتيادية .
ولتحقيق هدف البحث اخترت نسخة عشوائية مكونة من ( 51 ) طالبًا وطالبة في الصف الأول في فصل الدراسات الدراسية بالمعهد التقني في الناصرة بجهة التعليم التقني خلال الفصل الثاني من العام الدراسي ( 2012 - 2013 ) فسميت الى ثلاث مجموعات متساوية ومتكافئة في عدد من المتغيرات المؤثرة في التصميم التجريبي تجريبيين وضابطًا .
وتتم تحديد أربعة مواقف من المنهج المقرر لمادة التاسيسات الكهربائية، وحيدت الأهداف التدريسية، ونبذ الخطط التدريسية بالطريقة الادعادية للمجموعات الثلاث. وتم بناء مقياس الاتجاهات العلمية الذي يتكون من (30) فقرة، واستخراج الخصائص السكيمترية كالمقصط واليات لها.

وبدأ البحث بتثبيط مقياس الاتجاهات العلمية على طلب المجموعات الثلاث معا وتحليل نتائجه وملاحظة عدم وجود فروق دالة إحصائيًا بين هذه المجموعات. واستمرت التجربة لمدة أربعة أسابيع، كانت المجموعات الثلاث تدرس المادة بالطريقة الادعادية في المحاضرة معا. وكانت المجموعة التجريبية الأولى تستخدم شبكة الإنترنت قبل المحاضرة، والجموعة التجريبية الثانية بعدها، من أجل الحصول على معلومات إضافية وتوضيحية عن المادة. في الدراسة تعزز تعلم الطلبة، بينما المجموعة الضابطة لا تستخدمها. بعداً أعيد تطبيق مقياس الاتجاهات العلمية على طلب المجموعات الثلاث معا. وحلت النتائج بالوسائل الإحصائية المناسبة.

وتوصيل البحث أن حصول نمو إيجابي في الاتجاهات العلمية لدى طلبة المجموعة التجريبية الثانية بدرجة أكبر مما هو عليه لدى طلبة المجموعة التجريبية الأولى والجموعة الضابطة. ودالة إحصائية.

وفي ضوء ذلك استنتج البحث فاعلية تكنولوجيات المعلومات ومنها شبكة الإنترنت كأحد تقنيات التعلم عن بعد في تنمية الاتجاهات العلمية لدى طلبة المرحلة الجامعية، وأوصى باستخدامها لتحقيق هذا الهدف، كما تم إقراح إجراء عدد من الإجراءات المكملة لهذا البحث.

الفصل الأول
مشكلة البحث وأهميته

اولاً - أهمية البحث:

تعد الاتجاهات العلمية لدى الطلبة من الجوانب المهمة التي ينبغي الانتباه إليها والنظر إليها بأهمام كبير في العملية التعليمية لأنها تعد مفتاحا أساسي للتعلم الجيد والكفو للطلبة واستيعابهم للمواد الدراسية التي يقومون بدراستها في المؤسسات الجامعية.
وإلا من السعي من أجل تطوير هذه الاتجاهات العلمية والعمل على تعديلها وجعلها أكثر إيجابية عند الطلبة وذلك من خلال تطوير وتحسين طرق التدريس والتدريب في المؤسسات الجامعية والتي تجعل الطالب ينظر بصورة أكثر إيجابية للعلم ودوره الكبير في بناء المجتمعات والاحصاء الاساسية.

ومن الممكن الاستفادة من محليات التطور العلمي والتكنولوجي ونتائج من خلال استخدام تقنيات التعلم عن بعد ومنها تكنولوجيا المعلومات والاتصالات وتطبيقاتها المختلفة واستغلالها في هذا الاتجاه من أجل تطوير العملية التعليمية من خلال استخدامها في تحسين عناصر العملية التعليمية الأساسية ومنها طرق التدريس كأحد عناصر المنهج الدراسي ، وبرز الحاسوب وتطبيقاته المختلفة وتقنياته وتطبيقات الحاسوب فيها ومنها شبكة الإنترنت كونها من اهم طرائق تكنولوجيا المعلومات والاتصالات والتعليم عن بعد ولي من الممكن الاستفادة منها في العملية التعليمية التعليمية والتي ينبع من البحوث العلمية والدراسات لتعريف على فاعلتها وفضلية كل منها في التأثير على المتغيرات التابعة الأساسية ذات العلاقة بالعملية التعليمية ومنها الاتجاهات العلمية في هذا البحث.

وإضافة تكنولوجيا المعلومات، كأحد تقنيات التعلم عن بعد تغيير العديد من أساليب العمل في الحياة وجعلها أكثر سهولة وفهما وسرعة وذلك ساعد على تسهيل عملية التبادل العلمي والثقافي بين مختلف الشعوب ، وهذا أدى إلى إحداث ثورة عالمية كبيرة في مجال امتطادة الاتصالات وتحسين عملية التواصل الابائي ونشر المعرفة والثقافة العالمية بين مختلف البلدان . وهذا أدى إلى انتشار استخدام تقنيات التعلم عن بعد ومنها تكنولوجيا المعلومات بتطبيقاتها المختلفة ومنها شبكة الإنترنت في شتى ميادين الحياة ومن بينها المجال النرويجي والتعليم.

حيث يشير ( حسین ) إلى أن التطور الهائل في تكنولوجيا المعلومات والاتصالات ، وتبع

وتشهد إمكاناتها في تطور واستحداث تداخلات واستراتيجيات تعليمية ، يعد أمرًا يفرض عدم تجاهلها أو التفاوض عنها ويجري اتخاذ كافة الإجراءات اللازمة لاتاحة الفرص الكاملة لتطبيقها والاحتفاظ بها لصاغة وبناء واستخدام تلك المداخل والاستراتيجيات التعليمية.

( حسین ، 2007 ، 1)
وقد بدأ استخدام شبكة الإنترنت كونها أحد تقنيات وتطبيقات تكنولوجيا المعلومات والاتصالات ينتشر في المؤسسات التعليمية وخاصة الجامعة والذي أثبت كفاءتها وجودتها في تطوير العملية التعليمية وتقديم المساعدة للمدرس والطالب في أن واحد وفتح أفاق علمية وعرفية واسعة ومحدودة المصادر والثقافات أمام الطالب للحصول على معلومات إضافية وتوضيحية خارج أوقات المحاضرات الاعتيادية لتكون متكاملة مع ما يتم دراسته خلال المحاضرات الاعتيادية.

وأصبحت شبكة الإنترنت من الأمور التي لها اهتمام واسع في العملية التعليمية بسبب التطور العلمي الكبير وزيادة حجم المعلومات وتشعبها إلى درجة أصبح الالبام بها واستيعابها دون الاعتماد على بعض الموارد الإنتاجية عامة كتب التدريس، كأن يكون أرضا اصطناعياً للغاية، وهذا من الممكن أن تتوفر شبكة الإنترنت للطالب والمدرس إذا أحسن استخدامها واستخدامها للعمر المخصص من أجل وخلال الوقت المناسب لذلك وبالتالي قد يؤدي إلى تطور العناصر التي تتكون منها العملية التعليمية ومنها طرق التدريس.

ثانياً - مشكلة البحث:

(-distance learning) لقد فكر النرويون بضرورة أهمية استخدام التعليم عن بعد لتطوير العملية التعليمية وتحسين تعلم الطلبة وتطوير اتجاهاتهم العلمية والبحث عن أفضل الأساليب المستخدمة في هذا المجال في ضوء ما يتم الحصول عليه من نتائج طبيعية وتجريبية، وذلك إجراد العديد من الدراسات والبحوث العلمية في هذا المجال، وتبينت نتائجها في هذا المجال.

وتبعد ماهية التدريس الكهربائي الطريقة اجتذاب المواد الأساسية المغروبة على المجموعات الاستثنائية، أو استخدام المدرسين في كل المناهج الاستثنائية، أو استخدام التدريس الكهربائي في 따라서وا من الخدمات التعليمية في هيئة التعليم العالي، وهي تتسم كفاءة مهارتها، والذي يتطلب من مدرس المادة أن يقدمها للطلبة بأخذ إتظار ووضوح مع الاهتمام بالتركيز على النقاط الأساسية في الموضوع والابتعاد عن التشبيبات الكثيرة فيها، وهذا يتطلب إعطاء وقت إضافي خارج المحاضرة الاعتيادية من خلال التعليم عن بعد. و siendo بعض تطبيقات تكنولوجيا المعلومات والاتصالات لغرض إعطاء الطلبة فرصة اضافية خارج وقت المحاضرات الاعتيادية لرؤيتها وسعيها بصورة وفيفة.  

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ولذلك دعت الحاجة إلى استخدام وسائل إضافية لتزويد الطلبة بالمعلومات خارج وقت المحاضرات الاعتيادية. وهذا من الممكن أن نجهد متوفرًا في التطبيقات المختلفة شبكة الإنترنت وإمكانية تقديم معلومات إضافية ووضوحية للطالب من خلالها. وقد جاء هذا البحث في هذا المجال للإفادة على فاعلية تكنولوجيا المعلومات متمثلة بشبكة الإنترنت كأحد تكنيات التعلم عن بعد في ظل الاتجاهات العلمية عند الطلبة للاختيارات الناجحة تجريبية من الممكن استفادة منها وتعيمها على المتخصصين للاخذ بها والعمل بموجبها لتطوير العملية التعليمية وبناء الاتجاهات العلمية الإيجابية لدى الطلبة.

ثالثاً - أهداف البحث:

يهدد البحث إلى معرفة إمكانية تنمية الاتجاهات العلمية عند طلبة المرحلة الجامعية من خلال استخدامهم لتكنولوجيا المعلومات متمثلة بشبكة الإنترنت كأحد قنوات التعلم عن بعد لمساعدتهم في عملية التعليم بالتكامل مع المحاضرات الاعتيادية.

رابعاً - حدود البحث:

يحدد البحث بما يأتي:

1 - الحدود المكانية: المعهد التقني في الناصرية التابع إلى هيئة التعليم التقني في العراق.
3 - الحدود البشرية: طلبة الصف الأول في قسم العينات الكهربائية - فرع القوى الكهربائية.
4 - الحدود الأسائية: أربعة مواضيع متصلة من المناهج المقرر لفترة التسنين

الكهربائية الطارئة.

خامساً - فرصات البحث:

حاول البحث التحقق من صحة فرصيات المفردة الآتية:

1 - لاتوجد فروق ذات دالة إحصائية عند مستوى معنوية (0.05) بين متوسط درجات الطلبة في قياس الاتجاهات العلمية في المجموعات الضابطة والتجريبية الأولى.
2 - لاتوجد فروق ذات دالة إحصائية عند مستوى معنوية (0.05) بين متوسط درجات الطلبة في مقياس الاتجاهات العلمية في المجموعات الضابطة والتجريبية الثانية.
3 - لاتوجد فروق ذات دالة إحصائية عند مستوى معنوية (0.05) بين متوسط درجات الطلبة في مقياس الاتجاهات العلمية في المجموعات التجريبية الأولى والتجريبية الثانية.
تعرّف (المنيف) : هي عبادة عن الوصول إلى الأهداف والنتائج المتوقعة.

(المنيف، 1983، 350)

التعريف الإجراهي: هي عبادة عن قدو تكنولوجيا المعلومات ممثلة بشبكة الإنترنت الذي تم استخدامها من قبل الطلبة في المجموعتين التجريبيتين من عينة البحث، من طلبة الصف الأول في قسم الاتصالات الكهربائية - فرع القوى الكهربائية بالمعهد التقني في الناصرة لعرض الحصول على معلومات إضافية وتوضيحية عن مادة تأسيسات الكهربائية النظرية التي يتم دراستها في المحاضرو الاعتيادية في تنمية الاتجاهات العلمية لديهم بعد الانتهاء من تطبيق البحث.

2- التعليم عند بعد (الفرحاني، 2000 ؛ 14)

تعرّف (الفرحاني) : هو عبادة عن نظام يعمل على اتصال العلم والمعرفة إلى كفر راغب فيه وقادر عليه مهما بعدت المسافات التي تفصل بينه وبين المؤسسة التعليمية.

(الفرحاني، 2000، 14)

التعريف الإجراهي: هو عبادة عن استخدام الطلبة من عينة البحث لبعض طرق تكنولوجيا المعلومات ممثلة بشبكة الإنترنت، بأحد تقييمات التعليم عن بعد من أجل الحصول على معلومات إضافية وتوضيحية عن المادة العلمية التي يتم دراستها في الماضرة الاعتيادية.

3- تكنولوجيا المعلومات (IT) (ITAA) : هي عبادة عن دراسة وتصميم وتطوير وتتعلق ومهمة أو تسير أنظمة المعلومات التي تعتمد على الحواسيب وخاصة تطبيقات الحواسيب منها تكنولوجيا المعلومات باستخدام الحواسيب والتطبيقات البرمجية للتحويل والمحمية والمتعلقة والإرسال والاسترجاع الأتم للمعلومات.

(ويكيبيديا للكوسمية الحرة)

التعريف الإجراهي: هي عبادة عن قيام الطلبة من عينة البحث بتوفير تكنولوجيا المعلومات ممثلة بشبكة الإنترنت للحصول على معلومات إضافية عن مادة تأسيسات الكهربائية قبل الدخول إلى المحاضرو الاعتيادية من أجل تنمية اتجاهاتهم العلمية.

(الإنترنت)

4- شبكة الإنترنت
تعرف (2000، et al) أن عبارة عن شبكة من شبكات الحاسوب المرتبطة حول العالم بقنوات اتصال ذات سرعة عالية وتحتوي على كمية غير محدودة من المعلومات ويستخدمها عدد كبير من الناس وفي مختلف الأماكن.

(Donatti، et al، 2000، p. 2)

التعريف الإجراي: هي عبارة عن استخدام الطلبة من عينة البحث لشبكة الإنترنت من أجل الحصول على معلومات إضافية وتوضيحية عن مادة التأسيسات الكهربائية النظرية التي يتم دراستها في المحاضرة الإعتيادية. وتستمح المجموعة التجريبية الأولى شبكة الإنترنت قبل المحاضرة الإعتيادية. و تستمح المجموعة التجريبية الثانية شبكة الإنترنت بعد المحاضرة الإعتيادية.

5- الاتجاهات (Attitudes):

تعرف (زمون 1994) أن عبارة عن مواقف الطلبة من عينة البحث وحسنهم نحو توظيف تكنولوجيا المعلومات في تطوير طرق التدريس فيما يتعلق بالقبول والرفض نحوها مقاساً من خلال درجات استجاباتهم على المقياس الذي تم اعداده من قبل الباحثين لهذا العرض.

الفصل الثاني

خلفية ظاهرة ودراسات سابقة

أولاً: خلفية ظاهرة:

تعد طبيبات تكنولوجيا المعلومات ومنها شبكة الإنترنت أحد ظواهر المدنية الحديثة وهيئة تحوّل كبرى في عالم الاتصالات والمعلوماتية حيث اوجدت أساليب جديدة للتبادل المعرفي بين مختلف الشعوب والثقافات وكذلك بين المؤسساتicious in مختلف أنحاء العالم مما ساعد على احداث تغيّرات كبيرة وجوهرية في اهدافها وانظمتها وبرامجها الدراسية وطرق
تدريس والتدريب فيها. ولازالت هذه التكنولوجيا في تطور متواصل ومستمر مما يؤدي إلى اكتشاف أساليب وتطبيقات جديدة لكي تكون توظيفها واستخدامها في العملية التعليمية. إن التطور الكبير في تكنولوجيا الاتصالات والمعلومات أوجد طرقًا وأساليب تعليمية جديدة حيث أصبح بإمكان المتعلم أن يتعلم في أي وقت وأي مكان. وانتشرت هذه التقنيات بصورة واسعة في مختلف دول العالم.

وتكنولوجيا المعلومات والاتصالات هي وسائل وتقنيات تعليمية جديدة من الممكن أن تساهم في تحقيق الأهداف المتنوعة من عملية التعليم وتيسير إدراج المعارف بإزالة الحواجز القائمة بين المواد التعليمية وتمكين المتعلمين من استقلالية البحث عن المعلومة وتوظيفها فيتدرون على العلم الذاتي، ويساعد على إيجاد التعليم المستمر مدى الحياة. وخلال المؤسسات التعليمية الأكاديمية مما يجعلهم يشعرون بالمسؤولية وتطور اتجاهاتهم بصورة أكثر ايجابية وتصبح لديهم القدرة على تقبل القيم الحامل في مستوى تصليلهم الديني.

وتتبرون على العمل التعاوني فيما بينهم.

وتنتيجة للتطور العلمي والتكنولوجي وخاصة في مجال تكنولوجيا المعلومات والاتصالات فقد ظهر مفهوم التعلم عن بعد (Distance Learning) الذي يمكن من خلاله تجاوز محدودات المكان والزمان بين المدرس والمتعلم، والذي انتشر استخدامه بدرجة كبيرة في مختلف المؤسسات التعليمية وامكان التواصل العلمي والعلمي.

وتدكر الموسوعة الحرة في الإنترنت (ويكيبيديا) أن التعلم عن بعد هو أحد أساليب التعليم الحديثة نسبياً، ويعتمد مفهومه الأساسي على وجود المتعلم في مكان يختلف عن المصدر الذي يكون فيه الكتب أو المدرس أو حتى مجموعة الدارسين. وهو كل برنامج تعليمي من موضوعه في جو موسوعة تعليمية ما إلى أماكن متفرقة. ويهدف إلى جذب الطالب الذين لا يستطيعون تحت الظروف العامة الاستمرار في برنامج تعليمي طالب اعتمادي. ويستفيد الإسهام في بعض الموارد العلمي والعلم الاجتماعي لدى الأفراد وسد الفجوة في المدارسين المؤهلين في بعض المجالات كما يعلم على تلبية ضعف الإمكانيات، وعمل على توفير مصادر تعليمية متنوّعة ومتنوعة مما يساعد على تقليل الفروق الفردية بين المتدرين وذلك من خلال دعم المؤسسات التدريبية بوسائل وتقنيات تعليم متنوّعة وتفاعلية.

(ويكيبيديا الموسوعة الحرة في الإنترنت)
وتتنوع الأساليب المستخدمة للتعلم عن بعد بحسب نوع المواقع التي توفر بموجبها للمعلم، فكلما توفر استخدام التكنولوجيا المطلوبة توفر المعلم في التعلم. وخلافاً بنوع المرونة في التعلم التي تقدمها تلك الأساليب تباعاً نوع التقنيات التعليمية المستخدمة. فعلى تلك المرونة المرتبطة بتفاعل المتعلم في العملية التعليمية في المؤتمرات السمعية البصرية ومؤتمرات الفيديو لفرضها تواجه المشاكل فيها في أماكن محددة بأمكانيات الفنية اللازمة. بينما نجد أن تلك المرونة توفر مع زيادة توفر الإنترنت للمتعلم في الفعل مع الموقف التعليمي عندما يختار ما يريد تعلمه في الوقت الذي يرد وبالمكان الذي يرغب فيه.

(ووباكو، 2004)

وكلما إزداد الطور التكنولوجي جلب معه المزيد من الاستفادة لهذا النوع من التعليم، وهناك العديد من المميزات التي جلبها التكنولوجيا لأسلوب التعلم عن بعد، ونأتي تزداد مع توظيف شبكة الإنترنت.

(الفرح، 2002)

وقد بدأ التطورون في ضوء الفلسفة التربوية الحديثة ينظرون إلى العملية التعليمية ويعملون معها كعملية لا يضاهي زمانها أو مكانه وتستمر مع الإنسان حاجة وضرورة لتسهيل تكييفه مع المستجدات الحديثة في بيئته وعملوا على تنمية هومن تعليم الطالب كيف يتعلم وتعليمه كيف يفكر، لأن هذا الشعار له مدلولات مسلكية في غاية الأهمية، ولهذا التأكيد يطلب من الطلبة تعلم مهارات جديدة ولقدو على استخدامها في الموقف الجديد.

ويشير التطورون إلى التغييرات التي ستحدث في الفنون التعليمية التقليدية سوف تكون مؤشراً للتحول الكبير في الأنظمة الدراسية وبرامجها، وسوف يكون المعلم الإدراكي مكاناً لتبادل الأفكار والمعلومة، وهذا لا يعني أن تكنولوجيا المعلومات والأدوات سوف تلغى دور المدرس، ولكنها تحمي الإبداع وتجعل المتعلم راض عن نفسه ومستوى تعلمه، ومن ناحية أخرى فإن أهم الهال من المعلومات يجعل الطلبة أقل قناعة بفكرة أن المدرس هو الخبرطن، كما أنه لا يمكن للمدرس من إنتاج نهج المتعلم إلى الطلق، وبالتالي تشير علاقة الطلاب بالمدرس علاقة متكافئة نوعاً ما من حيث الدور الذي يؤديه كل منهما، وسوف يستفيد الطلبة من التحول من فئة المعلومات التقليدية إلى فئة أكثر حسب والمساعدة الطلاب على التعامل مع مصادر المعلومات يمكن رؤيتها وندوها، ويجعل تكنولوجيا
المعلومات ومنها شبكة الإنترنت محتوي المحاصيل أكثر حيوية في جميع الذاكر وتوزع الموارد من الارتباط بالموضوع . (طويل والهادي ، ب ، ت ، 299)
ويشير ( الزهيري ) إلى إن التقدم والتطور الذي تميز به العصر الراهن له امكاسات تروية وسعة لها أنها الواضح في العملية التعليمية من خلال التقنيات الحديثة التي يتم اكتشافها وتطويرها بشكل سريع . وهذا جعل النرويون يقرون في كيفية تعديل الطلبة على البحث وخلق التدقيق في كل معلومة مما يحقق نقطة نوعية في تفكيرهم ومعالجتهم ليكون هناك والمعلومات وبالتالي العمل على تحسين أساليب وإمكانات التعليم الذاتي لديهم . ( الزهيري ، 2006 ، 213)
وقد كتبت تكنولوجيا المعلومات والاتصالات رمزًا للغرض العلمي والدولي لهذا العصر ، فقد غزت الحياة العصرية وتوسع استخدامها، خاصة وقد أصبح لها قواعد حديثة هائلة لمواجهة ونحن مشكل المجتمع المستمر التي كانت تحتاج لجهود مشتركة وفق طول للدبلوم عليها بإتباع الطرق والأساليب التقليدية . (الإلكاري ، 1995 ، 239)
وهذا أدى إلى ظهور منظومة ومصدر تعلم غير تقليدية، ولم يعد استخدامها وتوزيعها في المواقف التعليمية ترقى بل أصبح ضرورة محالة وضرورة حيوية لما تقدمه هذه المصادر من نقطة نوعية في إعادة صياغة وتطور المواقف التعليمية . وينبغي توظيف تكنولوجيا المعلومات في التعليم والتعلم بحيث أصبحت تكنولوجيا المعلومات خيارًا استراتيجيًا للتطور . وقد أدت هذه التكنولوجيا في ميدان التعليم نظرًا لأهميتها في جسم أي مجتمع، وأيضاً أعطت نتائج إيجابية في هذا الميدان .
وقد ساهمت تكنولوجيا الاتصالات والمعلومات في خلق بيئة تعليمية جديدة تختلف عنما كانت عليه في السابق وهذه البيئة لا تحتوي فقط على أجهزة الحاسوب وملحقاتها وإنما تحتوي على البنية التحتية لمنظمة الاتصالات والمعلوماتية ومنها شبكة الإنترنت ومنها ما يطلق عليه بيئة التعليم الافتراضية . (Mime and Toshio , 2001 , 273)
فقد أصبح استخدام بيئة التعليم الافتراضية سمة بارزة في مؤسسات التعليم العالي وأصبحت معظم هذه المؤسسات تستخدم التقنيات الحديثة في عملية التعليم والتعلم بصورة واسعة وادي ذلك إلى طور ممطلق التعليم عبر شبكة الإنترنت وتفاعل الطلبة والمدرسين من خلالها .
وهذا جعل دور الطلبة أكثر إيجابية في عملية التعليم لأن الخبرات المقدمة له كانت أكثر تشوية وآثار. وهذا لا يعني الاغلاق التعليم الاعتيدي ولكن يظهر مصطلح التعليم الخليط أو المدمج الذي يتكامل فيه التعليم الاعتيدي مع التعليم الإلكتروني لينتج نموذج تعليم أكثر جودة وفاعلية.

Crispin and Andrew (2007, 101)

وقد انتشرت تكنولوجيا المعلومات والاتصالات في التعليم وتعلم العلوم والتكنولوجيا، ولا بد من وجود استراتيجيات تعليمية بعيدة المدى تأخذ تطبيقاتها بنظر الاعتبار والتي منها استخدام الحاسب كمنهاج تعليمي. ووجود الكتاب الإلكتروني الذي يختلف عن الكتاب الورقي إذ يقدم للطلبة المعلومات مع مساعدات صوتية ورسوم متحركة وأفلام مما يجعل الطلبة يتفاعلون معها بالإضافة لاختيار الطالب وتقييم نتائجه بصورة الية كما يمكن للطالب أن ينتقل بين الأفكار المتباينة في الكتاب بصورة الية والاتصال بالكتب الأخرى بصورة الية أيضاً. وتوفير برامج تساعد المدرس والإدارة والطالب في تحسين وتسهيل عملية التعليم والتعلم ورفع كفاءتها. وإمكانية وضع مكتبات العالم في مناطق المدرس وطلبة من خلال شبكة الإنترنت مع إمكانية الحصول على المراجع والمقالات والكتب والمجلات بعده قصيرة وسرعة وبتكلفة قليلة. (ملياني، 2006، 2)

وتكنولوجيا المعلومات متمثلة بشبكة الإنترنت لا تحل محل طرائق التدريس الاعتيادية ووسائلها ولكنها تقدم فوائد إضافية للطلبة وثقافة متطورة ومهمة وتبرز أهميتها الأساسية من خلال تعزيز العلم الذكي عند الطلبة. (Titus, 1998, 1)

نانيا - دراسات سابقة:

فقد انتشر استخدام تكنولوجيا المعلومات بتطبيقاتها المختلفة في العملية التعليمية وخاصة شبكة الإنترنت كأحد تقنيات التعلم عن بعد والتي أصبح هناك اتجاه متزايد لاستخدامها في
التعليم حيث قامت المؤسسات التعليمية بإجراء عدد كبير من المشاريع والتجارب والبحوث العلمية حولها و باستخدام أساليب متعددة في مختلف المواضيع والمراحل الدراسية.

حيث هدفت دراسة (الشقاق وحسن) عام (2006) في الأردن إلى تقييم مادة برمجية الفيزياء المحوسية والمواثق الإلكترونية في الفيزياء من وجهة نظر المدرسين والطلبة باستخدام اربع مجموعات تجريبية استخدمت الأولى الإنترنت والثانية الاقراض المدمجة والثالثة الإنترنت مع الاقراض المدمجة والرابعة المدرس وجهة عمار عمار البيانات إضافة إلى المجموعة الضابطة التي استخدمت الطريقة الاعتيادية. وتوصلت إلى عدد من النتائج الإيجابية الناتجة من جراء استخدام هذه التقنيات.

(الشقاق وحسن 2006)

وأجريت دراسة (الباقي) عام (2007) دراسة في العراق هدفت إلى التعرف على فاعلية استخدام الوسائط المتعددة بواسطة الحاسوب في تحسين الطالبات في مادة الفيزياء واتجاههن نحو استخدام الحاسوب في التعليم والتعلم باستخدام مجموعتين تجريبية وضابطة وتوصلت إلى تفوق طالبات المجموعة التجريبية اللواتي استخدمن الوسائط المتعددة بالحاسوب في التحصيل والاجهادات على طالبات المجموعة الضابطة اللواتي استخدمن الطريقة الاعتيادية في التدريس.

(الباقي 2007)

وأجريت دراسة (قطيط) عام (2008) إلى استقصاء أثر تدريس دبلوم التربية في تكنولوجيا المعلومات والاتصالات في تنمية الاتجاهات العلمية لدى طلبة جامعة اليرموك في الأردن. فتوصلت إلى أن استخدام تكنولوجيا المعلومات قد ساعد في تنمية الاتجاهات العلمية الإيجابية عند الطلبة.

(قطيط 2008، 1)

كما قام (البيغوي وجر) عام (2011) بأجراء دراسة في جامعة دي قار في العراق هدفت إلى الحصول على بيانات إحصائية حول تفاوت البنية المعلوماتية المستخدمة شبكة الإنترنت الاجراز البحوث العلمي بين تدريسي جامعة دي قار من خلال التعرف على وجهات نظر عدد من التدريسين في هذا المجال وتوصلت الدراسة إلى وجود تباين بين اراء التدريسين بهذا الخصوص.

(البيغوي وجر 2011)
وجّه ( الحساساوي والصريفي ) عام ( 2012 ) دراسة في المعهد التقني في الناصرة للنظر على فاعلية استخدام طبقات تكنولوجيا المعلومات في طريقة تدريس الهندسة التقنية الكهربائية من خلال معرفة اثرها في الانجاز الدراسي للطلبة وقابلياتهم على المناقشات المهنية داخل المحاضرة واتجاهاتهم نحو استخدام تكنولوجيا المعلومات في عملية التدريس. 
فلاحظا تفوق المجموعة التي استخدمت شبكة الإنترنت في متغيرات البحث التابعة على المجموعة التي لم تستخدمها . ( الحساساو والصريفي , 2012 )

العمل الثالث
إجراءات البحث
قام الباحثون بالإجراءات التالية للتوصل إلى نتائج الباحث:
1 - اختيار التصميم النحري:

من اختيار التصميم المتكافئ المكاني ليكون تصميم تجريبي للبحث وكما موضح أدناه في مخطط رقم (1) أدناه:

<table>
<thead>
<tr>
<th>المجموعة</th>
<th>التطبيق البدعي</th>
<th>المتغير البعيد</th>
<th>المتغير المستقل</th>
<th>طريقة التدريس</th>
<th>التطبيق البداعي</th>
</tr>
</thead>
<tbody>
<tr>
<td>التطبيق العلمي</td>
<td>المقياس الاعتيادية</td>
<td>الاجهادات على طلب المجموعات الثلاث</td>
<td>استخدام شبكة الإنترنت قلب المحاضر</td>
<td>الاجهادات العلمية</td>
<td>الاجهادات العلمية</td>
</tr>
</tbody>
</table>

الإجراء الأول
2 - تحديد مجتمع البحث:
حدد مجتمع البحث بجميع طلبة الصف الأول في قسم التقنيات الكهربائية - فرع الكهرباء - بالمقدمي التقني في الناصرية في هيئة التعليم التقني بجمهورية العراق خلال الفصل الثاني من العام الدراسي (2012 - 2013).

3 - اختيار عينة البحث:
اختيرت عينة من مكونة من (51) طالباً وطالبة بصورة عشوائية من مجتمع البحث وقسمت إلى ثلاث مجموعات متساوية بالعدد ومتكافئة في عدد من المتغيرات المؤثرة على سلامة التصميم التجريبي ضابطة وتجربيتان. وضمت في مخطط رقم (2):

محلول رقم (2): تكافؤ مجموعات البحث.

<table>
<thead>
<tr>
<th>متغيرات عملية التكافؤ</th>
<th>عدد الطالبة</th>
</tr>
</thead>
<tbody>
<tr>
<td>المحتمل الصالحة</td>
<td>17</td>
</tr>
<tr>
<td>النجاحية الأول</td>
<td>17</td>
</tr>
<tr>
<td>النجاحية الثانية</td>
<td>17</td>
</tr>
</tbody>
</table>

4 - تهيئة مسئيات البحث:
قام الباحثون بتهيئة المسئيات المطلوبة لأجراء البحث وما يأتي:
أولا - تحديد المادة العلمية: حدد الباحث ارتباط مواضيع متسلسلة من المفردات الدراسية المهمة لمتى هذه المادة التأسيسات الكهربائية النظرية خلال الفصل الدراسي الثاني.
نانا - تحديد الأهداف السلوكية: صاغ الباحث عددًا من الأهداف الخاصة من تدرس المادہ في ضوء الأهداف العامة المحددة من قبل المجموعة الاستشارية للفحصيات الكهربائية في هيئة التعليم التقني، وتم صياغتها على شكل أهداف سلوكية محددة يمكن ملاحظتها وقياسها وعرضت على بعض المختصين لبيان صلاليتها وحسب معادلة كور

(الاول) لاتفاق المحكمين وأعتماد نسبة اتفاق (80%) وبالتالي حددت هذه الهدف بعد تعديلها لتكون أهداف سلوكية لابد من تحقيقها بعد الانتهاء من تدرس المادة.

نانا - أعداد العلاج الدورى: أعد الباحث اجراء خطة دراسية بالطريقة الاعتادية، التي يتم تدريس طلبة المجموعات الثلاث معاً في ضوء الملاحظات السلوكية وعرضت على بعض المختصين وعدلت في ضوء ملاحظاتهم وحسب معادلة كور أيضاً بعض نسبة الاتفاق السابقة.

5 - أعداد أداة البحث (مقياس الإتجاهات العلمية):

قام الباحثون بتعيين مقياس الاتجاهات العلمية عند الطلبة. وهو عبارة عن مقياس مكون من (25) فقرة، بهدف ما بعد الاتجاهات العلمية عند الطلبة، وم أتدرج الاتجاهات المتعارف عليها في هذا المجال حيث أن الهدف منه هو (قياس الاتجاهات العلمية عند الطلبة)

وهو مكون من خمسة بدل حسب مقياس (ليكتر) الحاسبي ووستة فيه تقديرات الإجابة عليه، يتم عرضه على عدد من المختصين وبالاعتماد على معادلة كور (Cooper) لحساب درجة الاتفاق بينهم.

أ - استخرج صدق المقياس: تم أجراء التحليل الإحصائي للمقياس بتطبيقه على عينة استطلاعية من غير عينة البحث مكونة من (17) طالباً وطالبة، واستخرجت معائلات التمميز ودرجة اتساق الفقرات مع درجة المقياس الكلية بأستخدام طريقة الإحصائية المنسوبية (كما سيأتي ذكره في قسم الاتجاهات العلمية). فتبين أن جميع الفقرات مميزة ومتسقة فيما بينها وبين فقرات المقياس الكلية، وذلك عند المقياس صادقاً Validity.

ب - استخرج ثبات المقياس: تم استخدام طريقة تكرار أعداد التطبيق على نفس العينة الاستطلاعية بعد مرور أسبوعين على التطبيق الأول للمقياس، وتم حساب معامل الثبات باستخدام معامل ارتباط بيرسون فكان (0,80) وتم حساب معامل ثبات معادلة كروناخ - الفاً (0.84) وأصبح المقياس نابناً Ratability وصالحاً في صورته النهائية.
6 - خطوات تطبيق البحث:

قام الباحثون بالخطوات الآتية لغرض تطبيق البحث والتوصول إلى النتائج:

أولاً - تطبيق مقياس الاتجاهات العلمية الطلبة على طلبة المجموعات الثلاث معاً وتحليل نتائجه والتوصول إلى عدم وجود فروق دالة إحصائياً بين المجموعات في هذا المتغير.

ثانياً - في الامتحان الثاني (كونه مدرس المادة) يدرس المجموعات الثلاث معاً بالطريقة الامتحانية داخل المحاضرة لتقليل تأثير المتغيرات الدخيلة على نتائج البحث.

ثالثاً - استخدام طلبة المجموعة التجريبية الأولى لشبكة الإنترنت قبل الدخول إلى المحاضرة الامتحانية، واستخدام طلبة المجموعة التجريبية الثانية لشبكة الإنترنت بعد الانتهاء من المحاضرة الامتحانية حصول الطلبة على معلومات إضافية توضيحية عن المادة التي يتم دراستها في المحاضرة وكما يأتي في مخطط رقم (3) ادناه:

الخطوات (3) : كيفية تدريس المجموعات الثلاث

<table>
<thead>
<tr>
<th>المقارنة</th>
<th>التدريس بواسطة التطبيق الامتحاني</th>
<th>تدريس طلبة المجموعات الثلاث من قبل مدرس المادة</th>
</tr>
</thead>
<tbody>
<tr>
<td>التجريبي الأول</td>
<td>استخدام الطلبة لشبكة الإنترنت قبل الدخول إلى المحاضرة الامتحانية</td>
<td></td>
</tr>
<tr>
<td>التجريبي الثاني</td>
<td>استخدام الطلبة لشبكة الإنترنت بعد الانتهاء من المحاضرة الامتحانية</td>
<td></td>
</tr>
</tbody>
</table>

إيحا - استمرت التجربة لمدة أربعة أسابيع وواقع ساعتين في الأسبوع حسب الوقت المقرر لتدريس المادة.

خامساً - إعادة تطبيق مقياس الاتجاهات العلمية عند الطلبة على طلبة المجموعات الثلاث معاً وهي أن واحد أيضاً.

سادساً - تحليل نتائج مقياس الاتجاهات العلمية باستخدام عدد من الوسائل الإحصائية المناسبة (كما سوف يشار إليها في فقرة الوسائل الإحصائية).

الوسائل الإحصائية:
استخدم الباحثون الوسائط الإحصائية المدرجة أدناه لغرض أجراء عملية التكافؤ بين طلبة المجموعات الثلاث واستخراج صدق وثبات مقياس الاجهادات العلمية وتحليل نتائج البحث ومعرفة دلالة الفروق الإحصائية بين التطبيق التجريبي والابتعدي لمقياس الاجهادات العلمية :

أ - تحليل التباين الإحادي ( عودة وخليل ، 1988 ، 323 ) .

ب - معامل ارتباط بيرسون ( Pearson ) ( عودة وخليل ، 1988 ، 141 ) .

ج - معامل التمييز ( عودة ، 1998 ، 288 ) .

د - معادلة كروناخ - ألفا ( عودة ، 1998 ، 355 ) .

ه - الاختبار التأني ( t - test ) لعينتين مستقلتين ودرجة حرارة (32) .

(Glass and Joulion , 1970 , 295 )

الفصل الرابع

نتائج البحث

اولا - عرض النتائج :

من ملاحظة جدول رقم (1) نجد أن الرجاء توصل الى النتائج الآتية :

1 - توجد فروق ذات دلالة إحصائية عند مستوى معنوية (0,05) بين متوسط درجات الطلاب في مقياس الاجهادات العلمية في المجموعات الابتعادية والتجريبية الأولى . لصالح المجموعة التجريبية الأولى .

2 - توجد فروق ذات دلالة إحصائية عند مستوى معنوية (0,05) بين متوسط درجات الطلاب في مقياس الاجهادات العلمية في المجموعات الابتعادية والتجريبية الثانية . لصالح المجموعة التجريبية الثانية .

3 - توجد فروق ذات دلالة إحصائية عند مستوى معنوية (0,05) بين متوسط درجات الطلاب في مقياس الاجهادات العلمية في المجموعات التجريبية الأولى والتجريبية الثانية . لصالح المجموعة التجريبية الثانية .
جدول رقم (1): نتائج البحث

<table>
<thead>
<tr>
<th>الفرضية</th>
<th>القلمة الأولى المحسوبة</th>
<th>المتوسط الحسابي</th>
<th>المجموعة</th>
<th>الفرضية</th>
<th>القلمة الأولى المحسوبة</th>
<th>المتوسط الحسابي</th>
<th>المجموعة</th>
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<td>الأول</td>
<td>4,667</td>
<td>84,485</td>
<td>65,117</td>
<td>الأول</td>
<td>57,882</td>
<td>78,588</td>
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<tr>
<td>الثاني</td>
<td>7,371</td>
<td>84,485</td>
<td>65,117</td>
<td>الثاني</td>
<td>39,875</td>
<td>85</td>
<td></td>
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</tr>
<tr>
<td>الثالثة</td>
<td>2,681</td>
<td>57,882</td>
<td>78,588</td>
<td>الثالثة</td>
<td>78,588</td>
<td>39,875</td>
<td></td>
</tr>
</tbody>
</table>

تانيا - تفسير النتائج:

من خلال نتائج البحث (في جدول رقم 1) نجد أن طلبة الصف الأول في قسم الفنون الكهربائية - فرع القوى الكهربائية بالمعهد التقني في الناصرية قد استفادوا من المعلومات الإضافية والتوثيقية التي حصلوا عليها نتيجة استخدامهم لتكنيكلاً المعلومات متمثلة بشبكة الإنترنت كأحد قنوات التعلم عن بعد في عملية التدريس لغاية التسليط الكهربائية النظرية وذلك من خلال تنمية اتجاهاتهم العلمية بصورة أكثر إيجابية عما كانت عليه قبل استخدامهم لها نتيجة لحصولهم على هذه المعلومات الإضافية والتوضيحية.

وقد تشير إلى أنه بإمكان استخدام بعض طرق تكنولوجيا المعلومات ومنها شبكة الإنترنت لتطوير طرق التدريس وأمامكانها أن تصبح ذات أهمية كبيرة وفاعلية في العملية التعليمية فيما لو أحسن استخدامها بالشكل الصحيح ووفق الحاجة الفعلية لها في المواقف التعليمية التي تتطلب ذلك الاستخدام.

وقد بدأت هذه الهمة توضح نتيجة إجراء البحوث التطبيقية في هذا المجال والحصول على نتائج إيجابية لهذه البحوث في مختلف المتغيرات المتعلقة بالعلمية التعليمية والتي قد يجلبها مستقبلاً من الأمور الملموسة بها في العملية التعليمية. وذلك نقل على البحث في ظلية كمنها على الرغم من خلال معهف قوة تأثيرها في المتغيرات التابعة ذات العلاقة بالعملية التعليمية.
ان شبكة الانترنت عبارة عن وسيلة تعليمية تقنية حديثة تحوي على عدد من الوسائل التعليمية في وسط واحدة تحوي على معلومات كثيرة ومنوعة وحديثة يمكن الحصول عليها واستخدامها في وقت قصير جداً وبصورة سريعة وميسرة.

لقد حصل الطلبة في المجموعتين التجريبيتين على فرصة للحصول على المعلومات الاصفية والوضوحية عن المادة المادعة العلمية التي يتم دراستها في المحاضرة الاعتيادية وفرهنهم تكنولوجيا المعلومات ممثلة بشبكة الانترنت خارج وقت المحاضرة الاعتيادية المحدد لمتوفر لدى الطلبة في المجموعة المقابلة. وهذا ساعدهم في فتح أفاق جديدة ووسعة لهم للاستفادة من المعلومات العلمية الحديثة وبالتالي تنمية اتجاهاتهم العلمية.

حيث سعت شبكة الانترنت أسلوباً مشوقاً لتوفير الطلبة جعلهم يتلهمون لاستخدامها والاستفادة من مميزاتها لتحسين استيعابهم للمادة الدراسية نتيجة للاسلوب المشوقة التي يتم خلالها الحصول على المعلومات والاستفادة منها لغرض التعليم وهذا ساعد على تنمية اتجاهاتهم العلمية.

ثالثاً - الاستنتاجات:

من خلال نتائج البحث (في جدول رقم 1) ننوط إلى الاستنتاجات الآتية:

1 - أمكانية استخدام تكنولوجيا المعلومات (ممثلة بشبكة الانترنت) كأحد تقنيات التعليم عن بعد في عملية التدريس لغرض تزويد الطلبة بمعلومات إضافية وتوضيحية عن المادة العلمية التي يدرسونها في المحاضرة الاعتيادية.

2 - أن استخدام تكنولوجيا المعلومات (ممثلة بشبكة الانترنت) كأحد تقنيات التعليم عن بعد في عملية التدريس قد أثر إيجابياً في تجربة الطلاب العلمية عند الطلبة.

3 - أن استخدام تكنولوجيا المعلومات (ممثلة بشبكة الانترنت) كأحد تقنيات التعليم عن بعد بعد الانتهاء من المحاضر الاعتيادية كان تأثيرها أكثر إيجابياً في تنمية الاتجاهات العلمية عند الطلبة مما هو عليه عند استخدامها قبلها.
4 - أمكنية تطوير وتحسين طرق التدريس في المؤسسات الجامعية من خلال استخدام تكنولوجيا المعلومات (مثل شبكة الإنترنت) كأحد تقنيات التعلم عن بعد في العملية التعليمية.

رابعاً - التوصيات:

من خلال النتائج البحث يوصي بالتوصيات الآتية:

1 - العمل على استخدام تكنولوجيا المعلومات (مثل شبكة الإنترنت) كأحد تقنيات التعلم عن بعد في العملية التعليمية لتزويد الطلبة بمعلومات إضافية وتوضيحية عن المادة العلمية التي يدرسونها في المحاضرة الاعتيادية.

2 - العمل على تنمية الاتجاهات العلمية الإيجابية عند الطلبة باستخدام تكنولوجيا المعلومات بمختلف طرقها في عملية التدريس.

3 - قيام المؤسسات الجامعية ومنها هيئات التعليم التقني بإجراء البحوث التطبيقية للتعرف أهمية تكنولوجيا المعلومات والأساليب المناسبة لاستخدامها في العملية التعليمية.

4 - ضرورة الاستفادة من نتائج البحوث التربوية والتطبيقية في هذا المجال وادخالها ميدان التطبيق الفعلي في المؤسسات الجامعية لتطويرها والсуاد من تكنولوجيا المعلومات (مثل شبكة الإنترنت) كأحد تقنيات التعلم عن بعد في هذا المجال.

خامساً - المقترحات:

تواصل مع هذا البحث واستكمالاً لنتائجه وتعزيزاً للفائدة يقترح الباحثون أجراء بحوث تجريبية وتطبيقية أخرى في هذ المجل، ومنها على سبيل المثال ما يأتي:

1 - دراسة مقارنة لفاعلية كل من الحاسوب والإنترنت في تنمية الاتجاهات العلمية للطلبة.

2 - أهمية استخدام تكنولوجيا المعلومات في تطور التعليم الجامعي.

3 - دراسة مقارنة لفاعلية بعض تطبيقات تكنولوجيا المعلومات في تحصيل الطلبة واحتفاظهم بالمعلومات.
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تاریخ اسلامی " تدوین و طریق مطالعه"
اکثر عرفان الله

تاریخ کا لغی معنی: ارخ کتاب پر ارکلہ تہوارخ، تہوارخ تونیکھی اور وقائی ارخم کتاب ای بینت وقت کتابہ-1

"مین نے اس کی کتابت کا وقت بیان کیا یہ".

اصطلاحی تعریف:

یہ فن حیث فیذ عقیدہ الزمان، میٹالیات میں مشغول بونامکروہ

"یہ اسی فیذ جس میں زمانہ عالم کی واقعات سے متین اور مؤقت بحث بوتی۔"

تاریخ کا موضوع: انسان اور زمان أور ان دونوں کے

کو زمانہ مین موجوداو عارضہ کی دائرہ مین بو۔3

تاریخ کا حکم:

تاریخ کا حکم واجبہی بی جیسے: سیرت نبوی کو بیان کرنا

جبہی بی جیسے: خلافات اور وابستہ مین مبتلا بونا، مثالا اسرائیلیات میں مشغول بونامکروہ

جبہی بی جیسے: چہوئی باتوں مین مشغول بونا جس کا ترک اولی بوت

مثلا مشاہرات صحابہ مین بحث کرنا، اور مباح بیہ، یعنی جس کا نہ ہی نیوی

فالہ بیو اور نہ اخیری جیسے: قصائید اور اشعار کی تاریخ۔4

تاریخ قبل الإسلام:

عمر شعبی بیان کرتی بین کہ جب بنو آدم زیادہ بوگی اور زمین مین بھیل گی

تو انبون نی آدم کے دونا مین اے سے تاریخ لکھی ہیں ہیک تک کہ تاریخ طو

تک لکھی گئی پہل نار ابرائیم نے، پہل زمانہ بوسفک پہل خروج موسی تک،

پہل داؤد کے زمانہ نے پہل سلیمان نے پہل اور پہل عیسی کے زمانے تک تاریخ

لکھی گئی۔ محمد بین صالح اور شعیب یہ بھی کہتے ہیں کہ بنو اسمااعیل نہ ابرائیم سے تاریخ لکھی، پہل ابرائیم اور اسمااعیل کے بیت المقدس کی بنیاد سے

تاریخ لکھی، پہل کعب بن لوئی کی موت سے، پہل واقعہ فیل سے اور پہل نبی

کریم کی بجرت سے تاریخ لکھی۔5 هجری کینئنر کا اجراء:

امام سیوطی کی کتاب تدریب الراوی مین اب طبر الیزاء سے روایت بیکے

کریم نے بجری تاریخ کی ابتداء کی۔ کہ جب نجرا کے عیسائیوں کو خط لکھ

برہنہ تو علی رضی الله عنہ کو حکم دیا کہ اس کو هجرہ کے پانچویں تاریخ کو

لکھنا گا پی۔6
بعض كتبه بين كرسى اور حكومتي سطح پر بجری کیئنثر کی ابتداء
عمر رضی الله عنہ کے دور میں بونی اور اس بارے میں مختلف قسم کی روایا
ہیں۔ ایک روایت میں ہے کہ ابو موسی اشعری رضی الله عنہ کی طرف سے
عمر رضی الله عنہ کو ایک خط آپ کے جنس میں لکھا تھا تاہم آپ کی طرف سے بہیں
خط آپ ہی لیکن اس کا کچھ پتھ نہیں کہ یہ کون سے مہینہ یا سال ہا بھی
مشورہ سے بھی نیوی کا اجراء کیا گیا۔ اور ایک روایت ہے کہ عمر رضی
اللہ عنہ کے پاس ایک چیک آپ کے جنس بر شعبان لکھا گیا تھا تو عمر رضی
نے فرمایا کہ اس کا کیا پتا چلتا ہے کہ یہ کون سے سال کا شعبان ہے؟ تو اس کے
بارے میں بریمان سمیت باقی صحابہ سے بھی مشورہ کیا گیا تو علی رضی الله
عنہ نے هجرة کا مشورہ دیا جس کو پسند کیا گیا اور وہ اس سے جوگردی کیئنثر کی
ابتدا بونی۔

تاريخی معلومات کے مرتب کی جاتی بین:
تاريخی معلومات خواہ ان کا تعلق کسی بھی زمانے سے بو ان کے مرتب کرنے کا
ایک طریقہ۔ کار بونا ہے جو متعدد مرحلے کے گزر کر بعد کی نسلوں تک پھپچتی
ہے۔

واجعہ رونما بونا اور عینی شہادت:
جہب کونی واقعہ رونما بونا ہے تو اس کے چھ عینی شابدین بونی پری۔ پہی
لگا اس کی تفصیلات کو نوٹ کر جاتے ہیں اور پھر اس کے ذکر کر جاتے پری۔
کسی واقعہ کو عینی شابدین میسیر کے بوسکے تو اس کے احوال عموماً محفوظ
ہوتے ہیں。

معلومات کو یکجا کرنا:
اگر کسی واقعہ کے عینی شابدین زیادہ بو تو اس سے معلومات کو اکثرہ یا
جاتا ہے اور ان کے بیانات کو قلم بند کی وہ جاتا ہے۔

تیسرا مرحلہ: تصویر کا مکمل کرنا:
جہب ممکنہ حد تک معلومات کو جمع کیا جاتا ہے تو پھر ان کی مدد سے واقع
کی تصویر کو مکمل کیا جاتا ہے، کرتی ہے سے کرتی ہے ملنے جاتی ہے اور کوشش ہے
کی جاتی ہے کہ واقعہ کی اصل صورت سامنا آجاتے ہیں۔

چؤتھ مراحلہ: واقعات کی تسلسل کی تاریخ کی شکل میں مرتب کرنا:
واقعات کی ترتیب کے بعد اگلے مرحلے میں ان واقعات کی تسلسل اور ان کے
بامی تعلق کو بین کیا جاتا ہے۔ عام طور پر یہ کام مورخین کا بونا ہے اور اس کے
اگے وہ کتابیں لکھتے ہیں اور اسی طرح سے تاریخ ایک مسلسل عمل کی شکل
میں نظر آتی ہے، مسئلہ کے ذاتی رجحانات اور تعصب‌سے اس میں اپنا کردار ادا کریں ہیں۔

تاریخی معلومات کیسے مسح جواب دیں؟

غیر ارادے طور پر تاریخی معلومات کا مسح بونیاںجو واقعات ابسو بوجن کی پزازوں افراد نے دیکھا ہو، وہ تھیسک تھیک اگیلی نسل کے ایک ایک توفیق ہو تا کہ صحیح تصویر اگیلی نسل کے نئے منٹ کے ہو سے اپنی صورت میں طابعی بات کے کچھ بیہوئے ایک دو گوہاں فوت ہو جاتے ہیں۔

جان بوجہ کر تاریخی معلومات کا مسح کرنا: بعض اوقات لائروبی اور کم علمی کی وجہ سے تاریخی معلومات اگیلی نسل کے صحیح منٹ کے نئے بوہو اگیلی نسل کے روبی مفادات کی خاطر جان بوجہ کر تاریخ کو مسخ کریں گے کوہش کرے۔

پہلی سیاسی جدوجہد مین ایک دورے کے خلاف تاریخ کو بھی بطور بہتر استعمال کرتے ہیں اور مسئلہ کے مسخ کریں مین کوئی حرج محسوس نہیں کرتے۔

طرح کہ پہلی اور دوسرے صدی امریکی سیاسی پارٹیاں بہت تحقیق کیریاں ایک نے ذاتی تحقیقات کے بناء پر یونیئری اور سچی روایات کو جمع کیا کیا اس حالے سے مقدمہ تاریخ ابن خلدون (732-808) نے تاریخ مین غلطیوں کے کئی اسباب ذکر کئے ہیں۔

پھر سب اختلاف آراء و نقطہ بانے نظر ہے۔

کوئی بات سننے سے تو اس کی تحقیق اور مین غور وفکر کرنا ہے پہن تک کہ جانتے کہ یہ خیبر سچی ہے یا جھوٹی ہے جب ذین کسی رائے یا نقطہ نظر مین ذوقا بیٹا ہے تو ہو فورا اس خبر کو مان لینا ہے جو اس کی رائے یا نقطہ نظر سے موافقت کریں گے اس کی بھی اس کی صورت پر محسبت کی پھی بندھی باتوں پر جو اسے تحقیق وتفقید سے روک دیتی ہے۔ اب وہ جھوٹی خبر کو قبول کرکے غلطی کا شکار بہت جواببے ہے اور اسے اگیلے نقل کریں گے۔

دوسری سب نقل کریں گے وہ تم پر ہیرویس پر کہ کس کے خیال مین وہ قابل بین اور غلط بیان اس کے چیلیکی ہے کہ سیاسی شان نہیں، اس وجو سے ہے جرح وتعذیب کے اصولہ پر ان کے احوال کی جانی پڑتال نہیں کرتا۔

تیرا سب مقصد سے لائروبی اس کہ بہت سے اپنے مفادات کی بوئی یا سنسے بونی خبروں کے اغراض ومقاصد سے اگہ نہیں بھوئے تو۔ وہ محض اپنے اگھا کے ابتدال کی بندی پر روایت کردنے کی بیناس پر، اس نے ہو غلطی کا شکار بہت بیں۔
چوہا سبب ہے کہ خبرون کو دیگر واقعات سے تطابق نہیں دی جاتی کہ اس خبر اور دیگر واقعات میں مطابقت پیدا بھی جاتی ہے۔ اس تطابق سے عدم واقفیت کے باعث جعلی اور من گھڑت باتوں کو فروغ حاصل وجوہاتی ہے اور صحیح وغیر کی تمیز نہیں رہتی۔ نے والا خبر کو جون کا تون نقل کر دینے کے حالاتکہ جعلی بونے کے سب سہی سے بہت دور بہتی ہے۔

پاڑواں سبہ مزعز اور بہت لوگوں کی خوشامد کرکے انہوں نے خوش کرنا اور ان کا قرب حاصل کرنا کے لئے جوہویج خبرین بنانے جاتی ہے اور پھر اسے پہچانے دیاجاتا ہے۔

چیہا سبہ اس معاشرہ کے احوال سے ناواقفیت ہے (جس کی وہ خبر بو) کیونکہ،

بردور کا ایک مخصوص ماحول بھیتا کے اور اس دور کے بے قرار کے لئے اس دور کی خصوصیات سے مطابقت ضروری بہتی ہے اگر خبر سنے والا ماحول کے تقاضوں اور واقعات کی مخصوص خصوصیات سے باخبر بو تو اس خبر کی تحقیق مین پہت ملدی گی۔

تاریخی معلومات کسے منتقل ہوتی ہیں:

ایہ صحابہ بلکہ بر دور کے متعلق معلومات عموم دو شکل کے پرہیز کی ہیں۔ ان میں ایک شکل متعلق دوسرے ہوئے اور دوسری کے بھی، تاریخ میں کسی بھی قسم کی معلومات خواہ شہبیدی بو بھیگر مذبوبی، گو دوسرے لوگوں کو منتقل کرنا کے بینادی طور پر بیہاں طریقے استعمال ہوتے ہیں۔ ماحول سے حاصل کرے مین کسی قسم کا رہد وبدل ممکن نہیں ہوئی جب کہ انفرادی روایتوں میں جان بوجھ کر حقائق کو مسند کی جاسکتی ہے صحابے کی تاریخ کے بھی زور واقع تواصیر کے ساتھی منتقل بہت مثل الہاء راشدین کون کون ہے؟ اب بکر رضی الله عنا کے دور میں مرتدین سے جنگیں بوئی اور عمر رضی اللہ عما کے دور میں روایات کی بھیک بھیک جو لوگوں کی بھیک بھیک۔ عثمان رضی اللہ عما بھیک بھیک کے بھیک بھیک۔ عثمان رضی اللہ عما کے دور میں خانہ جنگیں بوئی۔ اب ابھی واقعات کے ذروے روایات ان احادیث کے ذریعے ملئی بہتی اور ان میں سچی جهتی بر قد کے روایات ملئی پہنے۔

تاریخی روایات کی جانئے پڑتی لا کیسے کی جانئے:

علام تاریخ کے محققین نے اس مقصد کے لئے ایک چارہ تحقیق کی طرح کی جانئے بہتی لازم لیزا اور تاریخی تحقیق کی طرح کی جانئے کی تحقیق کی طرح کی جانئے۔

پڑتی لا کہ اس کے لئے ہیری اس تحقیق کی جانئے کے ہیریں ہیں۔

1: ماحذ کی تحقیق 2: داخلی تحقیق 3: خارجی تحقیق 4: تاریخی وجوہات کا تجزیہ۔
مآخذ کی تحقیق:

اس تحقیق میں یہ دیکھا جاتا ہے کہ تاریخی معلومات کا مآخذ کیا ہے اور ہو کس درجے میں قابل اعتماد ہے؟ معلومات مضبوط سنی سنائی بنی یا ان کے لئے

کونی ثبوت موجود ہے؟ کیا ان معلومات کا مآخذ ایک ہے شخص یا ما افراد بین؟ اگر متعدد افراد بین تو ان کے درمیان کونی بابمی تعلق تو نہیں؟ کیا

معلومات کے لئے یہ مآخذ متعصب تھے نہیں؟ اگر بہت سے مآخذ سے متفرق

ایک بی پات سامنے آریہ ہے تو میں لیا جاتا ہے کہ یہ واپس پہنا ہے۔ جیسے

شہادت عثمان رضی اللہ عیں سنا، کربلا کا واقعہ جو کہ بہ شمار مآخذ

ثابت ہے۔ اگر مختلف افراد اس واقعے کے بارے میں متضاد باتیں بیش کہ

بوتو پہر دیکھیا جاتا ہے کہ کس کی پات درست ہے۔ اس ترجیح کے اصول یہ ہوں:

1. اگر ایک شخص واقعے کا عینی شاہد ہے اور دوسرے نے کسی سے سن کر بات بیان ہے تو عینی شاہد کی بات کو ترجیح حاصل ہوگی۔

2. اگر ایک شخص واقعے کے متعلق کسی قسم کا تعلق رکھتا ہے اور دوسرے

ئن کرکہا ہے تو غیر متعصب گو ترجیح حاصل ہوگی۔

3. اگر ایک شخص کی بات کی تصدیق آزاد ذرائع سے بالی بوٹی ہے تو اس

کی بات کو زیادہ ابھی بITALIC

داخلي تحقیق:

جو تاریخی روایت مل رہی ہے اس کے متن کا تجزیہ کر کے دیکھا جاتا ہے کہ وہ

کس حد تک قابل اعتماد ہے۔ چونکہ یہ تحقیق متن کے اندرونی تجزیہ سے متعلق

بوتو الہ ہے اس وجوہ سے اس داخلي تحقیق کے بین اس کا طریقہ کھچھ یوں بوتا

ہے۔

1. معلومات پر مبنی جو مسودہ پے کیا سے کے اندر کوئی اندرونی تضاد ہے؟

2. جو شخص روپورٹ دے رہا ہے یا یہ عینی شاہد ہے اس نے کسی سے

سند کر یہ معلومات لکھیں بہ؟ اگر یہ زبانی روایت کررہا ہے تو کیا اس کی

سند مکمل ہے یا نامکمل ہے؟ کیا یہ تمام کے تمام راوی قابل اعتماد ہیں؟

3. اس شخص نے واقعہ کی روپورٹ کہ اور کہ بان کی ہے؟ یکس اس تو

نہیں؟ اور یہ واقعہ کی روپورٹ پچاس سال بعد بیان کررہا یہ جب اس کے

دیگر عینی شاہدین دنیا سے رخصت ہو چکے ہیں؟

4. اس شخص نے وہ روپورٹ کن اشخاص کے سامنے بیان کی ہے؟ کیا یہ ان

پر اثر انداز بہنا چاہتا تھا یا پہر محض معلومات کی متقلی اس کا مقصود

نہا؟

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کس شخص نه مرتب کین؟ کبھی وہ کسی متخصص گروہ سے تعلق

4. کیا معلومات اصلی مآخذ سے حاصل کی گیا یا پہر کسی ثانوی مآخذ سے؟

5. کیا معلومات اپنی اصلی حالت میں بیا اس میں کوئی تبدیلی کی گئی ہے؟

6. کیا لوگ طولی عرصے سے اس کو مانتے آئے ہیں یا بیان اس کا اپنی ہی گھڑ ہے؟

تاریخی اسباب و علل کی تحقیق:

تاریخی معلومات اور رحلات سے مطابقت رکھتی ہیں یا نہیں؟ زیر تحقیق واقع کے اسباب اور وجوہات تلاش کی جاتی ہیں، پہر ان کی نتائج پر غور کیا جاتا ہے اگر کوئی واقع غیر منتوقہ بو تواس سے متعلق زیادہ سے زیادہ معلومات حاصل کی جاتی ہیں تاکہ کسی نتیجہ پر پہنچ جاسکے۔

ابن خلدون نے بھی اس معیار کو بیان کیا ہے: خبرون کی تحقیق معاشرے کی طبیعت کو سمجھنے پر مفید کا، اس طریقہ کا رنکی اچھی اور قابل اعتماد ہے۔ اس سے سچی اور جوہوتی خبرون مین امتیاز بھی شکا ہے۔ اگر چہ خبرون کی سپاہی روابطی کی دیانہ داری سے بھی معلومات کے لیے اس دیانہ داری کی حیثیت ثانوی بھی جب کہ معاشرے کے طبیعی حالات سے تحقیق کا دوچار مقدم پے۔ راکروکی دیانہ داری کی تحقیق تو تب کی جانے گی جب خبر مین سپاہی کا امکان بھی لیکن جب خبر بی ناممکن اور بعد از عقل بوتو پہر جرح وتعدل سے کیا فائدہ؟ بعض عقل کے لئے لوگون نے خبر کی سلسلے میں ایک طریقہ یہ نکالا ہے کہ اناظ کا ناممکن معنا لئے لئے جانین یا پہر عقل سے خارج بوکر اس واقعہ کی تاواش گھر لئے جانے شرعي
اخبار وآثار میں راوحین کی جانب پرتنال ضروری بے تاک کم از کم ان کی سگئی
کا غالب گمان تو بی 14۔

پہلی صدی بجری مین علم تاریخ:
جوہر کے صاحبہ بہت بجری پر مشتمل بے اس وجوہ سے بونا تو ہے جابیے
تھا کہ اس دور مین پوئی کوئی مورخ پیدا بونا تھا اس دور کے متعلق لکھتا ہوئے
یہ کہ اس دور مین کاگذ کمیایہ تھا اور کتابیں لکھ کر ہوئے پیلیاں کا روائے نہ ہتھا۔ قرآن
مکی بیہ و احد کتاب تھی جو لکھی بونی صورت مین موجود تھی۔ احادیث کو
بعض لوگوں نے اپنے رجسٹری مین لکھ رکھا تھی اس کی حیثیت ذاتی ذائری
کی تھی۔ تاریخ کا ذوق رکھنے والے مسلمانوں کی تاریخ تور توجہ احادیث بر موقف
تھا اور اس وقت پہلے ایم کام تاریخی وافقات کی پیاد چونکہ اپنی ابھی تازہ تھی اس
لنے اس کے لکھیے کی ضرورت محسوس نہیں کی گئی اور احادیث کے ساتھ
ساتھ ان روادات کو بھی بیان کیا جا رہا پہلوئی اس دور مین اپس شخصیات
پیدا بونے نے احادیث اور تاریخ پر غیر معمولی کام ہی۔
ابن شہاب الزبری(124): زبری گی اپس شخصیت بھی جو فن حديث مین ایک
نیمات مقام کا حامل بھی اور ان کی روادات موؤطا امام مالک، صحیح بخاری اور
حیح مسلم جیسے کتابوں مین موجود بین۔ اگر چہ بعض لوگوں نے زبری پر تنقید
کی لیکن امت کے کثر ابل علم نے اس پر اعتماد کیا ہے۔
ابن شہاب زبری سے بعض تاریخ روادات بھی منقول بین سکری مسلمان روادات مین ایک
مسلم بھی بھی کے جنگ جمل، صفین اور تحکیم وغيرہ مین پیش آ
کہ زبری کی پیداشش 58 مین بونے ہے۔ زبری جب ان واقدات کی تفصیل بیان
کرنا قہر نو سند بیان کرنے گی کہ بہانہ بر اراست اس واقعہ گی تفصیل بیان
کرنے لگتے ہیں۔ اس شخص کا نام حقیقی ہیں جس اس سے نہ رواہی سند
رکھنے چونکہ زبری ان واقدات کے گیسی شیخ کے نام بھی بیان اس لئے نہ رہے ہیں کیا
جوہر کا، جس شخص سے اس نے پہ واقعہ سنا وہ قابل اعتماد تھا یا نہیں؟

دوسرا صدی بجری مین علم تاریخ:
دوسرا صدی بجری مین مسلمانوں کو ماوره النہر کے علاقے مین کچھ چینی
باشندے لائی کے دوران بانہ آنے جو کاغذ بنانے کے مابر تھے اور ان سے
نے یہ فن سیکھا۔ دوسرا صدی بجری کا نصف آخر اور تبیسی صدی
کے نصف اول مین تصنیف وتالیف کاکم برے پیمانہ پر کیا جانے لگاجن مین
تاریخ کتہ بھی شامل ہوئی۔اس دور مین جن مؤرخین نے جو گو کتابیں لکھئی، وہ
پہ بین:
محمد بن عمر الوافدي (130-207) أُسّس جرح وتعديل نه تحرير ديا

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1 مصادر مؤرخين:

1) كتب الأنساب: كان الإثنان هو الدور الرئيسي في كتاب الأنساب، وهو الذي يحتوي على معلومات حول النسب.

2) كتاب الأنساب: كان الكتاب الرئيسي في النسب، وهو الذي يحتوي على معلومات حول النسب.

3) كتاب الأنساب: كان الكتاب الرئيسي في النسب، وهو الذي يحتوي على معلومات حول النسب.

4) كتاب الأنساب: كان الكتاب الرئيسي في النسب، وهو الذي يحتوي على معلومات حول النسب.

5) كتاب الأنساب: كان الكتاب الرئيسي في النسب، وهو الذي يحتوي على معلومات حول النسب.

6) كتاب الأنساب: كان الكتاب الرئيسي في النسب، وهو الذي يحتوي على معلومات حول النسب.

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حیثیت حاصل ہے۔ ان کتابوں کا مقصدوں بے ک مختلف شخصیات کے نسب نامے
اور کارائی بیان کے جانیں۔
علم الاسناس پر سب سے مشہور کتاب البلاذری (م 279) کی انساب الاشراف ہے۔
کہیں کو تو ہے انساب کی کتاب ہے لیکن تاریخی معلومات بہت بہت موجود بنی۔

2: کتب طبقات:

طبقات کی کتابوں میں بھی مشہور شخصیات کے حالات زندگی بوتے بین جس کے
ذیل میں انساں کے دور کی تاریخ بیان بوتی ہے لیکن ان کتابوں کی تریبہ
طقب در طبقہ بوتی ہے جب کے اسی کے ذریعے سالون میں
ایمان لانے والے صاحب ایک طبقہ میں شامل بوتے بین، بجرت کے بعد اور غزوه
سے پہلے ایمان لانے والے ایک طبقہ میں وہ متعلقہ میں اور مالک صرف اس میں مشہور کتاب
( 230) کی الاطبقات الکبری ہے۔ اس سد اگر خود تو بڑے قابل
اعتماد میور بوتی محمد بن عمر الواقدی کے شاگرد بین جنہوں خبراء خانے
نبیتی پر ضعیف قرار دیا ہے۔ اس وہ سے ایک میں سے روایات جو اوہ اکہدی کے
تذکرہ سے متوقع بین، قابل اعتماد پہیں مانے جانی۔
کتاب مغازی:

ان کتب میں جنگ کے حالات بیان کے جانے بین اس قسم کے تاریخ کے
مشہور عالم محمد بن عمر الواقدی بین جنہوں نے جنگ کے سے متعلق روایات جمع
کی۔ امام احمد بن حنبل فرمانے کی میں مغازی اور ملاحم کی کتابین بے اصل بین۔
کتاب تاریخ:

اس اسلوب کی کتاب میں تاریخی ترتیب سے روایات درج کی ہے جانے بین اس سلسلہ
میں سب سے مشہور کتاب محمد بن جریہ الطری (م 310) کی تاریخ الامام والملک
پہہ۔

کیا تیسری صدی بجری کی لکھی بوئی کتاب تاریخ مستند ہیں؟

کا جواب بل کی میں بتی ہے اور نہیں میں بتی کیونکہ ان کتاب تاریخ میں
رواوات سے ہی یہ اور مستند ہیں۔ تیسری صدی بجری میں جو کتاب لکھنے
ان میں زیادہ زور اس بات پر تھا کہ روایات کو اکثر کیا جانے ہے اور انہوں نے
ساتھیان کردارا جاتے تھا مستقبل کا کوئی مورخ اس سند کی مدد سے تحقیق
کرسکے کہ روابات مستند ہے یا نہیں اور اگر ہے تو کس درجے میں ہے
تاریخ ایک طول موضوع ہے اور اس پر جنہاں لکھا جا ہے لیکن جاسکتا ہی لیکن اس
مختصر مقالہ میں اتنی گنجانش نہیں ہے کہ اس میں تاریخ کے حوالے سے بسط
والفصل کے ساتھ لکھا جانے لیکن یہ ہی وہ طبیعی حسب استطاعت کوشش کی جگہ ہے
کہ تاریخ کے حوالے سے ضروری باتون کا ذکر کیا جانے۔

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13. إضافةً.
14. إضافةً.
15. إضافةً.
16. إضافةً.
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Codification of Ilm al-Kalam

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ABSTRACT.
Ilm al-kalam is one of the Islamic sciences which deal with the study of Islamic doctrines and their intellectual and logical or rational proof. If we look into the Urdu literature of Ilm al-kalam, we can see such like topic: scholastic theology issues, methodologies of scholastic theologians (Mutakalimeen) and various schools of ilm al-kalam etc on the top of the list. But the compilation and different developmental stages of this subject rarely has been discussed. The basic purpose of this article is to discuss comprehensively the stages of ilm al-kalam and to find out the distinct characteristics of each stage. Similarly to search out who is the first compiler of this field of knowledge and which books possibly called the first written books of ilm al-kalam. A new view has been presented after the comparison of classical and modern views of researchers.

Keywords: Ilm al-kalam, Islamic sciences, Islamic doctrines,
مقدمہ

اگر عالمِ کلاؤں کی تدوین کی تحقیقات کو متعارف کرنے کی کوشش کی جانے والی تحقیقات کو متعارف کرنے کی کوشش کی گئی ہے۔

علمِ کلاؤں کی تدوین کو اپنے پاس میں لیا جا سکتا ہے۔ میں علوم کی تدوین کے بارے میں متعارف کرنے کی کوشش کی گئی ہے۔

علمِ کلاؤں کے بارے میں متعارف کرنے کے لیے بہت سے متعارف کرنے کی کوشش کی گئی ہے۔

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علمِ کلاؤں کی تدوین کے بارے میں متعارف کرنے کی کوشش کی گئی ہے۔
کردار

پی چار کرنے کے بعد خوارج کی حضرت علی ﭼ سے لو اس وقت تاہم فرض ﭼ پر کوئی طرح خاتمہ نہ ہوگے اور وسعت عقائد و نظریات کا
ب نظر رہے ہوئے۔

بو نظریات اس وقت مورخ جلد رہے اس میں سب سے مشہور ہے تھے:

1- مارکب کبھی کبھی حبا ببا سے یا سالنہ کی دیتی؟
2- تھی میں کبھی بناء سب
3- مامت اور خلافت کا مسلم

4- انکام مسائل میں صاحب کرام اور جامعۂہ کے اقوال اور عقائد مورخین اور خوارج کے مسائل حضرت امام علیہ السلام کا باقاعدہ مشہور ہے۔
5- صاحب کرام اور جامعۂہ کا ان مسائل میں کلام اور مناظرہ علم کلام کی نظم پر پہرا راست پڑنے کو بھی۔

خیالات میں یہ سب میں علم کلام کا میں اور نظریات میں برہنہ تھی۔

عبوری علم کلام

اصل منہ صاحب کرام بہتر اسلام کے جنہ جنگ کی فتح پر ہم کا رمز و دیوا اس کے عقائد، نظریات اور
مباحث میں علیہ مشارکت کی ہے بہت باہر چند کتابوں سے تحقیق کی ہے۔ وہ اور صاحب کرام سے حقیقہ تحقق کو سانہ رکھ کر باقاعدہ
طور پر ایک علمی نہیں یہ گرا پھر اس وقت اس کے نام علم کلام ہے تلمیقد اور معیار علم کی
سدوار کر چکاں ہے۔ جدید و دوسری صدی کی ابتدائے سے شروع ہوتا ہے۔ تو ان مطالعات کے ساتھ، حضرت علیہ السلام کا
یہ سب دوسری صدی کی ابتدائے سے علم دکھا تیریکی اور ان کے شروط میں، بہتر چند کتابوں سے تحقیق
کی باقاعدہ تعمیر کے خواہ کے سب میں علم کلام ہے میں علم کلام کے بنیادی اور حاصل تحقیق کی کتابوں میں برہنہ تھی۔

این جنہوں نے کلام کو خالق کی کتابوں یا قانون یا اسلام کے عقائد، نظریات اور
مباحث کی مشارکت کی ہے بہت باہر چند کتابوں سے تحقیق کی ہے۔ وہ اور صاحب کرام سے حقیقہ تحقق کو سانہ رکھ کر باقاعدہ
طور پر ایک علمی نہیں یہ گرا پھر اس وقت اس کے نام علم کلام ہے تلمیقد اور معیار علم کی

1- کتاب الفقہ الکبیر
2- کتاب الفقہ الابتداء
3- کتاب الفقہ الحنفی
4- رسالہ ایل خان اہل
5- الوصی

این طرح کتابوں کا ذکر کیا جاگا اس ضمن میں ہے:

1- کتاب در جمایہ ولاء علیہ اسلامیہ
اِنام کا مک" 12 نے میں ایپن شاگرد امام علیٰ احمد کو 13 کے لئے ایک رسالہ کا کیا ہے جس میں قدرتی پہ رو تھا 14

علم کا مک اور م儒 طیارے کے ساتھ ان کا متعلقہ میدان

پر ہے 3 کیونکہ علم کا ان کی تبدیل کیا ہے۔ 15 دیل میں مصونہ ہے اور کیا کہ اس کی اس کا تبدیل کیا ہے۔

اس میں ایک کتاب کے متعلق بانوں تبادلہ کے کتاب کے موضوعات کی قسم

کہا کہ میں تبدیل کا پہلا ہے جو مختلف جو مختلف جو مختلف جو مختلف۔ 16

و دیگرہ کرتا کہ جو مختلف جو مختلف جو مختلف جو مختلف۔

2 علم کا مک کے متعلق طرز تبدیل شامل ہے جو مختلف جو مختلف جو مختلف جو مختلف۔

3 علم کا مک کے متعلق طرز تبدیل شامل ہے جو مختلف جو مختلف جو مختلف۔

4 علم کا مک کے متعلق طرز تبدیل شامل ہے جو مختلف جو مختلف جو مختلف۔

5 علم کا مک کے متعلق طرز تبدیل شامل ہے جو مختلف جو مختلف جو مختلف۔

6 علم کا مک کے متعلق طرز تبدیل شامل ہے جو مختلف جو مختلف جو مختلف۔

7 علم کا مک کے متعلق طرز تبدیل شامل ہے جو مختلف جو مختلف جو مختلف۔

8 علم کا مک کے متعلق طرز تبدیل شامل ہے جو مختلف جو مختلف جو مختلف۔

9 علم کا مک کے متعلق طرز تبدیل شامل ہے جو مختلف جو مختلف جو مختلف۔

10 علم کا مک کے متعلق طرز تبدیل شامل ہے جو مختلف جو مختلف جو مختلف۔

11 علم کا مک کے متعلق طرز تبدیل شامل ہے جو مختلف جو مختلف جو مختلف۔

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13 علم کا مک کے متعلق طرز تبدیل شامل ہے جو مختلف جو مختلف جو مختلف۔

14 علم کا مک کے متعلق طرز تبدیل شامل ہے جو مختلف جو مختلف جو مختلف۔

15 علم کا مک کے متعلق طرز تبدیل شامل ہے جو مختلف جو مختلف جو مختلف۔

16 علم کا مک کے متعلق طرز تبدیل شامل ہے جو مختلف جو مختلف جو مختلف۔

17 علم کا مک کے متعلق طرز تبدیل شامل ہے جو مختلف جو مختلف جو مختلف۔

18 علم کا مک کے متعلق طرز تبدیل شامل ہے جو مختلف جو مختلف جو مختلف۔

19 علم کا مک کے متعلق طرز تبدیل شامل ہے جو مختلف جو مختلف جو مختلف۔

20 علم کا مک کے متعلق طرز تبدیل شامل ہے جو مختلف جو مختلف جو مختلف۔

21 علم کا مک کے متعلق طرز تبدیل شامل ہے جو مختلف جو مختلف جو مختلف۔

22 علم کا مک کے متعلق طرز تبدیل شامل ہے جو مختلف جو مختلف جو مختلف۔

23 علم کا مک کے متعلق طرز تبدیل شامل ہے جو مختلف جو مختلف جو مختلف۔

24 علم کا مک کے متعلق طرز تبدیل شامل ہے جو مختلف جو مختلف جو مختلف۔

25 علم کا مک کے متعلق طرز تبدیل شامل ہے جو مختلف جو مختلف جو مختلف۔

26 علم کا مک کے متعلق طرز تبدیل شامل ہے جو مختلف جو مختلف جو مختلف۔

27 علم کا مک کے متعلق طرز تبدیل شامل ہے جو مختلف جو مختلف جو مختلف۔

28 علم کا مک کے متعلق طرز تبدیل شامل ہے جو مختلف جو مختلف جو مختلف۔

29 علم کا مک کے متعلق طرز تبدیل شامل ہے جو مختلف جو مختلف جو مختلف۔

30 علم کا مک کے متعلق طرز تبدیل شامل ہے جو مختلف جو مختلف جو مختلف۔

31 علم کا مک کے متعلق طرز تبدیل شامل ہے جو مختلف جو مختلف جو مختلف۔

32 علم کا مک کے متعلق طرز تبدیل شامل ہے جو مختلف جو مختلف جو مختلف۔

33 علم کا مک کے متعلق طرز تبدیل شامل ہے جو مختلف جو مختلف جو مختلف۔

34 علم کا مک کے متعلق طرز تبدیل شامل ہے جو مختلف جو مختلف جو مختلف۔

35 علم کا مک کے متعلق طرز تبدیل شامل ہے جو مختلف جو مختلف جو مختلف۔
اس مرحلے میں خاصی خاصیات ہے۔

اس دور میں خواص اور تقلیدات کا پہچان بہت سے مختصر ہے۔ پہلے ہیں کہ اس کی کلاس سے نہایت علم کا کام کی تقریم اساتذہ کی۔

اس دور میں مشیر علماء نے علماء عالمیہ یاکوی 23. حکمت خیال 24 کو اسے الحب کے سر خیال میں شاہ کا سجاہت پہنچنا۔

مصوبہ وضوح علم کا

بادشاہ صدر خیبرے سے آئے کہ کے زمانہ کو علم کا کام کا آخری دور کی سخت ہوئی۔ علم کا کام ابہم کجھ چیز کی اس نظر میں ضرورت ہے۔

ایسے دور کی فقیہ کی بیانات اس امکان سے تھے:

١. عالم اسلام کے عقل پر علی بن محمد

٢. مغرب میں نہیں چیڑن گری اور معاشرتی ترقی.

مغرب میں ایسی دور کے اداک لیے سے تندرستی زندگی کی چھوٹی دو جوں دوں سے جب سب سے سب سے کہ اس کا بہترین تجربہ ہے۔ اور معاشرتی طرز دیا جا سکتا ہے جذبہ اور اگر اسے نئی حدیث شروع کی جاتی۔ جب بعد میں نوآبادی نظام کی صورت میں تبدیل ہوئے اس دور میں بحیرہ مسلمان کی خواص اور حکمت بہتر ہوئی جس کا خطرہ رہا۔۔۔۔ بنی امیر نے اس نظریہ اور تحقیقاتی سندہد تم کی خصوصیات کو کسی سماوت کی تعلق کے نظریات کی طرح پہلے ہے۔

سرحد کی خصوصیات میں کچھ یا کچھ اور ایک سے تک گرے پر ہے۔

یہ بات نہیں کہ تین روز چند چیز چاہیے کہ معنی اعتماد نہیں اس کی کئی کئی اساتذہ علم کے اہمین خلاق ہوں۔ خلاق ہوئے اور معاشرتی میں بہت بڑھ کر اور معاشرتی میں بہت بڑھ کر معاشرتی پر معیار ایک کو کہی جاتی۔ تحقیک کا فیصلہ کہی جاتی۔ بہتر ہے اور

بینہ تحقیق علم اسلام اور سیاسی تحقیق 26. قاضی بنصدرالدین شیرازی 27. اور بھی پنیک الاحرف 28 کے ساتھ ہے۔ اس دور میں شیعہ اور سنی 29 نے علم اسلام کو ایک سے اندازہ لینے کے میں زیادہ اور ملت میں نے پہلے پہل سے علم اسلام کے ملت میں نہیں۔ چھیا کہ اس کا اب بائیکی اس کا کیا ہے اور ملت گاہ 30

اس دور کی دوسری اہم تھی۔

اس آواز کی دوسری اہم تھی انہوں نے افلاطون صدی جدید کے ساتھ کی اس کو کچھ کچھ دی۔ پھر اس ایک رنجہ میں قرآن کے اس وضاحت کے قرآن کے ملت میں ہے۔

بھیکر سے آئی اور کارل مارکس کی افلاطون کی کتاب کے ساتھ دیکھی چند دنیا بھی جو کانکی کی کچھ دیر اس وقت ملت ہے۔
نے علم کا ساتھی کے ذریعہ اس کے آگے بہت ہی پہچان۔ جس میں اسلامی صحیر 31 کی کتاب "موقف العقل والعلم من رب العالمین و عبادہ المرسلین" کا خواہ دیا جا کر پہنچتے ہوئے، علماء اور عالمین شریفین نے علم کی کتاب کے لیے لو گئے شرکت کے علاوہ اسلام میں ایک میں ادیب ترجمہ کر ہیں۔

ڈاکٹر حسن محمود شاہی، "المدخل الی دراسة علم الكلائی"، صفحہ 54-44، ادارۃ الکرآں والعلوہ الاسلامیہ، کراچی، 2002.

ری، ابو رہوۃ، مقدمہ مقالات الکوی ریہتا، مصر، بدوہ الطبع والتاریخ۔ ری، خیر الدین، الأعلاؤ، مکتبۃ التوفیق، دمشق، 7431.

عبد اللہ بن سبأ (المتوفی 94 هجری/066ء) فتنہ کے بانی، یمن سے تعلق تھا۔ بیان کی جا تھا کہ اصل میں یہودی تھا مگرGLenumظاہر کربتا تھا۔ حجاز، بصرہ، کوفہ، مصر اور دمشق سفر کیا۔ "ابن السوداء" کے بانی سے معروف تھے جو امام کو کتاب کا نام "الغیر" رکھا تھا۔

خوارج: "حروراء" کے مقام پر قبلاً اورامردو غیر علماء کے اعمال کی تعلیم و تربیت کے لئے خواہ الله کے لئے جمہوریت کا قبضہ کیا گیا۔

اصحاب: عبد السلام بنا مسعود، جامعۃ الکوثیہ، 789ء۔
ہے جائیں گے جیسے تیر شکار سے ب ارہوبتا۔

8 ری، رری، مقدمات الکوی ری، مقدمتا تبیین کذب المفتت الکوی۔

9 یکھئے د:

الصت عاانی، عبد الرزاؼ بن ابۺ جاء فی الحروریۃ، ۰۱/۷۵۱، اتہذ:

8۷۶۸۱، تحقیق:

حبیب الرحمٰ ۺالمکتتب الاسلامی، بیروت، ط۲، ۳۰۴۱ء۔

10 یکھئے د: الت ع دذادی، عبد القاهر، اصوؽ الدین، ص۹۰۳، طت عہتا الستعفا، استانبوؽ، ط۱، ۸۲۹۱ء۔

11 یکھئے د: الت ع دذادی، عبد القاهر، اصوؽ الدین، ص۹۰۳، طت عہتا الستعفا، استانبوؽ، ط۱، ۸۲۹۱ء۔

12 یکھئے د: الت ع دذادی، عبد القاهر، اصوؽ الدین، ص۹۰۳، طت عہتا الستعفا، استانبوؽ، ط۱، ۸۲۹۱ء۔

13 یکھئے د: الت ع دذادی، عبد القاهر، اصوؽ الدین، ص۹۰۳، طت عہتا الستعفا، استانبوؽ، ط۱، ۸۲۹۱ء۔

14 یکھئے د: الت ع دذادی، عبد القاهر، اصوؽ الدین، ص۹۰۳، طت عہتا الستعفا، استانبوؽ، ط۱، ۸۲۹۱ء۔

15 یکھئے د: الت ع دذادی، عبد القاهر، اصوؽ الدین، ص۹۰۳، طت عہتا الستعفا، استانبوؽ، ط۱، ۸۲۹۱ء۔

16 یکھئے د: الت ع دذادی، عبد القاهر، اصوؽ الدین، ص۹۰۳، طت عہتا الستعفا، استانبوؽ، ط۱، ۸۲۹۱ء۔

17 یکھئے د: الت ع دذادی، عبد القاهر، اصوؽ الدین، ص۹۰۳، طت عہتا الستعفا، استانبوؽ، ط۱، ۸۲۹۱ء۔
اور دوران میں میں مشغول رہ سکتا ہوں۔ ان کے خصوصیات کی تعداد تقریباً (30) ہے۔ اس کے نئے پوپیلی اور میں (1941) لگانے کے خصوصیات میں سے مثبت سمجھتے ہوں۔

19 امریکا میں خود مختار جوہری اور جنگ میں اکثر میں بنیادی طور پر وہ فیصلہ کرتے ہوں اور قیامتی ہیں۔

18 امریکا میں خود مختار جوہری اور جنگ میں اکثر میں بنیادی طور پر وہ فیصلہ کرتے ہوں اور قیامتی ہیں。

17 ان کے خصوصیات کی تعداد تقریباً (30) ہے۔ اس کے نئے پوپیلی اور میں (1941) لگانے کے خصوصیات میں سے مثبت سمجھتے ہوں۔

16 ان کے خصوصیات کی تعداد تقریباً (30) ہے۔ اس کے نئے پوپیلی اور میں (1941) لگانے کے خصوصیات میں سے مثبت سمجھتے ہوں۔

15 ان کے خصوصیات کی تعداد تقریباً (30) ہے۔ اس کے نئے پوپیلی اور میں (1941) لگانے کے خصوصیات میں سے مثبت سمجھتے ہوں۔

14 ان کے خصوصیات کی تعداد تقریباً (30) ہے۔ اس کے نئے پوپیلی اور میں (1941) لگانے کے خصوصیات میں سے مثبت سمجھتے ہوں۔

13 ان کے خصوصیات کی تعداد تقریباً (30) ہے۔ اس کے نئے پوپیلی اور میں (1941) لگانے کے خصوصیات میں سے مثبت سمجھتے ہوں۔

12 ان کے خصوصیات کی تعداد تقریباً (30) ہے۔ اس کے نئے پوپیلی اور میں (1941) لگانے کے خصوصیات میں سے مثبت سمجھتے ہوں۔

11 ان کے خصوصیات کی تعداد تقریباً (30) ہے۔ اس کے نئے پوپیلی اور میں (1941) لگانے کے خصوصیات میں سے مثبت سمجھتے ہوں۔

10 ان کے خصوصیات کی تعداد تقریباً (30) ہے۔ اس کے نئے پوپیلی اور میں (1941) لگانے کے خصوصیات میں سے مثبت سمجھتے ہوں۔

9 ان کے خصوصیات کی تعداد تقریباً (30) ہے۔ اس کے نئے پوپیلی اور میں (1941) لگانے کے خصوصیات میں سے مثبت سمجھتے ہوں۔

8 ان کے خصوصیات کی تعداد تقریباً (30) ہے۔ اس کے نئے پوپیلی اور میں (1941) لگانے کے خصوصیات میں سے مثبت سمجھتے ہوں۔

7 ان کے خصوصیات کی تعداد تقریباً (30) ہے۔ اس کے نئے پوپیلی اور میں (1941) لگانے کے خصوصیات میں سے مثبت سمجھتے ہوں۔

6 ان کے خصوصیات کی تعداد تقریباً (30) ہے۔ اس کے نئے پوپیلی اور میں (1941) لگانے کے خصوصیات میں سے مثبت سمجھتے ہوں۔

5 ان کے خصوصیات کی تعداد تقریباً (30) ہے۔ اس کے نئے پوپیلی اور میں (1941) لگانے کے خصوصیات میں سے مثبت سمجھتے ہوں۔

4 ان کے خصوصیات کی تعداد تقریباً (30) ہے۔ اس کے نئے پوپیلی اور میں (1941) لگانے کے خصوصیات میں سے مثبت سمجھتے ہوں۔

3 ان کے خصوصیات کی تعداد تقریباً (30) ہے۔ اس کے نئے پوپیلی اور میں (1941) لگانے کے خصوصیات میں سے مثبت سمجھتے ہوں۔

2 ان کے خصوصیات کی تعداد تقریباً (30) ہے۔ اس کے نئے پوپیلی اور میں (1941) لگانے کے خصوصیات میں سے مثبت سمجھتے ہوں۔

1 ان کے خصوصیات کی تعداد تقریباً (30) ہے۔ اس کے نئے پوپیلی اور میں (1941) لگانے کے خصوصیات میں سے مثبت سمجھتے ہوں۔
فاضلروہمان، تعلیم الفصیلی 1975، آلبانی، ریاستی اکیڈمی کی یونیورسٹی آف نیو یارک پریس.

27) میں اس کے فصل و نمبر کو نیکی نیکی کہتے ہوں۔

28) اس کے ساتھ مندرجہ ذیل غیر مکمل مضمون اور تحقیقی ترمیم کی ہے۔

29) اس کا مضمون نہیں ہے۔

30) اس کا مضمون ہے۔
REAL-TIME OBJECT DETECTION AND TRACKING FOR VIDEO SURVEILLANCE

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ABSTRACT In view of application in smart visual surveillance systems this paper presents a new method of object detection and tracking in a surveillance scenario. The paper proposes robust object detection and tracking mechanism in which the background subtraction uses parallel processed Kernel Density Estimation (KDE) and the object tracking uses spatial color models of the detected object for tracking. The models of newly detected objects are stored in a reference list. Models of object detected in the next frame are compared with the reference models to track the object in the new frame. The spatial dimension introduced make the algorithm performs very well and fast. The system has been implemented both in indoor and outdoor environmentsand was found not only functionally okay but very computationally efficient in terms of processing time. The proposed system also is capable of detecting collision and object merging. One major areas the system contributes is the fast processing which is required by surveillance systems.

Keywords: KDE, surveillance, tracking, models

1.0 Introduction. Object detection and tracking is an important task in computer vision applications including surveillance, smart buildings, augmented reality, video compression and medical imaging processing. Before we can perform any advanced video image processing, we need to identify the particular object from the scene. Therefore detecting regions that corresponds to moving objects such as people, vehicles, animals is the first basic step of almost every vision system Akintola et al., (2011). Due to different nature of different backgrounds, some static some dynamic and some quasi-stationary, motion detection posed a difficult problem, and different algorithms have been proposed to work in different environments. Frequently used techniques for moving object detection are background subtraction, background statistical modeling, temporal differencing and optical flow. In this research we adopted the kernel density estimation method (KDE) which is modeled in parallel fashion. After object detection, the next thing is how to keep on tracking such objects in subsequent frames. Object tracking can be defined as the problem of estimating the trajectory of an object in the image plane as the object moves around the scene. In other words, a tracker assigns consistent labels to the tracked objects in different frames of a video. A visual surveillance system must be able to detect objects within the scene, track the objects for eventual activity recognition.

The tracking of realworld objects is a challenging task due to the presence of noise, occlusion and clutter of objects of interest. Tracking schemes usually include two major components (Comaniciu et al., 2003). The first component deals with generating and maintaining a model for the objects within the scene while the second component searches for potential locations for these objects in the current frames. A variety of algorithms have been proposed in the literature to tackle these problems of tracking. Tracking algorithms can broadly be classified into two categories viz: deterministic methods and stochastic methods. Deterministic methods typically track by performing an iterative search for the local maxima of a similarity cost function between the template image and the current image. The cost function widely used is the sum of squared difference (SSD) between the template and the current image. In this regards, the mean-shift algorithm or other optimization techniques have been applied to find the optimal solution (Yang et al. 2005). Mean Shift is a powerful and versatile non parametric iterative algorithm that can be used for lot of purposes like finding modes, clustering etc. Mean Shift was introduced in Fukunaga and Hostetler (Fukunaga et al., 1975) and has been extended to be applicable in other fields like Computer Vision.
Mean shift considers feature space as a empirical probability density function. If the input is a set of points then Mean shift considers them as sampled from the underlying probability density function. If dense regions (or clusters) are present in the feature space, then they correspond to the mode (or local maxima) of the probability density function. We can also identify clusters associated with the given mode using Meanshift. The mean shift algorithm is a simple iterative procedure that shifts the center of the region of interest to the center of mass (i.e. average of the data points). Bradski (1998) proposed an enhanced mean-shift algorithm named Continuously Adaptive Mean Shift (CamShift) that can track objects that changes shape dynamically.

Model based tracking algorithms incorporate a priori information about the objects to develop representations such as skin color, body blobs, silhouettes, kinematic skeleton, while Appearance based approaches apply recognition algorithms to learn the object in some basis such as the eigenspace, or in kernel space Yang et al (2005).

The second category which is the stochastic method, uses the state space to model the underlying dynamics of the tracking system. An example of this method is the Kalman filter. The basic idea of Kalman filtering based tracker is to recursively estimate the state vector given the last estimate and a new measurement. The Kalman filter is a tool that can estimate the variables of a wide range of processes. In mathematical terms we would say that a Kalman filter estimates the states of a linear system. The Kalman filter not only works well in practice, but it is theoretically attractive because it can be shown that of all possible filters, it is the one that minimizes the variance of the estimation error (Simon 2010). The Kalman filter is composed of two steps, the prediction step and the correction step. The prediction step predicts the approximate location of the object while the correction step computes the exact location of the object and the process continues.

While Kalman filter method require a Gaussian and linear process, the particle filtered method is used to model a non-linear and non-Gaussians process. Particle filters are sequential Monte Carlo methods based on point mass representations of probability densities, which are applied to any state model. Particle Filter is concerned with the problem of tracking single and multiple objects. It is an hypothesis tracker, that approximates the filtered posterior distribution by a set of weighted particles. It weights particles based on a likelihood score and then propagates these particles according to a motion model.

Section 2 describes kernel density estimation, section 3 describes the Histogram computation of the distribution formed by pixel observations at a particular spatial location. Section 4.0 describes an experiment on object detection and tracking algorithms. Section 5.0 presents performance analysis of the object tracking algorithm.

2.0 Related Research Comaniciu et al. (2000) presents a new approach to real-time tracking of non-rigid objects based on visual features such as colour and texture, whose statistical distributions characterize the object of interest. The proposed algorithm is good for objects with different colour and texture patterns being robust to occlusion, clutter, rotation in depth and changes in position. The mean shift iterations are employed to find the target model with the similarity being expressed by a metric based on Bhattacharyya coefficient. Various experiment show that the algorithm performs excellently.

In Haritaoglu (1998), a real time system tagged W4 for detecting and tracking people is presented. W4 is designed as real time visual surveillance system for detecting and tracking people and monitoring their activities in an outdoor environment both day and night. It operates on a monocular grayscale video imagery or video imagery from an infrared camera. W4 is motivated by the desire to develop a people tracking oriented system that can locate and track people especially during the night time. The objective of developing the system is to answer questions about who is the there?, what is he doing?, where is he? and when was the action?.

The system can perform Background modeling using frame differencing, object detection, object tracking, occlusion handling using region merging and splitting. The object tracking aspect uses second-order motion model including velocity and acceleration for human tracking. It also uses human parts localization and tracking using cardbaord algorithm for activity recognition.

Fleck et al., (2006), presents a distributed network of smart cameras for real-time tracking and its visualization in 3D environment. In this project, a multi-object tracking system is developed. The live visualization of tracking result is embedded in a 3D model of the environment. The project is motivated by the desire to develop a multi tracking system that can be visualized in embedded 3D model environments. The system employs particle filter algorithm for
the object tracking. The limitation of the tracking aspect is that particle filter is computationally expensive. In Collins et al. (2001), the Architecture of the Video Surveillance and Monitoring (VSAM) is presented. The Objective of the system is to develop a single user monitoring system. The architecture of VSAM consists of an operator control unit, several sensor processing units, a graphical user interface (GUI), and several visualization nodes. Object detected is tracked using Kalman filter. The live visualization of tracking result is embedded in a 3D model of the environment. The project is motivated by the desire to develop a multi tracking system that can be visualized in embedded 3D model environments and can generate real time alerts. The system employs Kalman filter algorithm for the object tracking. The limitation of the tracking aspect is that Kalman is computationally expensive.

In Georis et al. (2008) an IP-distributed computer-aided video-surveillance system is presented. It is a surveillance architecture that consists of three components: First are the computers connected together through a typical fast Ethernet network (100 Mbps). Secondly, we have the various cameras that are plugged either in an acquisition card in a PC or directly on the local network hub for IP cameras. Lastly we also have the Human Computer Interface (GUI) and storage space plugged into the system. This platform has the capacity for analysis tools, such as motion detection, segmentation, tracking and neural networks modules. The goal of these advanced tools is to provide help to operators by detecting events of interest in visual scenes and store them with appropriate descriptions. This indexation process allows one to rapidly browse through huge amounts of stored surveillance data and play back only interesting sequences. The system also employs Kalman filter tracking algorithm which is computationally expensive. In the aforementioned systems the non-functional requirements such as time of processing is traded off for the functional requirement such as track-ability. Here we propose a system that is both computationally non-expensive and has high track-ability. This is required as the tracking system would be employed in surveillance environments.

**2.0 The Proposed Object detection and Tracking Algorithm**

The proposed algorithm is composed of two stages. Background modeling and object tracking. For background modeling, the approach used in this research is Kernel density estimation with adaptive threshold and shadow removal algorithm. The goal in image segmentation is to separate background areas of the image from foreground regions of motion that are of interest for advance vision processing such as tracking. In this research, we make the fundamental assumption that the background will remain stationary. This assumption necessitates that the camera be fixed and that lighting does not change suddenly. Segmenting moving objects in still camera video frames is done in three stages in the proposed method. First is the Histogram computation, next is the threshold calculation and then foreground segmentation.

![Object detection and Tracking Algorithm](image)

Figure 1.0 Object detection and Tracking.
2.1 Background Modeling using Kernel Density Estimation: Kernel density estimation (KDE) is the most used and studied nonparametric density estimation method. The model is the reference dataset, containing the reference points indexed natural numbered. In addition, assume a local kernel function centered upon each reference point, and its scale parameter (the bandwidth). The common choices for kernels include the Gaussian: and the Epanechnikov kernel.

The Gaussian Kernel is given by:

\[ K_N = (2\pi)^{-d/2} \exp(-\frac{1}{2} ||x||^2) \]  

(1)

The Epanechnikov kernel is given by

\[ K_E = \begin{cases} \frac{3}{4}(1-\frac{|x|^2}{d+2}) & \text{if } ||x|| \leq 1 \\ 0 & \text{otherwise} \end{cases} \]

(2)

Let \( x_1, \ldots, x_n \) be a random sample taken from a continuous, univariate density \( f \). The kernel density estimator is given by,

\[ \hat{f}(x; h) = \frac{1}{nh} \sum_{i=1}^{n} K((x - x_i)/h) \]

(3)

\( K \) is the function satisfying \( \int K(x)dx = 1 \)

The function \( K \) is referred to as the Kernel and \( h \) is a positive number, usually called the bandwidth or window width.

2.2 Histogram computation. The first 100 initial frames in the video sequence (called learning frames) are used to build stable distributions of the pixel RGB mean. The RGB intensities of each pixel position is accumulated for the 100 frames and we calculate the cumulative sum of the average intensities i.e. (sum (RGB)/3) is computed over 100 frames. A histogram of 256 bins is constructed using these pixel average intensities over the training frames. The sum is then normalized to 1. That is we divide each histogram bin value with the accumulated sum to get a normalized histogram of 1.

![An Histogram of typical pixel location.](image)

2.3 Threshold calculation. Threshold is a measure of the minimum portion of the data that should be accounted for by the background.

For more accuracy in our segmentation, we use different threshold for each histogram bins.

The pseudo-code for the Threshold calculation is given below

1 For each H[i]
2   Get sum of H[i]
3   Peak[i]=max(H[i])
4   Pth[i]=Peak[i]/2
5   Calculate sum2(H[i] >Pth[i])
6   If(sum2(H[i] >Pth[i]) is less than 0.95 of sum of Hi
7       Pth[i]=Peak[i]/2
2.4 Foreground/Background detection. For every pixel observation, classification involves determining if it belongs to the background or the foreground. The first few initial frames in the video sequence (called learning frames) are used to build histogram of distributions of the pixel means. No classification is done for these learning frames. Classification is done for subsequent frames using the process given below. Typically, in a video sequence involving moving objects, at a particular spatial pixel position a majority of the pixel observations would correspond to the background. Therefore, background clusters would typically account for much more observations than the foreground clusters. This means that the probability of any background pixel would be higher than that of a foreground pixel. The pixel are ordered based on their corresponding value of the histogram bin. Based on the adaptive threshold calculated above, get the pixel intensity value for the subsequent frames. Locate the corresponding histogram bin. Read the bin value corresponding to this intensity. If the value is < threshold, classify as foreground. Else, classify as background. The classification process is performed on all the pixel locations in the current frame.

The Algorithm
(Frames 1—N is used for training modeling the background).
Read frames 1 -- N
For each pixel
- Calculate the value of (r+g+b)/3
- Locate the corresponding bin value in the histogram of the pixel.
- Increment the bin of this value by 1
- Increment the surrounding bandwidth pixels by fraction of 1
Normalize the histogram value by dividing each bin value by the sum of bins.
Calculate the adaptive threshold as given in section 2.3.
Read the Next frame after N.
For each pixel
- Read the intensity of RGB of the pixel.
- Calculate the value of (r+g+b)/3
- Locate the corresponding bin value in the histogram of the pixel.
- Test if the value is < threshold
  - Classify the pixel as foreground
  - Else
    - Classify the pixel as background

3.0 A spatio-color Algorithm for Object Tracking The proposed algorithm is composed of two stages. First is the appearance correspondence mechanism. Once detected, Appearance models are generated for objects appearing in the scene. The model is the estimate of probability distribution of colour of pixel colours. Multiple models are developed for a single object. These models are then used in subsequent frames to match the set of currently detected models and that of target models. In the second phase occlusion resolution and object merge and separation are handled.
The foreground object detected in previous stage is passed to the object tracker. We adopt a multi-part tracking algorithm in our system. That is, we segment each silhouette into upper-body area and lower-body area and generate a histogram of colures in HSV color space. This approach is good enough at discriminating individuals because of varying intensity in identical objects with similar color and occlusion. Our approach makes use of the object color histograms of previous frame to establish a matching between objects in consecutive frame. Our method is also able to detect object occlusion, object separation and label the object appropriately during and after occlusion. The diagram of our object tracker is shown in Figure 4.12.

3.1 Building the Spatio-Color Histogram Model Color models are obtained by histogramming techniques in
the Hue-Saturation-Value (HSV) color space (Perezetal. 2002) in order to decouple chromatic information from shading effects. Color information is however only reliable when both the saturation and the value are not too small. Hence, we populate an HS histogram with NhNsbins using only the pixels with saturation and value larger than two thresholds set to 0.1 and 0.2 respectively (Perezetal. 2002). The remaining “color-free” pixels can however retain crucial information when tracked regions are mainly black and white. We thus found useful to populate Nvadditional value-only bins with them. The resulting complete histogram is thus composed ofN = NsNv+Nbins bins (Perezetal. 2002). We shall denote \( b_j(u) \in \{ 1, \ldots, N \} \) the bin index associated with the color vector \( y_t(u) \) at pixel location \( u \) in frame \( t \). Given an occurrence of the state vector \( x_t \), the candidate region in which color information will be gathered is defined as:

\[
R(xt) = \{ u \mid b_j(u) \in \{ 1, \ldots, N \} \}
\]

Within this region a kernel density estimate \( q_t(x) = \{ q_t(n;x) \}_{n=1}^N \) of the color distribution at time \( t \) is given by (Perezetal. 2002)

\[
q_t(n;x) = K \sum_{u \in R(x)} w(|u - d|) \delta[b_j(d) - n].
\]

where \( \delta \) is the Kronecker delta function, \( K \) is a normalization constant ensuring \( \sum_{n=1}^N q_t(n;x) = 1 \), \( w \) is a weighting function, and locations \( u \) lie on the pixel grid, possibly sub-sampled for efficiency reasons. This model associates a probability to each of the \( N \) color bins. Here we set \( w = 1 \), which amounts to standard bin counting. This model associates a probability to each of the \( N \) color bins. In Comaniciuetal. (2000) the weight function is a smooth kernel such that the gradient computations required by the iterative optimization process can be performed. Here we set \( w = 1 \), which amounts to standard bin counting.

### 3.2 Histogram Matching

After foreground object detection has been achieved, we use a bounding box to get the area occupied by the object. For each object detected in the scene, we just build a two set reference color histograms and keep it in a list of reference models. To cater for the spatial distribution of color and to increase the ability of the tracker we divide the bounding box into two regions, called the lower and the upper regions. We then compute the upper-region histogram and the lower-region histogram separately and stored in histograms vector object. We call this list \( \{ \text{RO-List} \} \). The list of currently detected objects in the scene is kept in \( \{ \text{CO-List} \} \). The idea is to search on \( \{ \text{CO-List} \} \) their corresponding blob (appearance model ) in \( \{ \text{RO-List} \} \) from the previous frame. This algorithm will be very fast since searching is done in the list and not in spatial window. For objects in subsequent frames used for matching, as we have done for reference histograms, we calculate the histograms of the list of objects found in the subsequent frames. For each object, we compare the computed histograms both (upper and lower) with the reference histogram both upper and lower using the Bhattacharyya distance measure. Bhattacharyya distance measure returns a range of bounded values between \( [0 \text{ to } 1] \). 0 indicates that the two objects are very similar while 1 indicates they are not similar. If \( BD(obj1, obj2) < 0.419 \) then they can still be similar. BD() function is Bhattacharyya distance measure. Since we are adoting a Bhattacharyya distance measure:

\[
\text{RO-List}(i)=\text{arg Min } [(P( \text{CO-List}(i) \mid \text{RO-List}(k))] \text{ } \forall k \ldots (6)
\]

At time \( t \), the color model \( q_t(x) \) associated with hypothesized state \( x_t \) will be compared to the reference color model \( q^* = \{ q^*(n) \}_{n=1}^N \) with \( \sum_{n=1}^N q^*(n) = 1 \). In this research work, the reference distribution is gathered at an initial time \( t_0 \) at a location/scale \( x^* \) \( t_0 \) automatically provided by a foreground detection module.

\[
q_t^* = q_t^*(x, t_0)
\]

The data likelihood must favor candidate color histograms close to the reference histogram; we therefore need to choose a distance \( D \) on the HSV color distributions. Such a distance is used in the deterministic techniques (Comaniciuetal.,2000), as the criterion to be minimized at each time step. In (Perezetal. 2002 ,Comaniciuetal.,2000), \( D \) is derived from the Bhattacharyya similarity coefficient, and is defined as

\[
D(q^*, q_t(x)) = \left[ \sum_{n=1}^N \sqrt{q^*(n)q_t(n;x)} \right]^{-1}
\]

This distance between probability distributions is a bounded within \([0,1]\). Note that and empty bins are not a source of concern (Perezetal. 2002 ,Comaniciuetal.,2000)

### 3.3 Occlusion Handling

To track object efficiently, we must handle the situation when an object are occluded by another object. Our tracking system uses simple heuristics to detect objects merging and separation.
3.4. **Detecting Object Merge** When the number of contours in the current frame is less than the number in the previous frame, we try to determine whether it is as a result of objects leaving the scene or due to object merging. Object presumed to merge if the distance between object in the previous frame is less than 1 and the bounding box size of the new contour is 1.5 greater than the previous size.

3.5 **Detecting Object Separation** When the number of contours in the current frame is more than the number in the previous frame, we try to know whether it is as a result of new object entering the video or object merge. Object merge is presumed if suddenly the bounding box size of the new contour is 1.5 less than the previous size and the distance between the two contours object in the current frame and previous frame is less than 1.

4.0 **Experiment** The proposed object tracking technique has been tested on a variety of indoor video sequences. It has been used to track both fast and slow moving objects under different conditions and found to be very efficient. Figure 3.4 shows the example of the application of the algorithm in an indoor environment.
Object Tracking Results
5.0 Performance Analysis of the object tracking Algorithms

The time required to process each frame was recorded over some frames. Figure 5.10 (a) presents the proposed spatio-colour histogram tracking algorithm. While (b) gives the particle filter based tracking algorithm. It is observed that the proposed algorithm takes 0.85 ms while particle filter based takes averaged of 4464 ms to process a frame. We conclude that particle filter is not too good for tracking real time objects which requires small processing time to detect and track the moving object within the scene.

![Figure 4 (a) Processing time of proposed tracking algorithm](image)

**Figure 4 (a) Processing time of proposed tracking algorithm**
6.0 **Conclusion**

We have implemented object tracking algorithm algorithm in this paper using multi-part spatio-color algorithm together with motion detection. It is observed that the algorithm performs faster than particle filter based algorithm in terms of processing speed. This will be highly appreciated in a surveillance environment where time is a critical requirement. Future work can be done on this study by using feature based tracking algorithm.

**REFERENCES**


ABSTRACT: Dower is a sum of money or property which the wife is entitled to receive from husband in consideration of marriage. It is regarded as a financial right of wife and is a payable debt on husband. Quran, Sunnah and The Islamic Jurisprudence have explained the concept of dower in detail. In this article the definition of dower, its various kinds and its legal status have been discussed in light of the Islamic sources.

Keywords: Quran, Dower, Islamic Jurisprudence, Sunnah
ثعلب: إِنَّ ارْدَانَ الذِّكْرِ ۖ إِنَّهَا لِهَذَا اِبْنِيَا هَاتِينَ قَالَهَا عَلَىٰ أَنَّ تَأْجُرُّنِي ثَمَانِيَّ جَجٍّ فَلَنَّا إِلَّا صَنْعٌ ذَٰلِكَ غَطْيَةًۚ

"مَرَّ بِهِلِّ إِرْسَيْنِي مَعَيِّنَةً كَأَحِجَّ بُوْتَهَا اَلْلَّهُ تَعَالَى كَيْسَ اِسْرَادَ كَيْنَ بَعْرٍ كَيْ جَبَّ شِعْبِ عِلْيَ السَّلَامُ

نَّوُى مُوسَى عَلِيَّ السَّلَامُ سِيْرَ فَرْمَايَةَ يَِنَّ دَوْبَيْنَوَنَّ مَيِّ سَيْ اِيْكَ كَيْ نَكَاحُ تَمَارِبُهُ يَسَّأَرَهُ كَيْنَا جَائِنَا بَوْنَاسَ شَرْيُ بِرَ كَيْ أَمَرَ لِيْ لَنِّي أَتْهَ سَالَ نَكَ تَمَدُّوْرُ كُرِينَ وَلِيْنَ كَيْ لِيْكِنْ فِهْرٍ يَهْ حَمُ مَنْسَوْ بُوْغِيٍّ أَوْ مَرَّ

عُورَةُ لَكَ لَنِّي عَطِيَهَ بِنْ گَا؟ۚ

مرَكَأ ذِكرْ فَرْمَايَةَ مَجِيدٍ مِنْ

قُرْآنٍ مَجِيدٍ مِنْ كَيِّ جَجِبُ وَرَ مَرَأَا ذِكرْ كَيِّ مَجِيدٍ مِنْ

كَيْ سَأَيْتُهُ

سُورةُ الْنَّسَاءُ مِنْ اَلْلَّهِ تَعَالَى اِرْشَادُ فَرْمَايَةَ بَيْنِ

(وَأَذَاوَنِيَّانَ سَنَفَتُهُنَّ نَخْلَةٍ)ۚ اُورَتْ لُوْجُ بَيْوَيْنَوَنَّ كَيْنَ كَيْ مَرَّ خَوْشٍ دَلْيَ سَيْ إِذَا كَرَوْ ۚ

اِسْأَيْتُ مَاكَرُ مِنْ مَرَأَا كَيْنَ لَنِّي لَفِتْ سَنَفَتُهُ إِسْتَمَالَ كَيْنَ سَأَيْتُهُ إِسْتَمَالَ مَعَ سَنَفَتُهُۚ

ۚ بَيْنَ لَفْتِ سَدَأَدَةَ كَيْنَ زِيرَ أَوْ زِبْرُ شَدَاَيِّهَا بَيْنَ لَفْتِ سَدَأَدَةَ مَعَ اِسْتَعْمَالَ بَيْنَ لَفْتِ سَدَأَدَةَۚ

ۚ مَلَأً عَلَى الْقَارْئِ مَسَارٍ مِّنْ فَرْمَايَةَ بَيْنِ

وَسَمَّٰيَ بِهِ ظَهْرًاۖ صْدَقُ ﻓِرْضَ مَنْ دَلَّ إِلَى الْمُرَأَاۚ

ۚ مَرَأَا صَدَقَةٌ كَيْنَا مَداَدَ مَنْ صَدَقَةً [سَجُّ] كَيْنَا مَفْهَومٌ يَأَا جَانَا بَيْنَا أَوْرَ مَرْر

ۚ سَيْ بَيْنَ شُوْرَ وَأَيْنَ بَيْوَيْنَ كَيْ طُرْفُ سَقَا مِيْلَانُ طَيْبٌ بُوْتَا بَيْنَاۚ

نُحْلِكِ سَأَيْتُهُ

اِمْامُ رَأِبَ اِصْفَابَيْنِ فَرْمَايَةَ بَيْنِ: وَلَنَّغَا لَحْلَةُ غَطْيَةً عَلَى سَبِيلِ الْشُّرْعِ وَهُوَ أَخْصُصُ مِنْ الْهَنِيَّةٍۚ ۖ "نَحْجَتْ تَبْرَعُ أَوْرَ اِسْحَانُ كَيْ مَطْرُ بَنِي دَنِيَّةٍ جَانَا وَلَلَّهُ عَلَيْنِي كَيْنَا بَيْنَ جَوْ بَيْنَ سَيْ خَاصَّ بَيْنَاۚ

ۚ تَفْسِيرُ رُوحُ المَعَانِي مَيِّ مَيِّ بَيْنَا كِنَّ النَّحْلَةَ لِبَيْنَ مَطْلَقِ الْإِيْتَاءِ بَيْنَا هُوَ نَوْعٌ مَّلِكٌ وَهُوَ الْإِيْتَاءُ عَنْ طِيْبٍ نَفْصٍۚ

ۚ نُحْلِهِ مَطْلَقُ دَنِيَّةٍ بَيْنَا كِنَّ كُرِّتَا بَلْ كَيْنَا مَعْصِمُ اِيْتَاءِ بَيْنَا كِنَّ جَوْ بَيْنَا خَاطِرٌ دِيَ أَجَا بَيْنَاۚ

ۚ يْبَانَا اِيْكَ شَبْبُ بَيْنَا بُوْتَا بَيْنَا نَحْلُهُ مَيِّ مَيِّ عَمَّمُ كُمْ مَفْهُومٌ يَأَا جَانَا بَيْنَاۚ حَالَ أَنْ كَيْ مَرَّ تَ وَ بَعْضُ بُوْتَا بَيْنَاۚ

ۚ اِمْامُ رَأِبَ اِصْفَابَيْنِ فَرْمَايَةَ بَيْنِ: لَمَّا كَانَ لِلْزَّوْجَةِ مَثَلًاٰ لِلْزَّوْجَةِۚ وَكَيْنَا وَضَرَّرَ اِلْبَنْتَ عَلَىٰ بَوْطَةٍ مَّرْدَةٍ عَلَىٰ الْقَدْرَةَۚ كَيْنَا الْمَهْرُ مَجَانٌۚ

ۚ عُورَةُ كَرِ مَرْدَةٍ كَيْ بَرَأْ مَنْ طَافِعُ حَامِلٌ بِوْتَا بَيْنَا أَوْرَانَا نَفْقُ وَدَيْشَةٌ وَغَيْرِهَا اِسْمُ مِسْتَزَادُ بَيْنَاۚ

ۚ صُوْرَتُ مَيِّ مَرْدَةٍ كَنَا كَنيَّ مَفْتَ كَيْ مَالَ اِمْرَأَةٍ بَنَ جَانَا بَيْنَاۚۚ

ۚ لَكَ سَأَيْتُهُ

سُورةُ الْنَّسَاءُ مِنْ اَلْلَّهِ تَعَالَى اِرْشَادُ فَرْمَايَةَ بَيْنِ:

ۚ وَمَنْ لَّمْ يَسْتَطِعَ مَا كَتَبَهُ الْكُرُّ مَتْحِضَتْ فَمَا مَلَكَتْ اِمْلَكَةُۚ

ۖ اِمْامُ رَأِبَ اِصْفَابَيْنِ فَرْمَايَةَ بَيْنِ: لَمَّا كَانَ لِلْزَّوْجَةِ مَثَلًاٰ لِلْزَّوْجَةِۚ وَكَيْنَا وَضَرَّرَ اِلْبَنْتَ عَلَىٰ بَوْطَةٍ مَّرْدَةٍۚ

ۚ اِمْامُ رَأِبَ اِصْفَابَيْنِ فَرْمَايَةَ بَيْنِ:ۚۚ وَطُوْلُ فَيْضٌۚ قَدْرٌۚ وَالْمَرَّةُ هَابِبَةُ الْفَدْرُۚ عَلَىٰ الْمَبْرَرَ مَجِيدٌ مِنْ مَرْدَةٍۚ
لفظ طويل، قصر كي ضد بى أور بيلان اس س مراد ميرو كي أدائيغي با قدرت بى .

لفظ كي ساتيه

سورة النور

*(وَلِيَسْتَعْفِفَ الَّذِينَ لَا يُجِّدُونَ نِكَاحًا حَتَّى يُغْنِيَهُمْ اِلَّهُ مِنْ فَضْلِهِمْ)*

اورجو تم تتم نكاح كرائى سع عاجز بين ائتيح جابييه كدو اپيآ بأيو كو كنها مين پرہنے س بچانه

رکیپهنان تى كى الله تعالى ائتيح اپيآ فضيل سع غنی كردیه.

**تمسق قربطى مين يى:**

النكاخ بابیما شنق الخمر من الممر واللغة كالحاف اسم لمايثبت يى

لفظ نكاح بيل ميرو ئرى يى معنى مين آيآ به جس كى عوض عورت سے نكاح كي جامب به جس طرح

لفظ لحاف دالات كرتا به اس جيز بر جس كى جسم بر لبیتا جانا به .

**سكراتى:**

سورة النساء

*(وَاٰتُوْ ﻋَلَّيْكُمْ اِنْ طَلَّقْتُمُ اﻟْﻠَّدَىَّ ﻣَﺎ ﻓَرَﺿْنَﺎ ﻋَﻠَى اَﻟْهُمْ ﻓِي اَزْوَاﺟِﮭِمْ)*

ان كيو ملمر دوجو كچم مقرر كرچکى بى .

**تمسق روحو المعنى مين يى:**

وسمى المهر أجلأ لألم ديل عن المنفعة لا عن العين

مر كيو اجر سى موسوم كيا كيون كى به بدل به منفعت كى نى كى عين جيزي كى .

**فريسىكلى ساتهى:**

ارشد بارى تعالى يى : 

الاجتاح علیكم ان طلقتم النساء مالم تمسوه دينى وافقرضألهن فرضهكى

تم بر كونى نيهن أقرتن نى انيي بيويون كى طلاق دى دى قبل اس كى كى ائتيح بانها لگيايى بو يان كى

لى برو مقرر كيا بى .

**تفسير راى المفسرى ايفرامى بى:**

ايمام راىى اصفى المفسرى ايفرامى بى : 

فرضهكى اي سميكم له مهر واجينكى على السكمى بايلكى

كى تم كى ان كى لى برو مقرر كيا اور اپيآ اوبر اس كى لازم قرار دى .

سورة الأحزاب

قد علمنا ما فرضنا عليهم في ازواجهم .

**تمسق مدارك التنسللي مين يى:**

!”بهمن معلوم به جو بو نئي مقرر كيا بى أن بر بيويون كى حق كى طور برى .”

*”تفاصيل مدارك التنسلل بى:*

أى ما اوجنبى من المهر على أمتك فيزوجاتكى أوى اوجنبى عليهم في ازواجهم من الحقوق

بهمن معلوم به ومحجه جو بو نئي أبى كى امت كى مرودن بر أن كى بيايون كى مبرارو دير حقوق كى

طور برو واجبه كى ركث بى .

**علاما سريخى ايفرامى بى:**

والفول بان المهر غير مقرر شيونا يكون ايجاب أصله بالعقد وبيان مقداره مفقودا إلى رأى الزوجين

"اور يى كينا كى مر برى مقرر نيبى بى تواس كا جواب بى بى كى مر كا اصل وجوب [نفس وجوه] عنع

نكاخ مى ثابت به اورسى كى تقدير زوجين كى رانى بى موقوف بى ."

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مسلمہ نے ستنت رسول میں

رسول اللہ ﷺ ایک شخص سے فرمایا کہ جو نکاح کا ارادہ رکھتا تھا اوڑ اس کو پاس کچھ ن biên تھا، انہوں نے ایک نیا مال بنایا اور اسے نکاح کے عوام میں ادائیگی کے لئے تو مہر دیا۔

نیک کریم اک ارشاد بیان کر رہے تھے، اس میں مذکور ہے کہ:

اءِلْتَمِﺲْ

وَﻟَﻮْﺧَﺎﺗَﻤﺎً ﻣِﻦْ ﺣَﺪِﯾْﺪ

یعنی ڈھوڑۓ اگر ہوں گے تو یہ یہ کہ نکاح کے عوام میں ادائیگی ضروری ہے۔

علاء تحری نے بیان کیا کہ:

وَﮨُﻮَ أنّ أﺣَﻖﱠ اﻟﺸّﺮُوطِ ﺑِﺎﻟْﻮَﻓﺎءِ ﻣَﺎ ﯾَﺴْﺘَﺤِﻞﱡ ﺑِہ

سیدہ عائشہ صدیقہ رضی اللہ ع앙ا نے بیان کیا کہ رسول اللہ ﷺ نے ازدواج مطابقت کے لئے کتنا مال دیتا تھا۔

رسول اللہ ﷺ ازدواج مطابقت کے لئے مسلمانوں کا اتفاق کیا۔

امام ابی بکر جصاص نے بیان کیا کہ:

وَھٰﺬاﯾَﺪُ ﻋَﻠَﯽ وُﺟُﻮْبِ اﻟﺼﱠﺪَاقِ ﻓِی اﻟﻨِّﮑَﺎحِ

نکاح مسلمانوں کا اتفاق کہا۔

مسلم کا حکم

مسلم شرعی انجام ہیں اور اس کا وجوب شریعت کے قطعی دلائل سے ثابت ہے۔

اللہ تعالیٰ ارشاد فرماتے بیان کیے ہیں،

وَأَجِﻞْ ﻟِكُمْ مَاوْرَاهُ ﻟُذْکَرَ أنْ ﺑَتْبُؤُوا إِلَاءَ اﻟْمُسْلِمِينَ

اور باقی عورت کے نبی ﷺ نے بھی کہ ان کو اپنے مالوں کے دو مالوں ہی۔

کا بابو۔

امام ابن العیبی المالکی نے بیان کیا کہ:

وَهُذهِ دِيْلَةُ ﻋَﻠَى وُﺟُﻮبِ الصَّدِّاقةِ ﻓِی النِّﮑَﺎحِ

اہم این الاعظمی میں فرماتے ہیں۔
اور ہی آیت نکاح میں مبکرے کے وجوہ پر دلالہکرئے یہ:

اعظم ابو بکر کاسیتنی الفرماتے بہت

ان الاصل فی الابضاء والفسوئ هو الحراهمة والابضاء ثبت بهذا الشرط

اصل نفس میں حرمت ہے اوران نفس محترمہ کی اباحت اس شرط [مر] کے ساتھ ثابت ہے

تفسیر مدارک میں یہ:

و قدلیل علی ان النکاح لا یکون إلا بمحروان یجب وان لم یسم

اوراس میں دلیل پہ اس بات کی نکاح بغير مر کے نہیں بیٹاواجیب بوتائی ہے اگر چہ وقت عقد اس کا

ذکر نہ کیا جاتے ۔

اللہ تعالیٰ کا ارشاد (واوَؤْهُنَّ اُتْوِرُهُنَّ فَرِیضَةً)ہیں وجوہ مر پر دال یہ:

اعظم ابن عربی میں فرماتے بہت

کہ لفظ فرضۃ مین دو توجہ بین، یا تو ہو اتُوْرُهُنَّ [اتیان] کی صفت ہے جیسے امر وجوہ کے لئے خاص

بوجاتایا اور ایک اُتْوِرُهُنَّ [اجر] کی صفت ہے جو بمعنی تفیہر آنے گا جس کا مطلب بیوگا

اُتْوِرُهُنَّ ہیں فاصدفیقاً لاناً لاکاً شیناکہ انہیں ان کے مہ دورے کے پورے ادا کرا اور ان سے کونی چیز

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مہر کے وجوہ کی حکمتیں

اسلامی تعلیمی کا کوئی حکم حکمت وصلحت ہے خالی نہیں بیٹا مر کی مشروطیت میں بہی متمدن مصالح

بر جن میں چند کا تذکرہ نہیں میں کیئے جا ایہ:

1: مہر عقد نکاح کی وقت وابستہ کو واضح کرتا ہے۔

2: عورت کے شرف کوھیت کی اور اس کی قدر ومنزلت میں اضافہ کرنا۔ کرتا ہے۔

3: عائلی زندگی کی حسن انظام کا بیش خیمہ ثابت بوتیا ہے اور بابعی ہفت ومحبت کے ماحول کو فروع

دیتیا ۔

4: بھگری معافیت کو بطور احسن نمتانہ مین مرد کے حسن نیت پر دلالہ کرتا ہے اور اسے پابند کرتا

بہ کہ عورت کے جملہ حقوق کا ضامن بنے ۔

5: نکاح جیسے مقدس رشتہ کو دوام بخشی مین مددگار ثابت بوتیا ۔

مہر اگر جاجھہ اور نکاح مین نہ رکن ہے اور نہ شرط

مہر نکاح کی ارکان وشرائط مین داخل نہیں ہے اس کے بیگھی نکاح بوجاتیا ہے اس کا وجوہ دو

طریقوں سے ہوتا ہے۔

1: تسمیہ یعنی مقرر کرنے سے یہ:عقد یعنی صرف نکاح سے

مہر کا صرف نکاح سے واجب بنیا سے مراد اس کا نفس وجوہ پہ کہ معکر کے وقت سے اس کا لزوم

آگے ۔

اس کی دلیل قرآن مجدد کہ ہے آیت یہ:

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(لااجناح علیکم این طلقتم النساء مالتم تسول اوتفرضواليهن فرضیتۃ)

تم پر کوئی گناه نہیں اگرتم نے اپنی بیویوں کو طلاق دے دی قبیل اس کے کہ اپنی بات حلگیا ہو یا یا ان کے

لئے مہر مقرر کیا ہو۔

اعلانا کا نطقہ نظر: امام ابو بکر کاسیتنی اس آیت کے تحت لکھاتے ہیں:

رَفعُ سُبْحَانَ اللَّهِ عَلَیْمُ طُلُقُكَ فِی غَنْسِهِ ذِی الْحَیَابِ وَبِالطَّلَاقِ لَیْفَوْنَ اَلْبِعْدُ اَلْبِكَاحُ فِئٰلَ عَلَی جَوْازِ النِّكَاحِ بَلا
الله تعالى نَى أن نَوَّغَسِي إِنَّا أَتَهْلِيَاءَ جَنُورُنَّ نِى آس نَكَاحٍ كَي بَعْد طَلَقٍ ذِ ذِإِ جَسْمٍ مِنْ مِرْ مُقْرَرٍ نِعْيَ بَوَا
اور طَلَقُ نَكَاحٍ كَي بَعْد بَوَا بِي بَيضَايَ دَلِّلَتَ كَرْتَهَا كَي بَعْذ نُذُرُ مِرْ كَي نَكَاحِ درَسْتُ بَيَٰءُ
اس نَصَفْ نِى ثَنَايَتُ بَوَا كَي طَلَقٍ بَيِّنًا بِلِذِ ذِإِ نَزِمْهُ مِرْ مُبَاحُ بَيَّ بِإِن مِن كُونى
ْتَسِمْيَةٍ
اوqwیہ یاں دی سے زیادہ مہر مقرر نہیں کیوں چی چارسو درم بنتی ہے جو کوئی اس سے زیادہ مقرر ہے گا
وہ بیت المال میں جمع بہوگاس پر ایک قریشی حورت نے تنہی کی کہ اسے عمر™ کا یاد کی جس پر سیدنا عمر™
بے یہ کہ ایک تعلیم نے اس کے کوئی حد مقرر نہیں کی اور دو دلیل میں اور حالیہ ایک بھی یہ کہ جس پر سیدنا عمر
نے فرمایا:

اَمَّہُ اٰصِبِتْ رُجُلٌ أَخْتَاءً ﴿۱۳۱﴾، "حورت حق ہمہ پہنچ گئی اور میرا پوگا، آپ ہمہ منبر پر چڑھے
gئے اور حکم واس پر لیا۔

لیکن اس کے باوجود مہر مقرر تخفیف مستحسن اور موجب خیر وبرکت ہے।
ارشاد نبوی ﮐہ خِیْرُ اﻟْﻨِﮑَﺎحِ أَيْﺴَرُه۱۵۰۔ًً'ًّ'ًً

مہر کو کم مقرر کرنے فوائد۔

: نوگاون مردوں مہر اورشادی کے اخراجات نے پورے کرے کے کسی خطر سے شادی شدہ رہے بہے، کے

: لئی نکاح کرنا آسان ہوگا۔

: انفراڈی اور اجتماعی مسائل کا سد باب پوگا ور پر رہے کی روا تھام پوگی۔

: نہ کہ ویہ کی جگہ سادگی کو فراغ مِلے۔

مبر کہ کم سے کم مقدار

مبر کہ کم سے کم حد میں فہر ہی کا اختلاف ہے۔

احجج کے نیدزکیک اس کے مقدار دس درم پا ایک دینار پر ہی کی ذیل وہ رواینہ ہے جس کو سنہ بیجیں
او سنہ دارقتنی میں ان الفاظ سے نقل کیا گا ہے: لاَمِّر أَلْقَلِ مِنْ عَشْرَةِ دَرَارَہ۴۰۔ً'ً.

بہوگاہو دسرہا ہے وہ قیص کرتے پر مہر کو سرکہ کے نصاب بر جودس درم پر ہی میں اس اور
ہی کے کا سجا ہے مثالا۔ نِئَمُ وَلَوْخَاتُمَا مِنْ حَدِیْد۴۱۔ًً'ًّ'ًً

"یعنی ڈھونڈئے اگر چہ لوی کی اکثربی کیوں نہ

بنو اور محسول گردانے پرین مہر معقل پر کہ عربون کی عادت بوٹی تھی کہ مہر کا کچھ حصر تعجیلا

حورت کودیا کریگ تھی۔

: فقہ مالمی کی فقہاء کی نیدزکیک اس کے مقدار دس درم ہی کا جوہنگی پا تین ہیں جاندی کے خالص درم پر

شواوئف اور حنفی مکثین فقہ کے نیدزکیک مہر کی کم سے کم مقدار کی حد نہیں ہے ان کے بان کسی مقدار پر

سکو محدد کرنا درست نہیں میل کے ذیل یا کچھ بہتر ہو تا کہ کوئی چیک نہیں بہکا جاننیک جنس مقدار پر

راضی ہو جاندیہ وہی درست ہے ہو عقد نکاح کو عقد بیچ پر قہا کرتے پر نکاح اور بیچ میں مخصوص

[عقد کا انتباہ] اِنْ جَوْ چِز عَقْد بیچ میں قیدت اور ثمن کی صلاحیت رختہ ہے وہی چیز عقد نکاح میں

مہر مقرر بوسکنی بے اس کے قیمت ضروری ہے کہ مہر مقرر اتنی کہ نہ ہو جو حید تماوی [جس کو مال

کباجا ہے] سے کم ہو۔

: ان کا دوسرہ استدلال قرآن مجید کا ہی پانی ہے: (اِن یَبْنَوْعَا بَارَمَ لاَمَا)۔ًً'ًً'ًً

یہ کہ تم ان کو این اپنے مال کے

ذیعی عقد نکاح میں لکن جبارو۔ًً'ًً'ًً'ًً

سکی ممت مطلقو مال کے کہا کہ جو نکاح کے بنلے میں دیا گا تا ہی اور

فعلہ پہا ہے: "الطلاق بی جیری علی طالبہاَی){۱۰۳۔ً'ًً'ًً'ًً

یعنی جو حکم مطلق ہو اور اپنے اطلاع پر محروم بھگا۔ًَلیذا

یہاں بھی بھی مطلق مال مذکر بھو جو قلیل ہو چیک میں

فقات طالبی کے نیدزکیک بھی اس کی کوئی حد مقرر نہیں پا کے کہ بان جس چیز پر بہا ایہ میں

تلمیک بیچا بیا جس شک کی تصمیف بھو بھو خواہ نہوڑی بیا یہاں زیادہ مہر پنی کی صلاحیت رختہ ہے

الہبہ وہ نکاح کو بیچ پر قہا کرتے کو درست نہیں ماتاے۔

مبر کی مسنون مقدار
مناسبہ ہے کہ جئینے مبر کے معاملہ میں میانۂ روہ سے کام لین نم اتینہ زیادہ مقرر بو کہ مرسالار
عمر اس کی ادانتیگی سے قاصر روہ نہ اتینہ کمی کی جانے کہ اس کی کوئی وقتہ بی نہ بو۔
مبر کے تقرر میں رسول اللہ ﷺ کی اتباع مستحب اور اولی بے جس کی مقدار 500 درم بے جو موجودہ
حساب سے 1387 گرام بنتا ہے۔
مبر تعلیل اور تاجل
مبر مععمل: معمل تعلیل سے بے جس کا معنی بے لاہی اللہ ئی مبر کی وہ قسم بے جس کی ادانتیگی
دست بدست اور مجلس عهد میں ضروری بو ہی جو عورت کی طلب پر موافقت بوار جب بھی عورت مطالبہ
kے خاوند اس کو دینے کا پایہ۔
فتاوا بزرگین میں ہے:
"جہب عقد میں مبر معامل کا ذکر آجاتے تو اس وقت سے
عورت کو مطالبہ کا حق ربا بے۔
مبر مؤجل: مؤجل تاجل سے اور اس کا معنی بے مدت مقرر کرنے میں مبر کی وہ قسم بے جس میں ادانتیگی
kے لیے کوئی معیاد سے مدت مقرر کی جانے اس مدت مقررہ سے پہلے عورت کو مطالبہ کا حق نہیں اور
میرے پر ادانتیگی لازمی نہیں اس معیاد کی عین سال دوسرہ، طلاق، یا موت ٹک بوسکتی ہے۔
فتاوا بزرگین میں ہے:
لائخلاف لا ہے تاجل ذا للمبر ری غایہ معلومناں شہراوسنتصدیج
اس میں کسی کا خلاف نہیں کہ مبر میں مدت، ایک معلم انتہا مثالابک مہینا یا ایک سال تک مقرر کرنا
derست ہے۔
یہ ضروری ہے کہ:
تاجل فاہم نہ بنوں، مثالا مالدار کے وقت تک مدت مقرر بو تی دست نہیں۔
تاریخ اور مدت مجبول نہ ہو، اس طرح کہ مؤجل کہ ہی دیا جانے اور اجل کی عین نہ بوجات۔
ان دونوں صورتوں میں مبر معامل بی واجب بھودا بے ہیجا کہ درمختا ر کی عبارت ہے:
"یہ بہت مدت بالکل غیر معیاں بو تو پھر مععمل بی واجب بھودا بے۔"
اک سبہ کا ازالہ
مود اور طلاق میں بھی جبالت اجل بے تو مبر کی ادانتیگی مود یا طلاق سے مشروط کرنے میں تاجل
کسے درست مانا جانتا ہے؟
اس کا جواب ہے کہ نہیں میں ان الفاظ کے ساتھ دیکھنا ہے:
و تاولہ، آن یہ ذکر تاجل جیا کی وقت الموت اورطلاق لا یصح لجھالیزی صحیح اللہ یصحت لا۔ یہ ثابت غرافل
ذکر فذکر کثب یہ نبیت
مود اور طلاق کے وقت تک مبر کی تاجل مدت جبالت اجل کی وجود سے درست نہیں بونی جابی لیکن
عورفات پا بے کی وجود سے بھی صحیح یہ۔
مبر کی ادانتیگی کی مختلف صورتیں
کل مبر کا جواب درمختا اور قانونی پیدی میں ہے:
والمشرائع یتأخذ باہم کوئی مقام، الدخلوہ و الخروا الصحبیہ و موہت احذی الروجین
lxvi
lxvii
lxviii
lxix
lxx
lxxi
مر بین چیزون مین سے ایک کی موجودگی سے ثابت بھٹا بے اور پورا واجب بھٹا بے ام بستی

2: خلوت صحیح 3:جوہر مین کی ایک کی موت۔

ب مہرم کے سل کے وجب اس ایت کریمہ سے ثابت بے: 

و ان ازائم اس کاج مکان زوج و اتنی اس کہ طاقتاً فلا تاثدیا ہوئے۔ با تختی اکثر

اگر تم ارادہ کہ ایک بیوی کو پہلی بیوی کی جگہ بدل اورتم اسے ذیہری مال دی جیکہ بے اس مال

سے کونی چیز نہ۔

خلوت صحیح جو مہرم کا قانون سے پورا جب کہ خلوت فادیہ سے نصف مہرم واجب بھٹا بے۔

خلوت صحیح کی تعریف قبؤا ان الفاظ مین کریمہ بین:

و اگر ازا دنیہ مین سے ایک بیمار ہے اور رمضان مین روزے سے نہ یا حج و عمرہ کا احram باندہ

بے بیا عورت حالت شخص مین بے تو خلوت صحیح۔ نہیں بے بصورت طلاق عورت کے لئے

نصف مہرم بھی۔

میں بیوی مین کی ایک کی موت سے کل مہرم واجب بھٹا بے کوہ کہ موت سے کوئی حق ساقط نہیں بھٹا

بلکہ اور ثابت بھوجاتی بے۔

و بالموث نتوئی اتکاحہ بنی اور مذہبی اتکاحہ بنی میں سپریمکی مجاہیدی میں اتکاحہ ہوئے۔

اور موت سے نکاح اینی انتہا کو پہنچ جاتا ہے اور کوئی جز اینی انتہا پہنچ ہے پس

نکاح اینی اینی تمام احکام سپریمکی ثابت بھوجاتی۔

اگر مہرم کی وجب اگر مہرم مقرر بھواور بھی بستی یا خلوت صحیح سے پہلے طلاق مل جانے تو عورت

کے لئے نصف مہرم واجب بھوجاتی۔

و ان طالبعمویں من قبل ان طالبعمویں واقع فرضیہ میں فرضیہ فی صفات میں فرضیہ

اور اگر تم نہ بیویوں کو بھی بستی یا پہلے طلاق دے دی اس حال میں کہ تم نہ ان کے لئے مہرم مقرر

کیا تھا تو ان کے لئے کہ مہرم مقرر کا نصف واجب بھوجاتی۔

مہرم مثل کا وجب اگر مہرم مقرر دے بھو اور خلوت صحیح۔ بوجا کا بھو طلاق پڑنے کی صورت مین مہرم

مثل واجب بھوجا بھی حکم موت واقع بھوئے کی صورت مہرم کو بیہ لی آتے موت کے لئے خلوت اور رخصت

کی متعہ۔

کے وجب اگر نکاح بوجا بھو اور مہرم مقرر دے بھو اورتم مقرر دے بھو اپنے کے لئے خلوت میں متعہ

اس معنی مرنے کے لئے دل سیدنہ عبد اللہ بن مسعود اور حدیث میں جو پہلے ذکر بھوجاتی۔

کے نسب مرنے میں مثل کے لئے ثابت ہے۔

اس معنی مرنے کے لئے ثابت ہے۔

لازم ہوئے کہ جمیر علامہ کے نذیک متعہ اس صورت مین واجب۔

اس کی کوئی مقدار عارفی نہیں متعہ کی پہلہ۔ یہ بلاطیا کا مالاد اور تنا دست اپنی اپنی حیثیت
مرہ بھر کا حق بہ بہ بور اس کی معافی کا اختیار اس کو حاصل ہے

مرہ بھر کی ملکیت ہے اس کے انا رضا اور اختیارسے جس طرح چاہے استعمال میں لاسکتی ہے۔ یہ اس کو خرچ کریں اینی پاس رکھیے اینی شوہر کو بہ بنی بخش اگر بر طرح تصرف کی مجاز ہے۔ عورت کو اس حق سے محروم رہنے گا۔ اگر جا بھیت مین وہ عورت کا حق میر اس کا اپنی لیتا تا اور کہیں نکاح کو میر کی قید سے خالی رکھ کہ جا تا تا جو چیس کہ نکاح شگار مین ایسا بہتا ہے۔ اسلام نے جس صرف عورت کا حق لازم کر دیا ہے۔ عورت کو اس کا منصوبہ بھی بہن دیا۔ عورت اپنے حق میر معاف کرسکتی ہے مگر شرط کے ساتھ کہ اس کو مالک بنا دیا گیا ہو اور معافی اپنے حق میر طیب نفس سے کربیاں بو۔ اگر حوالہ دینے سے پہلے اس کی معافی کا مطالبہ کہیے یہاں عورت کو اس کی مرضی کے خلاف میر کی معافی پر مجبور کریں توی معافی درست نہیں سمجھتی جانے گی۔ اللہ تعالّیٰ

(فَان طَلِينَ لَكُمْ ﻋَنْ شَيْءٍ ﻣِّنْهُ ﻧَفْسًا ﻓَﮑُلُوهُ ﯽٰ)</lxxviii>

پس اگر بھورین ایک اور ہمیشہ سے میر کا کچھ حضور معاف کریں تو اس کو لڑتی ہاصل کرتے ہوئے خوشگوار سمجھتے ہوئے کہاں

حواشی

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ریالخاتر ابن عابدین شامی، كتاب النکاح باب المبر 100:ایک ایم سعيد کمبئی، کراچی سنداد

محمود بن عبدالله الحسينی، شهاب الدين الالوسي بغدادی 1217-1270ہی 236180.85127[127] مفسر، محدث، ادیب، اورفقی، بوعری بہے۔ سلفی العقائد تہی مالکی مالک کے سفر کیے مفيد، تفصیفی خدمات انجام دیئے جن مین تفسیر روح المعیا بہ مشہور بہے [الاعلام 176:217]

روح المعیا فی تفسیر القرآن العظیم، والسبع المثنائی، علماء: سید محمود الاؤوسی 19: 3، مکتب امدادی، ملتان پاکستان سنداد

سورة نساء 4:236

السان العرب 193:10

تاج العروس من جواهر القاموس 26:12
علی بن سلطان محمد، نورالدین مالا بروی القاری حنفی فقیه، برات افغانستان میں پیدا بونے اور مکرم مین سکونت اختیار کی اور وہ [1341 هـ (1923ء) کو وفات پاتے آپ نے فن تفسیر، حدیث، فقه، سیرت مین وقیع کتابین لکھن جن مین مشکوہ المصالح کی شرح مرقّة الفائح بهی شاہم پے، [الاعلام، خیرالدین زرکلی 12:13:دارالعلم للملاهین بیروت سند طباعت 2002ء] میں لکھی۔

مرقّة الفائح ملا على القاری 7:27 مکتب، حقائق، یہ کہ سند ندارد۔

حسین بن محمد بن مفضل ایو الاقسام اصفہانی لغت اور ادب کے امام تھے اصفہان [ایران] میں پیدا بونے تاریخ ولادت معلوم نہیں 6108 23612362 کو وفات پاتے [روضات الحنفی، محمد باقر موسوی اصفہانی 239 بدون نام طبیع سند طباعت 1347ہ۔

المفردات فی غرب القرآن، امام راغب اصفہانی: 1365ء دارالعلم بیروت

سرح المعنی: 4:1312

مصدر سابق

مصدر سابق

مصدر اسبق

مصدر النسا: 4:236

محمد بن احمد بن ابی بکر الانصاری المحرّمی، ابو عبدالله القرطبه [المتوفي 1273 (361م) کبار مفسرين مین سے بین ایہ زمانے کے ایک زاد اور متورع علم بوگز> بین قرطبه مین پیداوئے اور مشروط کی جانب بجرت کی اور مصر مین وفات پانگی اپنے کی تصنیف این الجامع لاحکم القرآن، تذکره باحوال الموتی اور اور التذکاری فضل الانکار زیده مشہور بین [شذرات الذیب به خبر من ذیب عبد الکریم بن احمد العکری الحنبیلی: 5:164 دارالعلم کثر بیروت دمشق 1204ء الاعلام] 6:32

الجامع لاحکم القرآن [تفسیر القرطبي] ایوب عبدالله محمد بن عبدالله بن ابی بکر القرطبه: 1365ء دارالکتب المصریه القابره 1384ہ۔

سورة النور: 2:24

تفسیر القرطبه: 12:33

سورة النساء: 2:31

تفسیر روح المعنی: 3:4

سورة البقرة: 2:34

مفردات امام راغب: 1363ء

سورة لاحزاب: 2:136

تفسیر مدارک التنزیل [بیانی: تفسیر خازن]، علامه نسفي: 1346م

محمد بن احمد بن سبک، ابو بکر، شمس الامام سرخس [خراسان، ایران] مین پیدا بونے قاضی اور فقیه، حنفی کے مجتبی عالم تھے فقیه، قانون مین آپ کی مشروط تصنیف ‘المبسوط’، بنبیت رحیمی پیا آپ نے امام محمد کی کتب کی شروح لکھی۔ آپ کو حق گوئی
لا يمكنني قراءة النص العربي من الصورة.
محمد بن عبد الله بن محمد المعافري الأشبيلي المالكي ،ابوبكر ابن العربي

الحكم القرآن، امام أبو بكر حصاصل۴:۳۳داهارياء التراث العربي بيروت سن طباعت

۱۴۰۵ه

[۳۸۴۵-۳۸۴۸] قاضي اور حافظ الحديث تهی.علوم دین مین درج اجتباه

بر قائم تهی حديث فقط.تقدیر ادب اور تاریخ بردن مین کتابین لکهی. [سير اعلام


۲۳۶:۶۰۰۱:۶۰۰۴:۶۰۰۵]

الحكم القرآن، امام العربي۲۸۳۳:۱۲داراصداربريوت سن ندارد

ابوبكر بن مسعود بن احمد الكاساني ملك العلماء علاء الدين جليل القدرحنفي عالم حلب

دمشق) مین پیدا بونه تاریخ پیداکش معلوم نین اینه زمانه که بزرگ فقیه تهی ان کی

کتاب بدام الصناعاق فحیف کی بندای مصدر سمجهی جاتی بی


سیانع الصناعق في ترتیب الشرافق، امام ابوبرک کاسانی۲:۶۴۴دارالكتب العلمیه. بیروت

۱۹۸۶ء

تفسیر مدارک التنزیل و حقائق التاویل، امام نسفی۱:۳۴۸ دارالکلم الطیب بیروت ۱۹۸۸ء

سورة النساء۴:۲۴

الحكم القرآن این العربی۱:۴۹۹

سورة البقرة۲:۲۳۶

بدآن الصناعق۲:۷۴

عبد الله بن مسعود بن غافل بن حبيب بن ذلیل ابوبکر الحرام اکابر صحابه اور سایقین اولین

مین سی بن رسول کرم کی خادم خاص تهی کوفه. مین تفسیر کی مدرس قائم کیا، آیات

قرآنی کی اسباب نزول سی خوب واقف تهی.سیدنا عثمان کی دور خلافت مین کوحف سے

میدین. آئینه (۳۲ه بمطابق ۵۶۵ء) کو تقربیا سائل کی عمر مین وقت سے. (غایة النبیه

فی طبقات القرآن این الجزیری۱:۴۵۸مکتبہ الخانجی مصر۱۳۵۱ه الاعلام:۴:۲۷۷)

اسن اناب دندود، امام سلمان بن اشعث السجستانی کتاب النکاح (۶) باب فیمن تزوج ولم پسم

صداقا۴۳:۳۲) حديث:۱۹۶۸

یہ حديث صحیح یے

المدونة الكبرى، ابن سحنون كتاب النکاح، فصل في النکاح بغير بیة۲:۱۹۲

المکی بالإضافة ابن حزم۹:۱۹۶ دار الفكر بیروت سن ندارد

سورۃ النساء۴:۲۰
بجرى يدا بيدن ساقيين أولين اور خلفانك راشدين اور عشره مبشره ميتين بين نمايت شجاع
اور اسلام پر مثنى واليل تهي ان كا دور خلافت اسلام کي اشاعت عدل وانصف اور
عوام کي رفاه من ضرب المثل تهي آپ کي راے کي مواقف كني آيات نازل بونین - ۲۴ هـ
کو وفات پانی (زندگی کمال حافظ مرنگ ۲۱: ۳۱۷ مؤسسہ الرسالة بپروت ۱۴۱۵ هـ الاعلام
۵: ۴۵):
MILLENIUM DEVELOPMENT TARGETS AND GOALS IN MARDAN DISTRICT OF KHYBER PAKHTUNKHWA

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ABSTRACT The objective of this study was to study the different MDGs indicators achieved by the Human Development Foundation (HDF) in Mardan district of Khyber Pakhtunkhwa. For this primary data was collected with the help of pre-designed questionnaires through face to face interview from 60 respondents. The data was analysed by using descriptive statistics and non-parametric tests. It is evident from main finding of study that majority and statistically significant respondents not using any contraceptive methods. Majority of the respondents have no deliveries in their homes ended in last 3 years and there was no significant difference in the percent distribution of the respondents in the selected villages. Knowledge about HIV/AIDS, malaria, TB, DM is at maximum, as all the respondents were aware of it. Maternal health care, births attendant status and immunization of children against EPI are not up to the mark. It is concluded form the findings of the study that HDF play a very important role in achieving the targets of the MDGs. The study recommends for social campaign/awareness, births control at the household’s level, training of more skillful persons having specialty in the maternal health care, immunization of children of less than 2 years about the different contagious diseases.

Key Words: Maternal health, HIV/AIDS preventions, HDF, MDGs

Introduction The increasing concern with social aspects of development finds its roots in the realization that a unit of investment in education, health, social welfare or other branches of manpower planning is in the long run as productive as unit of investment in agriculture industry or trade. There is a close association between social expenditure and subsequent economic development. Investment in the manpower planning plays an important role towards social progress, political stability and economic development in most of the developing and under developed countries of the world (Israr et.al, 2010). To achieve these targets in the developing world the eight Millennium Development Goals (MDGs) were agreed upon at the United Nations (UN) Millennium summit in 2000, by 192 countries in order to improve the living conditions of the world’s population. All 189 UN member states at the time and at least 23 international organizations committed to help in achieving the millennium goals. Each goal has specific targets and dates for achieving those targets. MDGs were meant as a major motivational contrivance to increase development efforts within and on behalf of poor countries. They can be seen as a fundamental promotion of human well-being from a multidimensional perspective and the principles enfolded in
these goals share the concept of human well-being underlying the human development index. Although, the MDGs originated in the United Nations, country driven and nationally owned efforts are necessary for their achievement. Given that the goals are ambitious, reflecting urgent need for fast progress on development, every poor country has to prepare a national strategy that addresses these issues. They need to assess whether and how the goals can be achieved within the target period and may have to redefine policy priorities; every national development strategy should formulate national policies to attain these goals. Identification of new actions and resources may be necessary to reach the MDGs but this could also lead to attention being drawn away from certain areas or regions within a country (Chakravarty and Majumder, 2008). The MDGs originated from the UN millennium declaration. The declaration asserted that every individual has the right to dignity, freedom, equality, a basic standard of living that includes freedom from hunger and violence and encourages tolerance and solidarity. The MDGs set concrete targets and indicators for poverty reduction in order to achieve the rights set forth in the declaration.

The Human Development Index (HDI) is a well-known yardstick of wellbeing. Since its introduction 20 years ago, the index has attracted enormous interest in discussions of development, both in policy and academic circles as well as in the broader community interested in development issues. The simplicity of the index’s characterization of development (as an average of achievements in health, education and income), linked to the basic message that development is about much more than growth has contributed to its popularity (Klugman et al., 2011). Human development is a process of enlarging people’s choices. In principle, these choices can be infinite and change over time. But at all levels of development, the three essential ones are for people to lead a long and healthy life, to acquire knowledge and to have access to resources needed for a decent standard of living. If these essential choices are not available, many other opportunities remain inaccessible (UNDP, 2010). With the continuing rapid evolution, adoption and relegation of ideas, policies and practices in development, words have continued to change. To achieve the different indicators of HDI in development of the developing world the UN set the following goals to be achieved in the specified time. These are to reduce extreme poverty and hunger, achieve universal primary education, promote gender equality and empowerment of women, reduce child mortality, improve maternal health, including reducing maternal mortality by three-quarters, prevent the spread of HIV/AIDS, malaria and other diseases, ensure environmental sustainability and to develop a global partnership for development.

**Background Of The Study** The empirical literature on the effects of health capital on growth is relatively thin. Conceptually, a healthy person can not only work more effectively and efficiently but also devote more time to productive activities. Based on microeconomic evidences, Strauss and Thomas (1998) argue that health explains the variations in wages at least as much as education. Research at the macro level can better capture the potential externalities of health sector interventions and the existing studies are supportive of the positive contribution of health capital to growth. Bloom and Canning (2003), Bloom and savilla (2004), and Gyimah-Brempong and Wilson (2004) find that health capital indicators positively influence aggregate output. They find that about 22 to 30 percent of the growth rate is attributed to health capital and improvements in health conditions equivalent to one more year of life expectancy are associated with higher GDP growth of up to 4 percentage points per year. Studies examining the impact of social spending on social indicators have produced mixed results. Based on cross-sectional data for developing countries, Baldacci et al. (2003) and Gupta and others (2002) find that social spending is an important determinant of education and health outcomes. They also find that education spending has a greater effect on social indicators than health outlays. The positive effect of social spending on social indicators is also supported by Bidani and Ravallion (1997) and Psacharopoulos and Patrinos (2002). Similarly, a number of studies of Musgrove (1996), Pritchett (1996), Filmer and Pritchett (1997), and Filmer et al. (1998) find that the contribution of health spending to health status as measured by infant mortality or child mortality is either small or statistically insignificant. In contrast, Gupta et al. (2003) find a positive relationship between public spending on health care and the health status of the poor. Also Schultz, (1999) pointed that education and health are interlinked in their contribution to growth. Higher levels of education increase public awareness and the capacity of families to address their own health needs. At the same time, better health enhances the effective and sustained use of the knowledge and skills that individuals acquire through education. Barro (1996) further argues that better health can reduce the depreciation of education capital and thus increases the favorable effect of education on growth. Few studies, however, have examined social spending, social indicators, and growth in an integrated system. Arjona et al. (2001) find that although there is no clear impact of social spending on growth at the aggregate level, there exists a positive association between certain types of social spending and growth. Recent study by Gyimah-Brempong and Wilson (2004) finds a positive and robust link.
between investment in health and growth in both Sub-Saharan African and OECD countries. Research of (Mauro (1998), Abed and Gupta (2002), Gupta et al. (2002) and Rajkumar and Swaroop (2002) has also highlighted the important role of institutions and governance in mediating the nexus between social spending, indicators and growth. Poor governance has been identified as a key cause of ineffective social spending.

MDGs are a global agenda of actions for human development. Inter-countries comparison of progress on MDGs targets from different South Asian countries confirms that there seems little possibility of meeting the MDGs. This is probably due to resource constraints and diversion of resources away from health to meet the pressing expenditures of energy, floods, food and security over the last few years which had a significant impact on the delivery of health services. Though Pakistan has registered a significant decline in its child and maternal mortality rates since 1990 through a coverage of essential intervention to combat the major diseases malaria, measles and HIV etc. However, slow progress in the indicators of maternal health and child mortality are major concerns in the progress towards MDGs. Special efforts would be required to meet MDGs deadline of reducing the infant mortality rate to 40, under 5 years mortality rate to 52 and maternal mortality to 140 by 2015.

Prevention and treatment of HIV/AIDS remain among the most important condition for resumption of human development activities across much of the regions. The objectives of the HIV/AIDS prevention program are to prevent HIV/AIDS transmission and to promote safe blood transfusion. The number of injecting drug users has posed a threat of increasing numbers of total cases of HIV/AIDS in Pakistan. Still the prevalence of HIV/AIDS is considered to be as low as 1%, hence not considered a high risk country. The focus of the program is on behavior change communication (BCC), services to high-risk population groups, treatment of sexually transmitted infections (STIs) and supply of safe blood and capacity building of various stakeholders. Till date 4,500 HIV positive cases have been reported to the AIDS control programs at federal and provincial levels. The program is technically supported by the UN agencies and global fund against AIDS, TB, and Malaria.

Mother and Child health has been one of the priority areas of public health in Pakistan. This program has been launched by the government in order to improve maternal and neonatal health services for all, particularly the poor and the disadvantaged at all levels of health care delivery system. It aims to provide improved access to high quality mother and child health and family planning services, train 10,000 community midwives. Comprehensive emergency obstetric and neonatal care services in 275 hospitals/health facilities, basic services in 550 health facilities, and family planning services in all health outlets. Despite these modalities, Pakistan has shown a modest improvement in this segment and the Infant mortality rate and Child mortality rates are still very high as compared to the other countries in the region. It is envisaged that successful implementation of this project will bring these indicators in a respective range with improved health status of mothers and children.

Human Development Foundation (HDF) has been fighting against extreme poverty and deprivation through a unique holistic model of development focused on lasting change. The core stone of HDF efforts is commitment to work directly with communities through our social mobilization program. Through this program HDF facilitates the formation of democratic community organizations that empower individuals to have a say in the decisions that affect them. HDF is helping over 250000 people in Pakistan, educating over 10000 students, empowering people through 1700 community organizations, providing primary health care to 200000 patients treated, micro financing 7000 loans disbursed and maintaining 700 infrastructure projects including solar power initiatives. The HDF focuses on the social mobilization, education, primary health care, economic development and sustainable environment for achieving the targets of the MDGs.

As the HDF is working on the targeted MDGs in the district Mardan includes; promote gender equality and empowerment of women, reduce child mortality, improve maternal health, including reducing maternal mortality by three –quarters and prevent the spread of HIV/AIDS, malaria, and other diseases. Resting on the ongoing work of the HDF and the importance of the topic in contribution to the existing literature the internee selected the field work with the following objectives:

**Objectives Of The Study**

1. To study the different indicators of the MDGs in the study area at the gross root level.
2. To pinpoint the different MDGs indicators in the rural Mardan, where HDF working for its up-liftment.

**Material And Methods** District Mardan is comprised of two Tehsils, namely Mardan and Takhtbhai For this study only one Tehsil i.e. Mardan is selected purposively because the Human Development Foundation (HDF) perform the development activities from the last 15 years on different indicators of the Millennium Development Goals and also
due to the reason that I being an internship internee actively involved in all these activities with the organization. From this three union councils were randomly selected i.e. Khazana Dheri, Chamtar, Manga as a stratum and from this stratum three different sub-stratum of villages were selected randomly i.e. Gund Abad, Shah Kalay and Muslim Abad respectively. The respondents which mostly include the head of households having age between 25 -60 years. Primary data were collected by means of questionnaires already design by the HDF official/team about the different aspects of the MDGs and was confirmed from secondary data from different published and unpublished sources available. A total of 60 questionnaires were selected for the analysis of the study filled by the internee and the HDF team in the field due to the time and money limitations. From each village 20 questionnaire were randomly selected. As mostly the data were qualitative in nature and after collecting of the primary data it was analyzed by using descriptive statistics i.e. percentages and averages coupled by the used of non-parametric tests for checking the significant of the variable of interest in the study.

**Results And Discussion** Human Development Foundation is working on the targeted MDGs in the district Mardan includes improvement in maternal health, including reducing maternal mortality by three –quarters and prevent the spread of HIV/AIDS, malaria, and other diseases. The discussion starts from the married women in the households.

**Married women in the households** The MDGs and other global commitments have focused primarily on the entitlements and needs of women. Women play a significant role in the development of nation. Women are heavily engaged in domestic chores along with the socio-economic activities. They have major role in household management and they have to do of household works in spite of having low decision making power. After the marriage the women responsibilities in the household management increases. The data in table-I presents information regarding the number of married women in household. The numbers of married women were divided into a class interval of 1-2, 3-4 and 5-6. It is evident from the data in that in almost all villages an overwhelming majority (90%) of the household having 1-2 number of married women. This is attributed by the fact that in the sample area as like in Pakistan majority of the respondents having young people in the household. The chi-square value explained that there is a significant difference in the percent distribution of the respondents among the three selected villages.

**Table-I:** Respondents distribution on number of married women in the households

<table>
<thead>
<tr>
<th>Village Name</th>
<th>No women married</th>
<th>1-2 married women</th>
<th>3-4 married women</th>
<th>5-6 married women</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shah Kalay</td>
<td>0* (00%) (0.33)</td>
<td>18 (90%) (18.00)</td>
<td>1 (05%) (1.33)</td>
<td>1 (05%) (1.33)</td>
<td>20</td>
</tr>
<tr>
<td>Gund Abad</td>
<td>0 (00%) (0.33)</td>
<td>18 (90%) (18.00)</td>
<td>2 (10%) (1.33)</td>
<td>0 (00%) (0.33)</td>
<td>20</td>
</tr>
<tr>
<td>Muslim Abad</td>
<td>1 (05%) (0.33)</td>
<td>18 (90%) (18.00)</td>
<td>1 (05%) (1.33)</td>
<td>0 (00%) (0.33)</td>
<td>20</td>
</tr>
<tr>
<td>Total</td>
<td>1 (02%)</td>
<td>54 (90%)</td>
<td>4 (06%)</td>
<td>1 (02%)</td>
<td>60</td>
</tr>
</tbody>
</table>

* * figure without parenthesis is the frequency, (Percent distribution), expected cell totals, Chi-square statistic for each cell].

Chi-square statistic at 5% level of significance is 4.5 and P value is 0.609339.
Source: Field Survey, 2014

**Total numbers of eligible couples for marriage in the household** Women’s health during the reproductive or fertile years is relevant not only to women themselves, but also has an impact on the health and development of the next generation. Many of the health challenges during this period are ones that only young girls and women face. Married adults have made greater economic gains than unmarried adults. Individuals who are legally married under the laws of the State where they have a permanent home, living together in the same household and holding themselves out as husband and wife to the community in which they live. The data in the table-II depicts the number of eligible couples in household for marriage. The number of eligible couples was divided into a class interval of 1-2 and 3-4. The data in the table shows that in almost all villages an overwhelming majority of the household having 1-
2 number of eligible couples for marriage in the household. This implies that majority of the Pakistan population consist of the young group and are eligible to established the martial relationship in the society. Chi-square statistic explains that there is no difference in the percent distribution among the selected villages in the area.

**Table-II: Total numbers of eligible couples for marriage in the household**

<table>
<thead>
<tr>
<th>Name of Village</th>
<th>Number of eligible couples in HHs</th>
<th>1-2 couples</th>
<th>3-4 couples</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shah Kalay</td>
<td>2* (10%) (2.33) [0.05]</td>
<td>17 (85%) (16.33) [0.03]</td>
<td>1 (05%) (1.33) [0.08]</td>
<td>20</td>
</tr>
<tr>
<td>Gund Abad</td>
<td>2 (10%) (2.33) [0.05]</td>
<td>16 (80%) (16.33) [0.01]</td>
<td>2 (10%) (1.33) [0.33]</td>
<td>20</td>
</tr>
<tr>
<td>Muslim Abad</td>
<td>3 (15%) (2.33) [0.19]</td>
<td>16 (80%) (16.33) [0.01]</td>
<td>1 (05%) (1.33) [0.08]</td>
<td>20</td>
</tr>
<tr>
<td>Total</td>
<td>7 (12%)</td>
<td>49 (82%)</td>
<td>4 (06%)</td>
<td>60</td>
</tr>
</tbody>
</table>

* figure without parenthesis is the frequency, (Percent distribution), expected cell totals), Chi-square statistic for each cell.

Chi-square statistic at 5% level of significance is 0.8265 and P value is 0.934856.

Source: Field Survey, 2014

**Number of couples using contraceptive methods** Reproductive intentions are important predictors of contraceptive behavior. Joint fertility intentions of the spouse will significantly determine whether the couple will use modern methods of family planning (Bankole 1998). There is a positive relationship between income and knowledge of the respondents about the different methods of birth control (Shakeel 2003). Future fertility is likely to be more important to married couples when choosing a birth control method. The data in the table-III pointed the number of couples using contraception methods. The number of couples using contraception was divided into not using any methods and using 1-2 methods. Findings of the data revealed that in village Gund Abad 80% of the couple not using any contraceptive methods, while only 20% of the sample respondents use it. Also in villages Shah Kalay and Muslim Abad more than 70% of the respondents reported for not using any contraceptive methods. In the whole study area 75% of the respondents mentioned for not using any methods of contraception while only 25% reported for it use. This implies that in sample area people often don’t use contraceptive methods due to the strong cultural or religious backgrounds or not aware of any birth control mechanism. Chi-square value explains that there is not a significant difference among the percent distribution in the couple using contraceptive methods in the selected villages in the area.

**Table-III: Total number of couples using contraceptive method**

<table>
<thead>
<tr>
<th>Name of Village</th>
<th>Couples using contraception methods</th>
<th>Using 1-2 methods</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shah Kalay</td>
<td>15* (75%) (15.00) [0.00]</td>
<td>5 (25%) (5.00) [0.00]</td>
<td>20</td>
</tr>
<tr>
<td>Gund Abad</td>
<td>16 (80%) (15.00) [0.07]</td>
<td>4 (20%) (5.00) [0.20]</td>
<td>20</td>
</tr>
<tr>
<td>Muslim Abad</td>
<td>14 (70%) (15.00) [0.07]</td>
<td>6 (30%) (5.00) [0.20]</td>
<td>20</td>
</tr>
<tr>
<td>Column Totals</td>
<td>45 (75%)</td>
<td>15 (25%)</td>
<td>60</td>
</tr>
</tbody>
</table>

* figure without parenthesis is the frequency, (Percent distribution), expected cell totals), Chi-square statistic for each cell.

Chi-square statistic at 5% level of significance is 0.5333 and P value is 0.765928.

Source: Field Survey, 2014

**Numbers of deliveries ended in the last 3 years** Number of deliveries determined the women health status in the households. Continuous deliveries without any interval by a woman affect the neonatal health and also lead to the complication health problems for the mothers. Data in table-IV presents the number of deliveries ended in last 3
The number of deliveries in last 3 years was divided into no deliveries and 1-2 deliveries. The data in the table shows that in village Shah Kalay 70% of the population have no deliveries ended in last 3 years while only 30% have 1-2 deliveries ended. This shows that majority of the people are newly married and having no children yet and still have not opted for the child birth now. The chi-square value suggests that there is a significant difference in the number of deliveries ended in the last three years among the three selected villages of the area.

Table-IV: Total numbers of deliveries ended in last 3 years

<table>
<thead>
<tr>
<th>Name of Village</th>
<th>No. of deliveries ended in last 3 years</th>
<th>Having 1-2 numbers of deliveries</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shah Kalay</td>
<td>14* 70% (12.00) 0.33</td>
<td>6 30% (8.00) 0.50</td>
<td>20</td>
</tr>
<tr>
<td>Gund Abad</td>
<td>7 35% (12.00) 2.08</td>
<td>13 65% (8.00) 3.12</td>
<td>20</td>
</tr>
<tr>
<td>Muslim Abad</td>
<td>15 75% (12.00) 0.75</td>
<td>5 25% (8.00) 1.12</td>
<td>20</td>
</tr>
<tr>
<td>Column Totals</td>
<td>36 60%</td>
<td>24 40%</td>
<td>60</td>
</tr>
</tbody>
</table>

* figure without parenthesis is the frequency, [Percent distribution], expected cell totals), Chi-square statistic for each cell.

Chi-square statistic at 5% level of significance is 7.9167 and P value is 0.019095.

Source: Field Survey, 2014

HIV disease For many women, the years between puberty and menopause offer multiple opportunities for personal fulfillment and development. However, this can also be a time of health risks specifically associated with sex and reproduction that may result in a significant burden of mortality and disability. Women are particularly vulnerable to HIV infection, due to a combination of biological factors, lack of access to information and services, and social norms and values that undermine their ability to protect themselves. Their vulnerability may increase during humanitarian crises and emergencies when economic hardship can lead to increased risk of exploitation, such as trafficking, and increased reproductive health risks related to the exchange of sex for money and other necessities (WHO, 2010). Globally, HIV is the leading cause of death and disease in women of reproductive age and women’s particular vulnerability to HIV infection stems from a combination of biological factors and gender inequality (Ribeiro et al., 2008). The data in tables-V and VI, presents information about HIV. The information about HIV is divided into different categories i.e. use of contraception method, careful relationship with partner, avoid use of untested blood and don’t know. The value of the chi-square pointed that there is a significant variation in the knowledge of the percent distribution of the responders among the selected villages of the area about the HIV and AIDS diseases.

Table-V: Respondents distribution regarding information of major diseases

<table>
<thead>
<tr>
<th>Name of Village</th>
<th>Knowledge about HIV/AIDS</th>
<th>Having knowledge</th>
<th>Having no knowledge</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shah Kalay</td>
<td>17* 85% (13.33) 1.01</td>
<td>3 15% (6.67) 2.02</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Gund Abad</td>
<td>15 75% (13.33) 0.21</td>
<td>5 25% (6.67) 0.42</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Muslim Abad</td>
<td>8 40% (13.33) 2.13</td>
<td>12 60% (6.67) 4.27</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>40 67%</td>
<td>20 33%</td>
<td>60</td>
<td></td>
</tr>
</tbody>
</table>

* figure without parenthesis is the frequency, [Percent distribution], expected cell totals), Chi-square statistic for each cell.

Chi-square statistic at 5% level of significance is 10.05 and P value is 0.006572.

Source: Field Survey, 2014
Table-VI: Respondents distribution on HIV/AIDS prevention methods

<table>
<thead>
<tr>
<th>Name of Village</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shah Kalay</td>
<td>02</td>
<td>12</td>
<td>29</td>
<td>10</td>
<td>03</td>
<td>17</td>
<td>05</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>Gund Abad</td>
<td>05</td>
<td>29</td>
<td>12</td>
<td>01</td>
<td>12</td>
<td>30</td>
<td>02</td>
<td>19</td>
<td>15</td>
</tr>
<tr>
<td>Muslim Abad</td>
<td>05</td>
<td>29</td>
<td>12</td>
<td>01</td>
<td>12</td>
<td>30</td>
<td>03</td>
<td>12</td>
<td>08</td>
</tr>
<tr>
<td>Total</td>
<td>12</td>
<td>30</td>
<td>09</td>
<td>22</td>
<td>12</td>
<td>27</td>
<td>10</td>
<td>15</td>
<td>40</td>
</tr>
</tbody>
</table>

A= use of contraception method, B=careful relationship with partner, C=Avoid use of untested blood, D=Avoid use of infected syringe, E = Don’t know, F=HIV can spread through mosquito, G=HIV can spread through eating and talking with patient, H=healthy person can transmit HIV

Table-VII: Respondents distribution about malaria knowledge

<table>
<thead>
<tr>
<th>Name of Village</th>
<th>Having knowledge</th>
<th>Having no knowledge</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shah Kalay</td>
<td>19 [95%] (17.33) [0.16]</td>
<td>1 [05%] (2.67) [1.04]</td>
<td>20</td>
</tr>
<tr>
<td>Gund Abad</td>
<td>20 [100%] (17.33) [0.41]</td>
<td>0 [00%] (2.67) [2.67]</td>
<td>20</td>
</tr>
<tr>
<td>Muslim Abad</td>
<td>13 [65%] (17.33) [1.08]</td>
<td>7 [35%] (2.67) [7.04]</td>
<td>20</td>
</tr>
<tr>
<td>Total</td>
<td>52 [87%]</td>
<td>8 [13%]</td>
<td>60</td>
</tr>
</tbody>
</table>

Chi-square statistic at 5% level of significance is 12.4038 and P value is 0.002026.

Table-VIII: Respondents distribution about malaria prevention methods

<table>
<thead>
<tr>
<th>Village name</th>
<th>Use of anti-malarial medicines</th>
<th>Prevention measures from mosquitoes</th>
<th>Mortein mosquito repellent</th>
<th>Don’t know</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shah Kalay</td>
<td>3* [16%] (3.63) [0.11]</td>
<td>13 [68%] (12.12) [0.06]</td>
<td>4 [21%] (2.02) [1.94]</td>
<td>1 [05%] (3.23) [1.54]</td>
<td>21</td>
</tr>
</tbody>
</table>
TB disease  Tuberculosis (TB) is one of the major diseases to combat against which is included in MDG. According to WHO (2005) 6 million people die every year due to HIV/AIDS, Malaria and TB and of those 2 million deaths are due to TB. TB is curable but kills 5000 people every day. Also it was reported that 98% of TB deaths are in developing world affecting mostly young age people. Global TB incidence is increasing by 1% a year. TB especially affects the most vulnerable such as the poorest and malnourished. The WHO also reported that 8.8 million new cases are reported in 2013 with 80% in less developed countries. The data in the table-IX pointed in all villages still 12% of people did not know about TB. The ways to prevent the TB disease, it was reported by 30% of the respondents for use well boiled milk/water, 70% of the respondents for adopting hygienic measures against TB, while 13% don’t know how to prevent from TB.

Table-IX: Respondents distribution about TB and its prevention

<table>
<thead>
<tr>
<th>Name of Village</th>
<th>Do you know about TB</th>
<th>If yes then how one can prevent from TB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shah Kalay</td>
<td>Yes: 17</td>
<td>A: 05  No: 03</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B: 29  No: 12</td>
</tr>
<tr>
<td>Gund Abad</td>
<td>Yes: 18</td>
<td>A: 04  No: 02</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B: 22  No: 14</td>
</tr>
<tr>
<td>Muslim Abad</td>
<td>Yes: 18</td>
<td>A: 07  No: 02</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B: 39  No: 11</td>
</tr>
<tr>
<td>Total</td>
<td>53</td>
<td>16  No: 07  30  No: 12  37  No: 70  07  No: 13</td>
</tr>
</tbody>
</table>

Source: Field survey, 2014

Conclusion And Recommendations  The findings of the study conclude that HDF is working on different indicators of MDGs in the rural areas of district Mardan effectively since from 1992. The empirical results of three selected villages pointed out that HIV/AIDS, knowledge about malaria, information regarding TB, DM is at maximum level and by looking the present progress, it will be stated that the desired result will be achieved in the specified time limit of the MDGs by the respective organization. The achievement at maternal health care, births attendant status and immunization of children against EPI is not satisfactory at all levels and hence cannot achieve the specified targets in the area. The study as a whole concludes that the HDF play a very important role in achieving the targets of the MDGs in the rural Mardan and contribute positively to the lives of the people. On the basis of the study findings the following recommendations are forwarded for future policy formulation about the targets of MDGs in specific to the rural areas of Mardan, other rural areas of the Province and Pakistan and the whole developing countries having similar socio-economic characteristic.

I. There is a need of social campaign/awareness among the respondents about the different contraceptive methods for control of the population problem in the area.
II. There is a need of births control at the household’s level, and this can be achieved by taking in to confidence the household head/local elders about the different interventions made by the government and NGOs in the area.

III. Proper measures should be adopted for the prevention of DM, malaria and HIV/AIDS. They must be aware through awareness programs.

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INSTITUTIONALIZATION AND GOVERNANCE:
SUPREME COURT OF PAKISTAN’S VERDICT
ON ASGHAR KHAN CASE

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ABSTRACT: Verdict delivered by Supreme Court of Pakistan contains
importance with respect to institutional approach in game theoretic environment
towards the analysis of role Supreme Court of Pakistan in good governance
because all major players or institutions were involved to impact governance of
the country in a concerted and collective way. There is no denial of the fact that
the speed and the extent with which the said case charged the political
environment and attracted attention and focus of media, with the same all was
cleaned, settled and vanished out of the attention as nothing happened. But in
spite of such an extreme insensitivity on the part of Pakistanis as a nation
towards history the uniqueness of the case lies in the fact that for the first time in
the constitutional history of Pakistan Army generals were brought in premises of
courts as a party to dispute which created at least a perception that generals are
also subject to some authority when it comes to dispensation of justice.

Key Words: Institutionalization; Good Governance; Supreme Court Of Pakistan

This work is divided into few sections. First section will narrate the factual and historical developments of the
case. Second section will be an attempt to taking of stock of variety of analysis of scholars, lawyers, members of
intelligentsia and social and political scientist. Third section will be dedicated to analysis of verdict through
institutional perspective to dwell upon the role of Supreme Court of Pakistan in fostering good governance in
Pakistan. Such variety of analysis will broaden the horizon of analysis and help integration of divergent views.
Fourth section will be the conclusion of this work.

1. General Elections 1990 - Judicial Developments General Zia ul Haq took over the governing reigns of
country on 5th July 1977 through imposition of martial law throughout the country and continued to rule the
country in two institutional capacities: Chief of Army Staff and President of Pakistan till 17th August 1988 when
he along with mainstream military leadership and foreign diplomats met their unceremonious but natural death
in plane crash which was destined to Bhawalpur airbase (Pakistan Herald). Along with him key military
leadership of the country and well known diplomatic/foreign personalities. Vacuum created in two institutional
offices: COAS and President, in the shape of departure of late General Zia ul Haq was covered on 17 August
1988 by General Mirza Aslam Beg the then Vice Chief of Army Staff, who flew to Bhawalpur Base in a
different plane on the day of aforementioned plane crash and Ghulam Ishaq Khan as an acting President,
respectively. Ghulam Ishaq was earlier serving as Chairman Senate of Pakistan. Pakistan People Party won
enough number of seats in the elections held on 16th November, 1988 to constitute their government at the
centre. Provincial governments and central government chose Mr. Ghulam Ishaq Khan(late) as their new
president of the country. But election of Ghulam Ishaq Khan was proved as death knell for the then PPP-led
government because subsequent differences between Prime Minister and President rose to a point of no return at
which Ghulam Ishaq Khan packed up the PPP’s government by invoking 58-2(b) of the Constitution of Pakistan
on the pretext of failure of government to maintain the accordion between its functions and constitution. Act of
dissolution of government was challenged in Supreme Court of Pakistan but to get the ratification. Mr. Ghulam
Mustafa Jatoi became the new ascendant of office of Prime Minister in a care-taking capacity to hold fresh
elections (The Express Tribune, May 5 2013). Elections took place on 24th October 1990 as a result of which
Islami Jamhoori Ittehad (IJI-a conglomeration of nine political parties constituted the government. Mian Nawaz
Sharif who had already served as Chief Minister of Punjab in Zia’s regime was elected as Prime Minister by the
house. Nawaz’s government met the same fate which his predecessor had met. Ghulam Ishaq Khan under the
same constitutional article 58-2(b) dissolved the IJI-led National Assembly on 19th April 1993 showing mal-
administration, corruption, nepotism as causes (Mcgirk 1993). This time Balakh Sher Mazari took the reigns of government as care taker Prime Minister (Ibid). Constitutional history took a slight turn after the dissolution of IJI-led National Assembly when such an act was declared unconstitutional by the then Supreme Court of Pakistan and hence resultant assemblies were restored (Mehdi 2013). But such a turn though was meaningful in terms of institutional role of Supreme Court in good governance as it protected the course of democracy but proved to be meaningless in terms of political development because later on the then restored Prime Minister Nawaz Sharif himself advised the President to dissolve the assembly which had been acted upon by him followed by his taking of leave under a political understanding (Ibid). Vacuum was filled by the then Chairman Senate Wasim Sajjad as acting President and Moeen Qureshi as care taker Prime Minister (Ibid). Pakistan Peoples Party (PPP) once again secured largest number of seats in the elections held on 6th of October 1993 and made new government under the Premiership of Benazir Bhutto. In her second term Benazir Bhutto had had a new dynamic in institutional relationships the President and Prime Minister, given the fact that new President Farooq Khan Leghari was a PPP stalwart. But as the rules of games had a tilt towards office of President in the shape of article 58-2(b) so political affiliation of the then President Farooq Khan Leghari with PPP made a little difference to stop President Farooq Leghari from dissolving the National Assembly on November 6 1996.

This was the second tenure of Benazir Bhutto during which the whole story started when Maj. General (rtd) Naseerullah Babar who was serving as interior Minister in PPP’s government in his speech on June 11 1996 in National Assembly provided many tip offs to machinations and manoeuvrings carried out by military establishment under the command of General Mirza Aslam Beg and Assad Durrani to get favourable results for IJI in 1990 elections (The Frontier Post, February 9 2012). He presented an affidavit signed on July 24 1994 by Lt. General Assad Durrani which stated that in 1990 elections an amount was distributed among candidates in carrying out the instructions given to him by the then COAS General Beg “to provide logistic support to the disbursement of donation made by some businessmen of Karachi to the election campaign of IJI” (Ibid). He was also told that the operation had the blessings of the Government and proceeded to act in accordance with the instructions received by him (Ibid).

2. How the Asghar Khan Case Was Initiated? Air Marshal (R) Muhammad Asghar Khan, the founder of political party Tehrik-e-Istaqlal (TI) Pakistan and ex-Chief of Air Staff wrote a letter to the then Chief Justice Sajjad Ali Shah on June 16 1996 in which he referred to the said speech of the then Interior Minister Naseerullah Babar that ‘General (R) Mirza Aslam Beg, a former Chief of the Army Staff, had drawn Rs. 15 Crores from the Mehran Bank and had distributed this amount to various people prior to the 1990 elections. He disclosed that this had been done through Lt. Gen. (R) Assad Durrani, the Director General of the Inter Services Intelligence Directorate, at that time (Khan 2012)’. He requested the then CJP “to initiate legal proceedings against both these persons who have brought the Armed Forces of Pakistan into disrepute and have been guilty of undermining the discipline of the Armed Forces” (Dawn February 29 2012). Supreme Court conducted the first hearing of the case on November 24, 1996 (The Express Tribune October 7 2013). During the course of case hearings Brig (rtd) Kamal Alam Khan requested the then Chief Justice of Pakistan to consider him as a party to the case subjudiced before the apex court (Sigamony 2012). The application through which such a request was made contained the names of those officers who took part in the task of distribution of money among various political figures among which one worth quoting personality was Brig (rtd) Hamid Saeed Akhtar. Request of Kamal Alam Khan was accepted to the extent that he was allowed to attend the proceedings only but he was not allowed to act as a party to the case in question. Brig (rtd) Hamid Saeed Akhtar responding to the apex Court’s notice turned up at next hearing and submitted a written reply along with excerpts of his personal diary on October 18 2012, in which he sketched a background picture against which whole operation of distribution of money was executed (Farooq 2012). His statement mentioned the whole episode in an organized, comprehensive, detailed and step by step way. He pointed out the governance conditions of that time by referring to deteriorating law and order situation prevailing in Karachi which showed the failure of PPP government led by Benazir Bhutto. There were two interesting points in his statement. First was his mentioning of the point of differences between civilian government and military establishment over the issues of uranium enrichment, military exercise in Sindh and Benazir’s assurance to India of crushing the Khalistan Movement which reflected the institutional conflict between Prime Minister and military establishment (Khan 2012). Second was his characterization of PPP-government and its policies as something dangerous to National Security when he underlined the Government’s grant of lucrative jobs to activists of Al-Zulfiquar Trust in various State owned enterprises who according to his statement were trained in India and authentic information regarding that was provided to military intelligence of that time (Ibid). He further confessed that that in September 1990 the then DG MI Major General Asad Durrani came to Karachi and gave number of directions to him. First direction was to open six accounts. Second was to send the titles and number of each account back to the then DG MI Major General Asad Durrani. Third direction was of continued and consistent monitoring. Fourth, was to deal all that accounts as secret. Last, was to hire the services of Grade-1 officer for completion of task. (Asghar Khan v Mirza Aslam baiq and others, H.R.C 19 of 1996, Supremecourt.gov.pk).
Brig Hamid noticed that “funds started pouring in from 16th September 1990 onwards. By 22nd October 1990, Rs. 140 Million had been received in these accounts” (Ibid). In his statement he provided the details of distribution among recipients. General Mirza Aslam Beg being respondent in the case submitted his reply on 23 February 1997. In first glance his reply seems to be a mere legal reply in the apex court but if analysed deeply then structural junctions among institutions have been pointed out in his reply. He said that the creation of political cell in ISI was the project of the then Prime Minister of Pakistan Zulfiquar Ali Bhutto. After that creation, cell was responsible for all types of intelligence to Chief Executive of the country i.e. Prime Minister of Pakistan. Manoeuvrings and manipulations among the candidates to elevate candidates of selective kind in power were carried out by Inter Service Intelligence (ISI) on the directions of Prime Minister. Dealing of ISI with Younas Habib was the pursuit of same directions. (Ibid). Specifically mentioning 1990 elections he put the responsibility on the then President Late Ghulam Ishaq Khan who not only established an Election Cell in the Presidency but also supervised it directly during the tenure of interim government in 1990, when election had been scheduled to take place within ninety days. Function of management of the cell, according to Baig, was performed by M/s Roedad Khan and Ijlal Haider Zaidi (Ibid).

He further contended that Rs 140 million were contributed as donations by Younus Habib and his community under the instruction of election cell of Presidency in cover accounts of ISI which were opened by 202 survey sections (Ibid). He questioned the intentions of Major Naseerullah Babar by underlining the contradiction between his two statements in which he mentioned two different amounts; one of the statement acknowledged that money was distributed among politicians and the other declared Beg as recipient; in one statement Naseerullah Babar claimed to be in possession of some computer diskette and in other he denied. Then he took exceptions to allegations of Asghar Khan on interesting grounds. By referring to definition of lawful command under Pakistan Army Act section 33 Note(b) Beg pleaded that he and the then DG ISI Assad Durrani were not the perpetrators of gross misconduct. He further stressed that Naseerullah Babar’s speech and disclosure of information in question on floor of National Assembly was violation of Official Secret Acts and Malicious Act (legaladvice.com, Wikipedia.org).

Asghar Khan filed his observations over the reply of General Beg and attempted to rebuff his contentions. His targets of rebuttal were lawful command, subordination to chief executive, and nature and extent of Beg’s involvement in the disbursement of money. As all these targets of rebuttal by Asghar Khan are relevant to institutional perspective of this research so it needs brief explanation. He contended that article 199(3) of constitution of Pakistan 1973 and section B(3)&B(11)note of Pakistan Army Act had been erroneously interpreted by General Beg because former applied to a person subject to military law and later applied to the suppression of disturbances and issuance of command by a civil officer to Army Officer. He rebutted ground of lawful command taken by General Beg by referring to Nuremberg trials, Nawab Ahmed Khan Case and one of his personal experience when he was in service and refused to obey a lawful command. He stressed on worthlessness of unlawful command which should not have been obeyed by the then ISI Chief Assad Durrani. He also accused General Beg as abettor in the crime of interfering in political process through distribution of money among IJI candidates because he had been aware of all the malafide activities and should have shown great concern about that due to violation of military laws and service discipline but preferred to be a silent spectator. Then the fundamental knot got untied on 31st October 1997 when Major General Asad Durani the then ISI Chief unveiled in the reply submitted to the apex court the circumstances in which affidavit was got signed by him. On May 11 1994 he took up the charge of his appointment as Ambassador of Pakistan to Germany (Ibid). He was informed by Naseerullah Babar about constitution of a commission of inquiry on Gen Beg’s statement in his press release in April 1994 on which the then Army Chief General Waheed Kakar had no objection as per Naseerullah Babar’s words (Ibid). One Rehman Malik of FIA was sent to him in Germany who got signed statement on court paper by him as his input to inquiry commission’s proceedings after assuring him of keeping that confidential. In that reply of 31st October 1997 he preferred to explain his stance on earlier letter written to PM and affidavit in chamber of Chief Justice or during in-camera proceedings due to legal limitation put by Official Secrets Act.

General Beg, during one of hearings in 2012, when case had been resumed, requested the apex court to issue directions to concern authority to provide statements submitted in two inquiry commissions on Mehran Bank Scandal and Habib Bank for his defence in the case responding to which Apex Court issued the directions but later came to know that official copies of detailed report by two commissions are missing except one interim report sent on 22nd April 1997 by the then chairman of commission Mr. Justice (R) Muhammad Ilyas (Ibid). For ascertainment of the facts Vice Chairman HBL and Governor State Bank of Pakistan on May 17 2012 was directed by the Apex Court to share all relevant material available with him. Replies filed by the two coupled with the facts mentioned in report of Brig(rtd) Hamid Saeed Akhthar and affidavit of Major General Assad Durrani left no doubt in withdrawal, deposit and distribution of money. On 22 October 1997, Mr Akhtar Ali Chaudhry AOR highlighted the gravity of sensitivity enveloped by the case and requested the court to conduct the proceedings in camera to take
full care of national interest and institutional interest of Pakistan Army which was vigorously opposed by General (rtd) Aslam Beg on the ground that matters of national security should be handled independent of matters of other institutions not related to matters of national security. Allegations about political cell was that it was impeding the people’s constitutional right of association. Therefore probing of such allegations should be dealt with independently of its functions relating to matters of national security (Asghar Khan v Mirza Aslam baig and others, supremecourt.gov.pk, H.R.C of 1996).

He further rebutted the accusation of abetment in one of statement of Asghar Khan submitted in the apex court by taking the plea that control mechanism of Inter Service Intelligence came within the domain of Chief Executive after 1988 elections and on the same side it was reportable to Joint Chief of Staff Committee. Army was neither supervising nor managing ISI in any context which can come within the category of influence, after 1988 elections (ibid, para 18). He further stressed that at that in spite of the fact that ISI Chief was a person in Uniform COAS had no authority to take action against ISI chief.

Ministry of Defence in its reply submitted on 24 February 1997 rejected the allegations on ISI of having received and distributed money for manipulation and manoeuvring of 1990 elections in its reply submitted to the apex court(The Express Tribune October 3 2012). Ministry’s reply also underlined contradiction between stances of Ministry of Defence and Naseerullah Babar over amount of money which was confirmed when the record of assembly proceedings on the day of speech made by him in assembly because there was no mention of amount in official record of assembly’s proceedings in his speech. Then about the maintenance and sustained function of a political cell in ISI court inquired in number of hearings that whether government still wanted to retain the cell or not as the court observed from one letter of the then Secretary Defence submitted by the then Attorney General along with the relevant document showing the establishment of political cell in ISI, but to no avail. No document was presented pertaining to present status of such cell if it is any. But before going into the details of location of the present status of political cell in ISI aforesaid document it is necessary to mention that how the case petitioned in 1996 was resumed in 2012 again so that flow of events can be narrated in arranged manner and for this the major events are reflected in a time line manner, reported in special report of The Express Tribune of October 20, 2012 as following:

Oct 12, 1999
Last hearing of the case is held before it is shelved off for another 13 years, following Gen Pervez Musharraf’s coup. A total of 14 hearings had been held so far

Dec 20, 2006
The National Accountability Bureau recovers Rs1.6 billion from Yunus Habib

Dec 12, 2011
At a joint press conference with PTI chief Imran Khan, Asghar Khan urges the court to pick up his petition

Feb 29, 2012
Chief Justice Iftikhar Chaudhry resumes regular hearings of Asghar Khan’s petition

April 30, 2012
Statements of Gen Beg, Lt Gen Durrani and Naseerullah Babar are found to be missing from record; Advocate Salman Akram Raja, counsel for Asghar Khan, informs court that Rs60 million and Rs20 million had also been given to ISI’s ‘K’ fund and its Directorate of External and Operations respectively

March 7, 2012
After years underground, a frail wheelchair-bound Yunus Habib resurfaces, appears before the Supreme Court

March 8, 2012
Lt-Gen (retd) Asad Durrani takes a stand in the SC, provides an affidavit that the army had indeed distributed Rs140 million to anti-PPP political candidates only a few months before the October 1990 general elections. Yunus Habib reveals in his first statement to the court that Gen Beg and then president Ghulam Ishaq Khan forced him to arrange around Rs350 million in the ‘supreme national interest’

March 29, 2012
Intelligence Bureau (IB) chief Aftab Sultan appears before court; says he has no knowledge of the alleged funds being issued by the agency

May 8, 2012
Gen Beg denies any involvement in, or knowledge of, dishing out money to politicians in the 90s; he blames Lt-Gen Durrani

June 21, 2012
SC asks defence ministry to produce the notification under which a political cell in the ISI was set up in 1975

July 25, 2012
Lt-Gen Durrani names military officers allegedly involved in rigging the 1990 elections; claims half of the Rs140 million were distributed through him, the rest were deposited to ISI’s secret funds

Sept 12, 2012
Attorney General Irfan Qadir informs court the notification for the creation of ISI’s political cell is unavailable; court reiterates demand for notification

Oct 2, 2012
Defence ministry says no political cell was operating in the ISI

Oct 3, 2012
SC makes the Presidency a respondent in the case; CJ Iftikhar Muhammad Chaudhry says the president’s office cannot be used for political activities

Oct 14, 2012
CJ Chaudhry says Lt-Gen Durrani violated the Constitution and his oath by distributing the funds among politicians

Oct 17, 2012
Presidential Secretary Malik Asif Hayat’s response to the court says no political cell has been operating in the presidency since 2008; Gen Beg and Lt-Gen Durrani point fingers at each other

Oct 18, 2012
Former Military Intelligence chief Brig (retd) Hamid Saeed submits his statement to the court

Oct 19, 2012
SC announces verdict in the case’

As regards to what happened after the resumption of the cases by Supreme Court of Pakistan in February 2012 till its legal conclusion in October 2012 five major developments are worth mentioning to take new information into consideration and for the subject matter of this research. First major development was the summoning of Younas Habib and he on turning up at Supreme Court submitted a detailed affidavit(The Tribune October 3 2012). Second new development was filing of a concise statement by Lieutenant General (rtd) Assad Durani on March 8 2012(The Express Tribune, July 27 2012). Third new development was about General Beg who then responded to his affidavit by submitting a counter affidavit on March 9 2012. Fourth distinguishing development was Younas Habib’s submission of an affidavit in response of two affidavits submitted on March 8 and March 9. On May 17 2012 first Attorney General was asked to find and present the notification pertaining to constitution of political cell in ISI through an executive order and then to do the same(The Tribune September 14 2012). Commander Shahbaz Director(Law), Ministry of Defence was directed regarding the same but in reply such a notification was reported to be as unfound(Ibid). Then on September 13 2012 Secretary interior and Secretary Defence was directed to submit their explanation about any such cell if any is functional in any of the agencies working under Defence Ministry or Interior Ministry(Ibid). Defence Ministry communicated its reply to learned advocate general that no such entity with the name or function of political cell is functional in Inter Service Intelligence (ISI) nor such an agency or body is administered by Ministry of Defence (Dawn October 4 2012).

Counsel of General (R) Mirza Aslam Beg ASC Mr. Akram Shiekh referred to order of the apex Court on June 26 1997 which confirmed that relevant document regarding establishment of political cell in ISI in 1975 was shown to court in initial stages but now the same was unfound(Sigamony 2012).

As regard to presence of political cell in presidency was concerned Malik Asif Hayat Secretary to President on October 17 2012 confirmed to the apex court that no relevant document had been found in presidency which can furnish the idea of presence of any political cell in presidency(The Nation October 17 2012). On October 18 2012, after consultation military secretary of President ,a statement informing the court about unavailability of relevant document was submitted in the apex court through Mr. Arshad Ali Chaudhry Director Legal President House(Abbasi 2012). However the apex court confirmed the presence of the same on the basis of affidavits, replies of General (rtd) Aslam Beg, Lieutenant General(rtd) Assad Durani and Younus Habib. In all of above developments affidavit of Younus Habib needs some light to be shed on because stances of others have already been explained except him and such an explanation will further complement the information. Younus Habib rejected the contention of other parties to the case that he contributed particular amount of money to some accounts. He told in his affidavit that he first met General Beg back in 1979-80 at house of one Brigadier Qamar-ul-Islam when he was Vice President of Habib Bank. That meeting and number of frequent talks among us after that evolved such a close relation which emboldened him to communicate President’s willingness, in March 1990, to arrange Thirty Five million rupees before 1990 elections. He, in his submitted affidavit, unveiled that for fulfilment of the same purpose which was labelled by both Ghulam Ishaq Khan and General Aslam Beg as national cause and national interest, a meeting brokered by General Beg was held among us in which President Ghulam Ishaq reiterated the earlier communicated demand and nodded at the requirement of

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manipulation for arrangement of such told by him in the same meeting. Then he was arrested by FIA officials and kept under custody for more than six consecutive days on orders of Roedad Khan which pushed him to arrange money by hook or by crook. He sanctioned a loan of Rs 148 crores in names of his friends by provincial committee and executive committee of the Habib Bank Ltd which was transferred to the accounts mentioned in detachment provided by General Beg and Colonel Akbar (Dawn September 3 2012).

Here reflection of the way in which argument, reason or ground of national cause and national interest is used, is worth mentioning by referring to some paras of Younus Habib’s affidavit in which he mentioned he and General (rtd) Mirza Aslam Beg were in frequent contact and used to talk to one another. He conveyed the designs of the then President Late Ghulam Ishaq Khan about holding of elections in great national interest. He further conveyed direction of the then president to him about arrangement of Rupees 350 million. Later on, a meeting was held among President, General (rtd) Mirza Aslam Beg and himself in which arrangement of 35 to 40 crores had been referred to, for the great national interest. Younas habib clarified the point that such a huge amount couldn’t be arranged through legal channel and some out-of-line option was needed to be adopted. The then President Ghulam Ishaq Khan affirmed going ahead with such manipulation for the national objectives. He further stated that he was not aware that he had to go behind bar for four years in pursuit of national interests without cognizant of the objectives for which money was dispensed and objectives which had been subjectively equated to national interests (Ibid).

The counter affidavit of General (rtd) Beg and concise statement of Assad Durrani contained rebuttals and regurgitation of their earlier stances so that is not worth explaining. Having narrated important points of Younus Habib’s judicial stance it is necessary to compare the details of distributed money in various in submitted document by different people in this case which is shown in the following table (Khan 2012, Asghar Khan v Mirza Aslam baig and others para 24):

<table>
<thead>
<tr>
<th>Lieutenant General (rtd) Asad Durrani</th>
<th>BRIG (RTD) HAMID SAEED AKHTHAR</th>
<th>YOUNUS HABIB</th>
</tr>
</thead>
<tbody>
<tr>
<td>140 million rupees was deposited in Karachi accounts</td>
<td>By 22nd October 1990, Rs. 140 Million had been received in these accounts. Thereafter following amounts were remitted as ordered by DGMI:- a. Rs.40 Million to GHQ account. b. Rs.10.5 Million to regional office of MI Quetta. c. Rs.5 Million to interim PM Mr. Ghulam Mustafa Jatoi d. Rs.5 Million to interim CM Sindh Mr. Jam Sadiq Ali e. Rs.2.5 Million to Mr. Muhammad Khan Junejo. f. Rs.3 Million to Mr. Abdul Hafeez Pirzada g. Rs.2 Million to Mr. Sibghat-Ullah Pir sahib Pagara. h. Rs.03 Million to Mr. Muzaffar Hussain Shah. i. Rs.03 Million to Mr. Muzaffar Hussain Shah j. Rs.0.3 Million to Mr. Ghulam Ali Nizamani. k. Rs.02 Million to Mr. Arbab Ghulam Rahim l. Rs.03 Million to Mr. Salah-ud-Din (Takbeer) m. Rs.05 Million to Mr. Yousaf Haroon n. Rs.3,828 Million to Sindh Regimental Centre, and also used for construction of men’s living barracks, interrogation</td>
<td>That the loans worth Rs.148 crores were sanctioned by Provincial Committee and Executive Committee of the Habib Bank Ltd. A total Rs.(34) crores out of Rs.148 crores were disbursed as under: - i. 140 million through Gen Beg as detailed above. ii. 70 million to Mr. Jam Sadiq Ali, the then Chief Minister Sindh. iii. 15 million to Pir Pagara Sahib through late Jam Sadiq Ali. iv. 70 million were paid to Mr. Yousuf Memon on the instance of the President/Gen Beg for the politicians who did not want to get money directly from ISI.</td>
</tr>
</tbody>
</table>
In the end it is imperative to conclude this section of the chapter by briefly narrating the perspectives of various actors in the game. Though these actors are individual but institutions animate and functions through these individuals as actors which at some time present a synonymous picture of two concepts to observers and researchers. Main points articulating and summarising the stances of various parties are:

Naseerullah Babar on the basis of one press release by General Beg asked Lieutenant General Assad Durani to cooperate in proceedings of one inquiry commission constituted for inquiry of distribution of money in 1990 elections and for the same purpose he got legal statement signed by Assad Durrani through Rehman Malik the then Director FIA. Naseerullah Babar misused the confidential statement of Assad Durrani by disclosing it on the floor of assembly. Asghar Khan wrote a letter to the then Chief Justice Supreme Court of Pakistan and after referring to the disclosure of affidavit by Naseerullah Babar requested the apex court to initiate legal proceedings against General (rtd) Aslam Beg and Lieutenant General (rtd) Asad Durrani for gross misconduct, bringing armed forces into disrepute, and guilty of disruption of discipline of Pakistan Army.

Violation of article 17, article 2(A), article 19(A), article 25, article 51(6) was considered as the basis which gave impetus to the public importance of the case and maintainability of the petition was argued on the basis of same articles coupled with reliance on earlier decided cases.

3. Stances Of Various Players Of The Game:

3.1. General (Rtd) Mirza Aslam Beg-The Then Coas

The stance of General (rtd) Mirza Aslam Baig is given in Asghar Khan v Mirza Aslam baig and others, para 11 and 23 in which he clearly mentioned that he had the information about arrangement and circulation of money and also about its objectives. He himself didn’t carve out his portion in the transacted money. He was neither the recipient nor the sender of money. ISI was in possession of the accounts to which Rs 140 million had been transferred by Younus Habib. ISI opened and managed all those accounts on the directions of the then Chief Executive as ISI became responsible and answerable directly to chief executive of Pakistani government in the wake of creation of political cell in ISI. He kept Ghulam Ishaq Khan the then president informed of all the transactions and its dispensation by the then DG ISI who was doing nothing except carrying out the lawful command. From the stance adopted by Gen (rtd) Mirza Aslam Beg in the Supreme Court, three things can be inferred. First, he himself didn’t take money. Secondly, he was shifting responsibility to office of the Chief Executive. Thirdly, he took the plea of lawful command that ISI was only carrying out that command which it was bound to follow. His three pronged stance seems to aimed at saving ISI as an institution and himself as an individual.

3.2. Assad Durrani

Lieutenant General (rtd) Asad Durrani has clarified his position in Asghar Khan v Mirza Aslam baig and others, para 4,7 and 24 of the verdict that he followed the directions of the then Chief of Army Staff Gen(rtd) Mirza Aslam Beg to extent possible support for arrangement of money in the form of donations and its disbursement in electoral success of Islamic Jamhori Itehad. He mentioned in the said paragraph that the then government’s nod gave fillip to such instructions of COAS.

3.3. Asghar Khan:

The gist of the submissions by Air Chief Marshal (rtd) Asghar Khan is mentioned in Asghar Khan v Mirza Aslam baig and others, para 6 and 12, in which he held General (R) Mirza Aslam Beg and of Lt. Gen. (R) Assad Durrani as responsible and culprits. He submitted that these two officials of Pakistan Army are responsible for violation of institutional discipline and disgrace of Pakistan Army as an institution. He drew a clear line between lawful command and unlawful command by saying that it is not enough for a command to be lawful that such command is given by your immediate boss. Decision of determining a command to be lawful or unlawful rests on individual.

3.4. Younas Habib

President Ghulam Ishaq Khan and former Chief of Army Staff General Mirza Aslam Beg paved the way for arranging the money distributed among politicians. They held meetings with him(Younus Habib) and then he had been compelled to arrange the money through manipulations with accounts in the name
of national cause or national interest. He (Younus Habib) then arranged the money by getting it sanctioned from Provincial Committee and Executive Committee in accounts of his friends (Ibid, para 22).

3.5 Ministry Of Defence: Stance of Ministry of Defence can be understood from Asghar Khan v Mirza Aslam Beg and others, para 26 where it submitted that no entity with the name or function of political cell is working in ISI as an institution or any other wing controlled by Ministry of Defence. Hence neither Ministry of Defence nor any agency allegedly to be associated with Ministry of Defence receive any amount in September/October 1990. In the wake of this, no question of distribution of money among politicians of that time doesn’t arise.

3.6 Ministry Of Interior: IB/ISI are not working under the administrative control of Ministry of Interior. Furthermore, no other agency under the administrative control of Ministry of Interior is running any political cell. (Asghar Khan v Mirza Aslam Beg and others)

3.7 Presidency: No document/file pertaining to the cell allegedly set up in the Presidency in the year 1990 or thereafter was found (Ibid, para 30).

3.8 Supreme Court Of Pakistan: Federal government must take actions against former Chief of Army Staff General (rtd) Mirza Aslam Beg and former DG ISI Lt Gen (rtd) Assad Durrani according to constitution. Federal Investigation Agency (FIA) was directed to initiate a probe against those politicians against whom allegations of receiving of embezzled money had been levelled and if anything corroborating the allegations found it is supposed to proceed according to law. Supreme Court of Pakistan issued notices to Attorney General of Pakistan, printers and reporters for explanation of news published in an English newspaper regarding spending of money on toppling of Punjab Government in the year 2008-09 (The Nation November 1 2013).

4. Institutional Role Of Supreme Court Of Pakistan: When we analyse Asghar Khan’s case in institutional framework to unearth the institutional role of Supreme Court of Pakistan in good governance it is observed that matter is not confined to embezzlement of thirty five crore rupees or more than that but focus should be attracted by the legal definition and adjudication carried out by Supreme Court of Pakistan.

The institutions with which Supreme Court if Pakistan dealt with in its verdict on Asghar Khan Case were Superior Judiciary itself, office of the President and Pakistan Army. Regarding the Superior Judiciary itself, Supreme Court touched upon two major aspects. First was the definition, attribution, and explanation of bias of the Judges. Second aspect was the division and differentiation between the Supreme Court’s earlier role through its verdicts pertaining to indulgence of President in office and new verdicts on the same which has washed out the effect of all earlier verdicts on the same issue. Dealing with the second institution i.e. office of President, Supreme Court of Pakistan relying on historical, theoretical, empirical and legal evidences delve into the nature, power, functions, limits and extent of attributes of the office of President which clarified its parameters and concluded that President is an apolitical office. Last but not the least part of the verdict which dealt with Pakistan Army contained explanation of extent of powers and functions of Armed Forces. Rationale taken by the Armed Forces for intervention in politics and justifying tactics used by them to attain and maintain the legitimacy was discussed and concluded on the note where a very crucial institutional norm was reconstructed when it was inked in the verdict in loud and high that unlawful command is worthless to be obeyed. It is essential to explain briefly major points of discussion in verdict’s way of dealing with every institution to dig out the characteristics of the case which have made the difference in judicial history of Pakistan and linked situation of governance in institutional context.

Bias on the part of judges was the important subject which was dealt with in detail by Supreme Court because it was tantamount to self-accountability. Attorney General raised the objection over objective adjudication of the case by judges of the bench hearing the case and requested to constitute a larger bench which was responded in the verdict by relying on cases: Pakistan v. Abdul Wali Khan (1975 PSCR 1), Asad Ali v. Federation of Pakistan (PLD 1998 SC 161) and Canons of Professional Conduct and Etiquette of the Pakistan Bar Council, Chapter III (Duty to the Court). It was established that conjectures, mere apprehension, inferences drawn from circumstantial indications, personal choices of litigants cannot be on the basis of arguments pleaded to question the objectivity of the judge or to prove the personal interest of the judge in the case under hearing, instead, if such an exception by either party to the bench meets failure in corroboration then party taking the exception may face the charge of contempt (Asad Ali v. Federation of Pakistan ,PLD 1998 SC 161, Asghar Khan v Mirza Aslam Beg para 44 ). Through this SCP again attempted to garner proportion of coherence and its unity by focusing on institutional interests requiring the strength and trust in consciousness of a judge about his/her duties (Huntington 1973). SCP overruled the argument of bias and hence achieved institutional interest required for generational age and protection of public interest which were considered as requirement for strength of
governmental organization to ensure good governance through enhancement of level of institutionalization (Ibid).

Office of the president remained the subject of attention for the greater part of verdict. President as an institution is a core part of governance in modern federations. Greater number of pages were dedicated to president’s role in politics and sustenance of democracy which is a process involved in governance. Main aim of narrating the whole story of institutional roles of two institutions: President and judiciary with respect to politics of the country was to subject president as well as itself to a stopper from whereon old course of ratification of every step of president by judiciary is going to change. In the verdict all the junctures at which President during democratic or military government interfered in politics and judiciary extended its support had been mentioned. It was akin to acceptance of past mistakes. One purpose can be to enlist all the precedents in which political role of President in any manner was ratified by the apex court on any ground, under any circumstance and legal theory with reference to an earlier decided case, was to rub that out from the legal or judicial history by reiterating it in the second judgment (verdict on Asghar Khan Case) in and hence being a continued precedent can block the path of future martial laws. Douglas has named it as deviance and innovation which shakes up the group survival. Supreme Court named all those occasions on which office was the president was involved in the politics and judiciary supported it as constitutional deviations. Douglas, with reference to Colson and Richard Posner’s view considers such deviation and innovation in the shape of ratification of unconstitutional steps as the cause of decline of an institution (Douglas 1991, Posner 1980). Supreme Court in Asghar Khan v Mirza Aslam Beg para 48, first recognized the earlier path as deviance which reflected that experiences that had been faced by the Supreme Court were different from today. Having enough freedom and courage to eradicate that deviances, Supreme Court of Pakistan highlighted different phase of organization experiences where it drew a redline around the military and president to cross out any probability, in future, of derailment of parliamentary system of government which ultimately secured what Huntington (1973) underscored maximum institutional adaptability necessary for gaining optimum level of institutionalization. In paragraph 48 of the verdict Supreme Court of Pakistan mentioned the path through which it is adapted to new situation. New situation was underlined in the said paragraph when it drew a line between the situation prevailing prior to Sindh High Court Bar Association’s Case and the phase after its verdict in the same case. New chapter was started after deliverance of verdict in Sindh High Court Bar Association Case. In new phase doctrine of necessity is intolerable. Supreme Court was of the view that it was putting the institutional framework of the state of Pakistan on the path of constitutionalism to which earlier superior judges were not adaptable and now they were needed to be adaptable by not taking oath under any unconstitutional regime.

Here it is noteworthy that Supreme Court gained generational age which is considered by Huntington (1973) as second measure of first contingency i.e. adaptability of an institution on which level of institutionalization of Constitution and Supreme Court depends. Such institutionalization of constitution and Supreme Court will improve the form and shape of political community of Pakistan. Generational age is explained by him not as the age or time spent by one set of judges in hearing the cases brought in jurisdiction of Supreme Court of Pakistan but as different organizational experiences which was mentioned by SCP when it highlighted constitutional deviations and the new experiences in the form of cases decided to block the legal effect of deviant precedents in future.

Supreme Court didn’t stop here. In this verdict, it also blocked its own way of currying favour with Presidency and military dictators in exchange of ascendancy to superior courts in an unprecedented way for all times to come by referring to amendment brought in article IX in code of conduct under article 209 of the constitution of Pakistan 1973 after which Judges have to cross the following barricade to attain handshake with military dictators or presidency in future: Any kind, form and nature of support, implicitly or explicitly, of any entity which had come into power through any way other than what has been provided in the constitution.

These directives were expedited move towards attainment of coherence, unit, discipline, coordination, spirit, morale required for Supreme Court of Pakistan to reach an optimum level of institutionalization-a quintessential for good governance- gearing others institutions to same. By blocking the path for members of legal fraternity to cover up the vacuum created by arbitral removal of judges during military takeovers SCP secured autonomy, which is means to coherence and aforementioned characteristics of institutionalization as highlighted by Huntington (1973). Here Huntington encircled a very important point which is inquired in discussions of chattering class and intelligentsia of Pakistan that the reason of military intervention and slow evolution of institutions necessary for governance of complex societies was the continued presence of autonomy, coherence, unity, spirit, morale, and coordination in Pakistan Army and lack of the same in other political organizations. Douglas (1991) has put it in the box containing fundamental underpinnings of institutions. Effective legal structure and court system to enforce contracts is essential for evolution of an institution in his eyes (Ibid). In the verdict of Asghar Khan Case SCP tried to consolidate and stabilize these all
attributes which it has attained since its restoration. One can say that SCP has not yet got same extent of these features but are in the process to gain saturation in these spheres.

Second aspect of the office of the president pertaining to its nature, functions, and limits was dealt with in detail in the verdict. The apex court relied on article 41, article 45, article 48, article 56, article 243, article 260 of the constitution of Pakistan 1973 vehemently after dwelling upon wording of oath for the president, position of President in constitutional monarchies and republics, nature of the office of president in Common Law tradition and Civilian Law tradition (Roman Law), comparison of oaths of offices of presidents of Pakistan, India, Bangladesh, Ireland, Canada, Australia, article 60 of the Indian Constitution and judgments of Indian Supreme Court and divorced office of the president from politics. All of aforementioned reliance and dilution drew a red crossing line between institution of president and politics to characterise, confirm and perpetuate the apolitical nature of office of the president. Supreme Court characterised in this verdict, office of the president as one in service of Pakistan by referring to article 260, article 240, article 63, Civil Service Act 1973, Section 99(1A)(d) of the Representation of the People Act 1976 and earlier decisions concluded that office of the President is constitutionally apolitical as the very nature of the office of the President comes in the category where office holders are in service of Pakistan.

The last part which charged the institutional environment was its shaking of chain of command when it laid down clearly that an unlawful command must not be obeyed and rather it should be prevented from execution. It was for the first time in history of Pakistan that any other institution tried to bridle the unlimited and unwarranted powers of Pakistan Army used by its chieftains and hence ground of national interest was dismissed. It was also reacted by many critics that Supreme Court provided grounds for soldiers to disobey the orders of their superior in future which if not has threatened but shaken the chain of command necessary for the order of institution. But it would be misconceiving and exaggeration of facts to perceive the verdict in context of chain of command existing in the Pakistan Army as an institution since its inception. Directions of lawful command must be understood in context of encounter of two institutions President and Pakistan Army and Inter Services Intelligence led by their chiefs. The directions and order should not be construed as relevant and applicable to Pakistan Army singularly rather it wraps around the inter-institutional flow and execution of that governing orders which due to contravention of constitution can’t take execution. Operational domain of Chief of Army Staff is independent of the office of the President and hence do not operate under the command of the President. Article 243 of the Constitution of Pakistan 1973 confers Supreme Command of the Armed Forces on the President. Such nature of the command does not include executive authority with respect to Armed Forces. Eight Constitutional Amendments dichotomized the functions of President. Article 48 of the Constitution of Pakistan contains first list of the functions of President which spans the institutional relationships between office of the Prime Minister and office of the President. Article 582(b) stipulates second kind of functions which show discretionary nature of the functions which is no more in action. Hence President, out of his discretionary powers, can’t issue any operational command to Armed Forces, let alone issuing lawful commands. Therefore, the argument that money had been disbursed on the directions of President has no administrative grounds. Obedience should be paid to lawful commands. Obeying unlawful command gives rise to individual criminality. Officers are culpable for failure to prevent the execution of unlawful command and issuance of unlawful command. Failure, on the part of all state authorities, regarding unlawful command shifts the burden of responsibility of oversight to judiciary.

Nowhere in the verdict, Supreme Court discussed directly the nature, flow and worth of execution of command within the Pakistan Army when the command seems to be illegal or unlawful. Here it is worth mentioning that Pakistan Army and agencies working under it do not carry out their functions pertaining to prevention of country from foreign aggression on the principles of legality or illegality of the orders. Legality of the orders then are contingent upon institutional dealing with the ground situation. Orders and nature of the orders vary from place to place and time to time and depends upon the contemporary definition of threat, strategy, planning, operation etc. Control, stability, order, discipline, coherence are some features which not only stretch the justification of orders under its own institutional conventions but also accrue autonomy and enough room to Pakistan Army as an institution to have exemptions from constitutional applications. The biggest example of such exemptions and autonomy from constitution is Army Act which restrains the jurisdiction of the superior judiciary i.e. Supreme Court of Pakistan when it comes to matter relevant to serving officers of Pakistan Army. Constitution of Pakistan which is the document embodying rules of the whole game do not apply to players (Military Officers) in particular capacity (in service of the institution). Particular capacity actually decide the ultimate subjection of these players to the rules (constitution) because a retired general or army officers can be brought into the witness box but a serving military officer is yet to be brought in highest court of law to justify legality of his/her duties. General (rtd) Mirza Aslam Beg himself mentioned this fact when he pronounced his thrice appearances in court as hat-trick. Such euphemism clearly showed his surprise and shock that a general (rtd) had also to ensure his presence before the court for clarification of his alleged
illegality. He, ironically, in his affidavit, submitted to Supreme Court of Pakistan, labelled his thrice appearances as an unparalleled situation faced by him only. None of his predecessors had ever been appeared before the court. The poetic sentence in which he enveloped his shock and surprise was: “Jaan kis jurm ki paiye hay saza yad naheen.” (Why I am being punished, I know not).”(The Dawn October 3 2012).

Such admission on the part of General(rtd) Beg is akin to what Huntington has underlined as scope of support attributed by following of political procedures which strengthens the political organizations and procedures in the society needed for the society to attain the political community(Huntington 1973). Moreover by setting new precedent SCP attained more autonomy as considered pre-requisite for institutionalization of SCP when it gave most prior preference to supremacy of constitution instead of subjective caring for probable consequences in shape of reaction from other institutions which was army in this case.

Nevertheless, an observation can be made that appearing of retired generals before superior court i.e. Supreme Court of Pakistan is a new chapter and gave rise to new beginnings and new conventions. One can infer that such retribution of ex-Army General is a start of new constitutional journey which has paved the way for cementing and evolution of this new convention which subjecting ex-whistle blowers of two strongest institutions of Pakistan. Similarly one can at least hope that in future Supreme Court will not hesitate to summon serving Army Officers to show the cause of obeying a particular order which might be justified in institutional domain of Pakistan Army but violation of constitution of Pakistan.

Here it is pertinent to mention that Supreme Court in para 49 of the verdict clarified the separated nature of an individual and an institution which later on was made point of criticism by many critics. It clearly stated that institution is not responsible for illegal acts of an individual who is in exercise of authority given by an institution. Exercise of powers against the terms enshrined in the oath of office or document of professional engagement with an institution is a personal act. Such clear stance on difference between individuals and institutions on the part of Supreme Court of Pakistan countered the argument of critics that Supreme Court of Pakistan through its verdict on Asghar Khan Case brought the Army as an institution into ridicule.

Many critics attribute such soft tone for Pakistan Army as an institution in the detailed verdict to the statement given by Army Chief General Pervez Kiyani on November 5 2012, between the date of issuance of short order and date of issuance of detailed verdict. But the other side of this apparent softer note was fiery one and its heat was felt by soldiers in the first place. It gave a message to a soldier that if any of his act no matter if it is carried out in pursuit of superior orders, proved to be contravention of constitution or law of the land then protection will not be available to him on the ground that he/she was in exercise of superior’s command which was given for execution of particular operation planned and executed under institutional definition of threat in the domain of Pakistan Army. Para 84 of the verdict is noteworthy in this regard in which apex court established that any soldier of Pakistan Army exercises the given authority in subversion, contravention, mutilation, or abrogation of the Constitution of Pakistan, he will be answerable and dealt with for such exercise of authority in consonance with Constitution of Pakistan and law of the land.

Message in the verdict sent a heating wave of insecurity for him/her in case of exercise of any command given to him/her by his superior and such implicit message was perceived as threatening to morale, integration, devotion and coherence of Army as an Institution by many army officers. Devotion of ordinary soldier which fight for the country on the main front was also affected by the perception created by the verdict that soldiers remain ready at any time to lay their lives at the forefront but their superiors take the ultimate undue advantage of threatening situation of their lives on the borders or in dangerous operations against militants. The cause of devotion and readiness of laying the life for country was questioned in the ranks of soldiers and was communicated in the speech of Army Chief Ashfaq Pervez Kiyani. But Supreme Court’s distinguishing of individual and institution or an organization in terms of Huntington’s definition of an organization fits to his mentioned attributes of adaptability-rigidity essential for level of institutionalization underpinning the strength of political organizations and procedures which accrues political community to a complex society like one prevailing in Pakistan(Huntington 1973). Supreme Court of Pakistan in case of Asghar Khan’s petition found itself in a new environment where it was not deciding the legitimacy of newly taking over of a military chief rather for the first time it had to decide the fate of unconstitutional and illegal act carried out by an individual in misuse of powers given to him by an Army as an institution and an active judiciary emerged as a result of revolutionary lawyer movement in whose favour public perception reflected by public opinion is tilted more than it was in favour of Pakistan Army at one time. It can also be said that new environment was not the wish of Supreme Court itself but it had to take on that to maintain the perception of supremacy of constitution determining fundamental rights of citizens. In any case, in such a new environment Supreme Court
unset in its ways by not hesitating to summon the generals though were not serving ones, and to deliver a verdict on them which no doubt is worth subjecting to criticism.

Positive aspect of Supreme Court’s directive and observation on unlawful activity done by an individual in his official capacity is that by unlocking the institutional liability from the individual liability of Gen(rtd) Beg Supreme consolidated the institutional interest of Pakistan Army and also, as referred to by Huntington(1973), like John Marshall Supreme Court of Pakistan under the leadership of Ifthikhar Mohammad Chaudhry enhanced the institutional power of Supreme Court by setting the precedent of securing answerability of Army Generals to Supreme Court of Pakistan.

In the end it is essential to shed light on institutional role of supreme Court of Pakistan in strengthening democracy, especially with respect to civil-military relationship. Most of the critics loose sight of essence of the verdict when they highlight this verdict as one more strike at democratic government. Supreme Court of Pakistan not only protected the elected government against unchecked powers of institution of President under military government or elected government but also laid the sujection of Pakistan Army to Federal Government which is obviously an elected government bare in the verdict in unequivocal words, Article 243, 244 and 245 of the Constitution was stressed upon in the verdict with clear reference to Sindh High Court Bar Association’s case to define role, functions and limitations and sujection of Armed Forces to civilian Government through its interpretive conclusion in para 83 of the verdict that any act done, including that which pertain to national security, national interests and external threat, by all the services without prior orders of federal government is tantamount to violation of the Constitution.

If the question is about removal and diminishing of powers of faces and individual personalities then criticism can be done by the critics viewing the whole episode in the individuals-institution synonymised context on sound basis but if the perspective is to observe the strengthening of institutions and through it the fostering of governance then without hesitation it can be said that democratic institutions such as elected assembly and elected government have been strengthened by making them free of the tentacles of President and Pakistan Army.

5. Conclusion: Supreme Court of Pakistan is independent to the extent that it adhered to distinctly judicial norms and to the extent that its perspectives and behaviour are independent of those of other political institutions such as military, executive, president etc. and social groupings. As with the judiciary, the autonomy of political institutions is measured by the extent to which they have their own interests and values distinguishable from those of other institutions and social forces. As also with the judiciary, the autonomy of political institutions is likely to be the result of competition among social forces.

Asghar Khan case is not an end but is an attempt on the part of Supreme Court of Pakistan towards building of basic institutional framework through institutional change by restructuring of Supreme Court. Definition of domains of president, armed forces and judiciary was a measure to build institutional framework where institutions of the state encamped as rules in constitution of Pakistan can work in harmony to conduct a productive game. The verdict has altered the institutional matrix consisting ‘of an interdependent web of institutions and consequent political and economic organizations’ in the way in which it can deliver to people and feedback to the system can be received in a smooth and efficient way. Opportunities have been created by the Supreme Court as one of organizations in political system of Pakistan which ensure existence of institutional framework. These opportunities included bringing army generals to book which earlier was not available and institutional framework was shaky in absence of these opportunities. Creation of new opportunities and capitalization on these opportunities have improved institutional framework which has electrified the governance of Pakistan. More opportunities lead to strong institutional framework and strong institutional framework means evolution of institution. Evolution of institutions automatically accommodates and co-opts the changing time and environment based on continued complexities and retains the trust of people-a quintessential of governance.

Path dependence factor is a key factor in determining the role of Supreme Court of Pakistan in good governance. After the restoration inter alia cases decided, verdict on this case was of distinguishing nature because it emerged as an inverter in the judicial history. Inverter means the instrument which has been operated in a way in which the judicial history erstwhile following the path on which it never resisted the transgression of military in the institutional framework of Pakistan and now resisted. Such a resisted was no doubt can be compared with the treatment meted out to circles related to parliament but it was a step forward towards accountability of military. Such a change in path of institutional performance has evolved the institution of Supreme Court of Pakistan. Inversion in the path has streamlined the impersonal relations among different political organisations which are essentials for bringing stability and evolution of institutional framework aimed at responding to complex varieties of problems in modern societies. This is very important cause which is being achieved by SCP through its verdicts like one on Asghar Khan Case. Personal relationship which impedes the
implementation of rules and constitutional articles in governance of Pakistan is being transformed into impersonal relationship based on constitutional rule to put Pakistan on the path of good governance.

6. Recommendations: Individuals should be dealt with separately from institutions. Individuals come and go but institutions remain functional. This argument in the politics of Pakistan should be buried completely that trying generals in court of law for their individual violation of constitution is akin to trial of Pakistan Army as an institution. Nobody in Pakistan denies the sacrifices rendered by Pakistan Army during war time and natural disasters. Pakistan Army by reacting to such legal course gives a wrong message to all and sundry that somehow and somewhere they deserve special treatment in all spheres of life. Such implicit messages bring Pakistan Army into ridicule unknowingly in the eyes of critical thinkers at least.

Such bold stance on the part of Supreme Court should be continued in case of other generals and officials of Pakistan Army. This precedent should be followed again and again because continuous following of such precedent will resist unconstitutional intervention in future. In the long run, it will empower democratic setup because for Pakistani democracy most prior thing is to ensure the continual of democratic transfer of democratic power from one regime to another.

Implementation is the main essence of any verdict. To make the verdict on Asghar Khan Case effective for democratic setup and institutional framework of Pakistan, implementation of the verdict must be ensured in order to bring the case to its conclusive end. In this regard, Supreme Court needs to continue its assertiveness by keep asking for submission of report about implementation of verdict as it did in National Reconciliation Ordinance (NRO) case.

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JUDICIAL APPOINTMENTS AND BASIC STRUCTURE DOCTRINE: SUPREME COURT OF PAKISTAN’S VERDICT ON EIGHTEENTH AMENDMENT

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ABSTRACT: Federalism and institutions work within a basic structure of governance and state. Question of basic structure doctrine has been answered by many superior judiciaries of various countries in divergent ways. This question was answered by Supreme Court of Pakistan (SCP) in Eighteenth Amendment Case against the backdrop of judicial activism. Basic structure doctrine was premised on procedure of appointment of judges in this case. Supreme Court of Pakistan ensured autonomy, coherence, adaptability and complexity of not only Superior Judiciary but also for other institutions, which are the features necessary for institutionalization in the process of governance. But one the other side, judicial intervention in the matters legislative amendments have been perceived as institutional encroachment by actors associated to other institutions. Research attempts to sketch a comparative picture of the institutionalization in superior judiciary through analysis of verdict on Eighteenth amendment.

Keywords: Judicial Appointments, Basic Structure Doctrine; Institutionalization.

‘An institution is a network of structures, procedures and shared values within a social system, of a relatively permanent nature, which is concerned with some social function or group of functions’ (Geoggrey, 1971). Institutions play an unavoidable role in determining the fate of democracy in any country. Framework of democratic state stands on three sub-structures: Law making body, law executing body and law-interpreting body. Generally these sub-structures are recognized as Legislature, Executive and Judiciary. The role of institutions for the success of democracy is pivotal (Heinz, 2000). The Executive, Legislature and Judiciary are the pillars of a democratic state (Prasad, 2006). While the people’s will is reflected by legislature and is assigned the task of making laws, governance is linked to execution and function of the state carried out by executive (John, Cheryl & Katherine, 2008). However this research will expose its readers to Supreme Court’s institutional role in fostering good governance through its verdict on 18th Amendment.

Dictators- the menace for the process of democracy can only be curbed by strong political institutions with whom judiciary otherwise can’t fight (Geoggrey, 1971). Judiciary plays a very important role in any democratic setup. It is the backbone of most of liberal democratic systems in today’s world (Mahmoud, 2008). It not only defines the liberties of masses but also stretch its scope in case of violation of masses’ right. Judiciary’s role is two folds. First is to ensure the protection of individual’s rights and second is to preserve, protect and interpret the constitution where existence and functions of all the institutions of state are rooted and hence is one of fundamental determinant of good governance. But for all that to be realised, a democratic society or political community is a pre-requisite.

1. What Does The Eighteenth Amendment Contain? Various alterations in institutional framework, federalism and constitutional skeleton in the shape of changes in dozen of articles of constitution were the results of eighteenth constitutional amendment. Explanation of this amendment can’t be swept under the carpet by highlighting it as mere transfer of power from dictatorial legacy to real representative Westminster style executive i.e. Prime Minister or its restoration to status existing in 1973. It covers the domains where centre-province relations, institutional skeleton and constitutionalism are evolved and geared to contemporary socio-
political requirements. These reformed alterations in abovementioned domains can be classified into three categories: normative, substantive and procedural changes. Normative category encircles the alterations in constitution which have reverted the dictatorial deformations to morally recognized shape. Hence normative refurging sniffed out all dictatorial impurities. Such restoration is contained in article 6 and article 270 of the constitution in which changes have been inserted by eighteenth amendment. New version of article 6 now unequivocally bars the judges from extending judicial cover to militarised or unconstitutional manoeuvring. Similarly new version of article 270 has established that verdicts delivered in accordance of unconstitutional engineering were void ab initio which has purified our fundamental law to augment its coherent concreteness.

Procedural alteration includes the stringent criterion set for disqualification of a parliamentarian and thinning the rubric of cabinet. The third category contains those elements, which became the centre of friction among various institutional actors in consequent institutional game. Acquisition of education became the fundamental right which will be an effective step towards increasing political and social awareness (Muhammad, 2012; Pakistan Today, July 20 2012). Injection of access to information circulating around the structure of state and other hubs of power as a fundamental right in constitution became the guarantee of transparency which ensures good governance (Meghna, 2013). Such increased transparency has links with other variables of good governance such as fairness and accountability. Independence of judiciary was translated by depoliticizing the process of judges’ appointment. Participative and democratic approach was followed by author of eighteenth amendment regarding appointment of judges. Though the process prescribed by the said amendment had been opened to several questions, one can say with full certainty that in comparison to early procedure this substantive nature of change regarding the appointment of judges was an attempt to give autonomy to judiciary to a considerable extent. However, this procedure was critically underlined as reason of institutional conflict against the backdrop of case heard by Supreme Court of Pakistan (SCP). Verdict on the said amendment dealt with the procedure in depth. Last sub-category of substantive change is relevant to provincial autonomy which funnelled dozen of ministries in exclusive domain of provinces (Qaiser, 2013). Abolition of concurrent list was the major step towards such realisation of provincial autonomy on the basis of which provincial administration became the masters of their own destinies in many fields.

Transparency, consultation and filtered procedure of judicial appointments enshrined in 18th amendment were serious steps towards enhancement of judicial independence. Two phases or filters have been incorporated for such purpose. First compartment designed for appointment of judges is a Judicial Commission which will recommend the names for appointment (The Express Tribune, July 6 2010; Daily Times, October 29 2013). The commission consists of Chief Justice of Supreme Court of Pakistan as its chairman and senior-most judges of the Supreme Court of Pakistan. Second phase comprises confirmation by a parliamentary committee consisted of equal number of members from treasury and opposition benches of Parliament (Dawn, December 2 2013; Amir, 2013).

Considerable weight has been given to judges recommendations in the procedure designed for selection of judges. Composition of commission has apparently tilted the balance in favour of judges. New procedure ended the monopoly of any individual and gave due part to all necessary sections of the state (Sohail, 2010; Hassan, 2010). Three pillars of the state have been given representation. Every organ of the state which is given the representation in procedure of judges appointment has also been made diverse by equalizing the strength of various players with different goals and interests. Article 175A of the Constitution embodies this new composition and procedure. New article has transformed the discretionary nature of powers held by different authorities into comparatively democratic nature. Procedure has become more transparent, fair, efficient, and accountable. All these features drive any political system towards good governance.

Eighteenth amendment itself is also important in the sense that it altered the function and jurisdiction of office of president. It can be said that the amendment was a serious step towards restoring the nature of the constitution to the one which truly characterise a Westminster style of democratic system where president only acts as a figurehead. Four articles: article 75, article 48, article 58-2(b) and article 224 of the constitution were effected in this regard. This amendment altered article 75 by decreasing the time period given earlier to President for consideration of bills ratified by the parliament (Mahbub, 2012). Prime minister was accorded the power to pass the affairs for approval or disapproval in form of securing yes or no vote to parliament directly under altered article 48 of constitution (Ibid). Powers to pack the assembly through invocation of emergency clauses have also been gleaned away from President. Then procedure of constitution of caretaker government was also made transparent and democratic (Abid, 2013). Both outgoing Prime Minister and opposition leader were taken on board in this regard through consultation. Article 224 envisaged the whole procedure of caretaking appointments by president required to manage the transition phase between outgoing and incoming government. These new alterations relevant to office of president provided stability and strength to political process and democratic culture. New phase of evolution of democratic society has begun.
Eighteenth amendment strengthened parliament. Prime Minister is part and parcel of parliament. Federal government is declared as embodiment of Prime Minister and his ministers. Prime Minister was declared as chief executive instead of president (Cohen, 2011). Consultation required for Prime Minister in different administrative affairs was reduced. Consultation with the Prime Minister was entered as pre-requisite for president in pursuit of his/her choice of appointment of provincial governors or military chiefs. A member of parliament can serve the nation for the third time. Provinces have been made the masters of their own resources to great extent. Senate which is considered as the representative envelope of any federal setup was strengthened.

Parliament was strengthened through introduction of eighteenth amendment in which federal government became the embodiment of Prime Minister and federal minister. Prime Minister replaced the President as chief executive of the country (Article 10 and Article 99). Consultation between president and Prime Minister reduced to purpose of communication of policy matters (Article 46). Consultation between the Prime Minister and President became meaningful and binding in matters pertaining to appointment of services chiefs and provincial governors (Article 101, 243, 260). Concurrent list comprising subjects over which both federal and provincial governments can legislate was removed. Hence through removal of concurrent list decentralized the administrative and legislative powers and enhanced the autonomy provincial units in letter and spirit. A member of parliament was allowed to become Prime Minister for third time (Article 91).

Relations between the federal government and provincial units of the state were reformed for the first time through eighteenth amendment. Institutions like council of common interest and Senate were strengthened by enhancement of their roles in the game of politics. Removal of concurrent list lessened the entrenched domain of federal government over legislation. Provinces were made to realise that they have become master of their own soil by giving them more powers to mobilize the natural resources in favour of their development. Provisions were made to make it compulsory for a governor to be permanent resident of the province (Article 101). Hence the capacity of provinces in legislative and administrative domains was augmented. All these measures enshrined in eighteenth amendment removed the nostalgic misperception about the self-constructed link drawn by rightists between decentralisation and disintegration.

2. Contested Points Of Eighteenth Amendment Debate And Institutional Debate

The eighteenth amendment to the 1973 Constitution was aimed to incorporate a more transparent and consultative process for judicial appointments to the superior judiciary. The amendment created a two tier structure consisting of Judicial Commission and Special Parliamentary Committee. The Special Parliamentary Committee will evenly consist of the members of the government and the opposition. The Judicial Commission will comprise of the Chief Justice of Pakistan and the senior most judges of the Supreme Court.

The eighteenth amendment was challenged before the august Supreme Court of Pakistan. The Supreme Court (exercising judicial restraint) through an interim order identified the anomalies in the provisions relating to judicial appointments impacting the independence of judiciary and made recommendations to the parliament on how to address it.

The Parliament in pursuance of the Supreme Court’s suggestions enacted nineteenth amendment. Notwithstanding the enactment of nineteenth amendment, the Supreme Court through its decision in Sindh High Court Bar Association v. Federation of Pakistan (Judicial Nominations Case PLD 2009 SC 393) declared the role of the Parliamentary committee as insignificant when it struck down the decision of the Parliamentary committee not to confirm certain nominations of the Judicial Commission (Ibid).

The decision of the Supreme Court in the Judicial Nominations Case made the Parliamentary Committee ineffective and irrelevant. The decision on one side triggered a power game between the two institutions, but on the other side reigned the dialectic debate on the role of Judicial Commission and the Parliamentary Committee in the procedure, method, and appointment of judges; tension between independence and accountability of judiciary in the country. In this context it is pertinent to analyze the genesis, design, and role of judicial commission as an institution in the other parts of the world and its appropriateness in the institutional architecture of Pakistan.

The selection of judges features prominent in theoretical content on judicial independence (Garoupa and Ginsberg, 2009). There is universal consensus on the fact that an individual who in any manner if is dependent on the will of another individual for his appointment to preside over the court compromises his ability to render independent, just, transparent, neutral, and high quality decisions. Hence the legal systems around the world have constructed different mechanisms through institutional modelling to strike a balance between independence and accountability. However, so far the experiments with different institutional models and research show that there is divergence of views on the perfect mode/tool to achieve independence (Kate & Peter, 2006).
Notwithstanding the diversity of mechanisms around the world to achieve independence of judiciary, the recent shift has been towards the adoption of judicial councils to achieve the same. The fundamental purpose of constitution of judicial council is primarily to address the extremes of judicial independence and accountability. It has also been the outcome of efforts to create "best practices" linked with the legal and judicial reforms package given by donor agencies like World Bank and has been adopted by recipient countries (Garoupa and Ginsberg, 2009).

It aimed to ensure the judicial independence by insulating the process of judicial appointment, promotion, and discipline from political intervention but also to secure a reasonable degree of accountability. However, the achievement of such balance is context specific i.e. it depends on the specific social, political, institutional, and legal settings of a country. These specific settings consequently structure the institutional design i.e. composition and competencies of the council and reflects concerns about the judiciary of a country.

For instance, in France and Italy the desire to give more independence and the establishment of the Judicial Councils emanated from frustration with the increased politicization. However, very soon a concern was raised about increasing involvement of judiciary in politics and was followed by demands of accountability.

2.1 France: French judiciary collectively exercised self restrained but the cumulative impact of consolidation of judicial review by the Constitutional Council in 1970, sharp increase in litigation (civil and administrative), the criminalization of various activities, extension of the scope of application of European Convention of Human Rights enhanced the influence of French judiciary (Ibid).

In addition to the above mentioned factors the involvement of judiciary in investigating political scandals further consolidated the power and prominence of otherwise subservient judiciary and tilted the scales of power in favour of French judiciary. Consequently, the judicial investigation of political scandals triggered the debate on external accountability of the judges involved in investigation (Valery, 2005).

2.2 Italy: The Italian Judicial system is also portrayed as extremely independent. The independence can easily be illustrated from the control exercised by judiciary in the regulating itself (appointment and promotion of judges) and regulating the political process via investigation of political scandals. The balance of power inside the Italian Judicial Council tilted in favour of Italian judiciary. The Judicial Council controls all aspects and process of appointment and promotion of judges working in lower tier of the judicial hierarchy.

Like French judiciary, Italian judiciary was also involved in the investigation of political and corruption scandals of Italian businessmen, politicians, and bureaucrats from 1992-1997 (Petrizia, 2004; David, 1996; Carlo, 2001). The increasing involvement of Italian judiciary due to their investigative role in the political scandals and corruption resulted in the Italian Parliament altering the composition of the Italian Judicial Council in 2002 that increased the parliamentary representation in the Judicial Council (Nuno, 2009). The raison d'être for the adoption of councils in the French-Italian tradition had been the independence of judiciary in post undemocratic rule. Such independence had been achieved by grafting the establishment of judicial council in the constitution.

It is pertinent to understand that independence is a complicated and multivariate phenomenon. Independence of judiciary might be achieved by insulating it from partisan politics, but it might become hostage to the whims of senior judges in judicial hierarchy. In either case under the influence of politicians or senior judges the independence of judiciary is compromised. The countries with Civil law traditions address this aberration differently.

In Civil law countries judges are mostly hired from law schools with little or no professional experience through some sort of public examination (Georgakopoulos, 2000). This mode of appointment encourages interaction between the judiciary and other state institutions that in turn increases their dependence on other state institutions for their promotions and salaries. Consequently, it raised demand for external accountability and inserted in the mandate of judicial councils as their second objective. The judicial councils in Germany, Austria, and Holland demonstrate this model. It is pertinent to briefly explain the relationship between the judicial council and Supreme Court of the countries. The nature of this relationship varies across countries in Civil Law jurisdictions.

For example in Costa Rica and Austria, Judicial Council works under the supervision of the Supreme Court and overlook the management. Similarly Brazil’s first judicial council was created in 1977 apparently with the objective to present the face of independence, but was unable to prevent military interference with the courts. However, from 1988 till 2004 the council was governing without any oversight. In 2004 the structure and composition of judicial council was changed with the return of democracy. The reforms
were introduced to make the judiciary politically accountable and break its dependent relationship with the military.

The mode of appointment in Common Law countries are comparatively different resultantly the structure of the judicial councils appointing is different. The judges in Common Law countries are usually appointed late in their life time and after appointment are considered fairly immune from the influence of partisan politics. Accordingly, the appointing authority or council intensively focused on the appointment/selection of judges because once appointed they are subsequently considered free from political influence. The Appointment of Judges in UK by the Judicial Appointment Commission under the Constitutional Reform Act 2005 focus on the appointment based on merit(Garoupa and Ginsberg, 2009).

Singapore presents an interesting model in Common Law tradition that reinforces the argument against the achievement of independence through Council. Singapore has Legal Service Commission with limited role(Ibid). The President appoints judges of the Supreme Court on the recommendation of the Prime Minister after consultation with the Chief Justice.

The Legal Service Commission deals with the supervision and appointment of subordinate court judges on the recommendation of the Chief Justice. The Judges are usually given high salary in lieu of an understanding that the judges would adjudicate in favour of government in cases involving government. The Chief Justice is personally responsible for the supervision to ensure that judges of the lower judiciary do not deviate from independence formula in commercial cases and submissiveness in the political cases(Ibid).

2.3. The American Model: Majority of states in the United States decided to adopt Merit Commissions (which is similar as Judicial Councils) to insulate judicial appointments from partisan politics and make the appointments on merit. The Merit Commission(MC) was primarily non-partisan mixed body consisting of politicians, judges, and lawyers.

In some states it is the exclusive jurisdiction of the Merit Commission to select and appoint judges, but in some states the Merit Commission sends a set of candidates to the Governor and the Governor then selects a candidate for appointment. These judges are then subjected to uncontested elections which they rarely lose. The impact of adopting Merit Commission on the independence and quality of judicial decision making is contentious(Ibid).

Studies conducted by Reddick conclude that there is insignificant evidence to support the claim of the proponents that appointment of judges on merit (by Merit Commission) insulates the appointment of judges from partisan politics (Ibid). Hansenn concludes that of all the methods, the Merit Plan is the most appropriate of all to protect state judiciary from partisan politics(Ibid).

The scope of the Merit Commission is restricted to selection of judges because in common law jurisdictions judges are appointed late in their career therefore the Merit Commission does not have to involve itself in the promotion and discipline of judges. This underlines the importance of decoding the variation in institutional design before demanding the judicial council model for appointment of judges.

2.4. The British Model: In 2003 the Prime Minister(PM) Tony Blair announced its intention to introduce changes to the system for judicial appointments in England and Wales. The simmering demand for changing the judicial appointment system stemmed from multiple factors like office of Lord Chancellor, high profile cases, Art 6 of the European Convention of Human Rights, and the gender and racial bias in the judicial appointments.

The bearer of the office of Lord Chancellor was wearing two hats i.e. Lord Chancellor was judiciary’s representative in the government and government’s representative to the judiciary (J. Steyn, The Case for a Supreme Court 118 L.Q.R 382). Hence the office was uniquely placed in the governance structure but unlike the judiciary in the United States it was not separate and independent. The defect with this system was its inability to cater to the diversity of opinion. Anyone who would not comply with the establishment policies or views was not appointed to the judicial position.

The Pinochet case in 1999 in which half of the senior judges were sitting members of the House of Lords. Another case titled McGonnel v. UK (2000) in the European Court of Human Rights regarding the office of bailiff in the Island of Guernsey in which the Court adjudicated that an official who holds the position of a judge and also act in an administrative role was violation of Art 6 of European Convention of Human Rights.
Another important factor was the increased judicial intervention and lack of racial and gender representation in the judicial appointments. All these factors went hand in hand leading to the creation of United Kingdom(UK) Supreme Court under Constitutional Reforms Act 2005. The Supreme Court consisted of twelve judges’ independent from House of Lords. The Act abolished the office of Lord Chancellor and his judicial powers were transferred to the President of the Courts of England and Wales. The Act established a Judicial Commission for the appointment of judges based on merit and transparency.

Eighteenth amendment was challenged before the Supreme Court of Pakistan by many petitioner on various grounds out of which two are worth emphasising. First ground was the conflicted nature of eighteenth amendment with the basic structure of the constitution with and second was the new procedure introduced for appointment of new judges. Legality of the arguments in favour or against the eighteenth amendment in case submitted to it will remain opened to contested debate but grounds pushed in the case are missing their roots in the legal setup of Pakistan. Track record of Supreme Court of Pakistan obstructs the channel through which basic structure’s theory prevailing in India’s legal structure can be infused into Pakistani jurisprudence. This theory triggered a clash between Indian parliament and court which remained frictional for a long time. The main theme of the theory projected in this case decided by Supreme Court of Pakistan is that the power of two-third of the total membership of parliament to amend the constitution is limited and subjected to judiciary’s guardianship when an amendment tries to alter the fundamental framework of the constitution. This theory deliberated upon by various actors in this case directly affected two institutions: parliament and judiciary. Channel of amending the constitution and binding nature of the laws made by one parliament over successive parliaments have been brought into question. With such questions into centre of debate question regarding the legal boundaries of Judiciary within which it makes law through the instrument of interpretation has also become the beauty of critical views of academicians, scholars and jurists. Article 239 of Constitution of Pakistan is vital in this regard which provides that judiciary should not attempt to entertain the petitions challenging the constitutional amendments which can be brought by parliament at any time. No limitations have been put on parliament regarding its power to amend the constitution under article 239 of the constitution of Pakistan. In presence of article 239 invocation of basic structure theory requires judiciary to interpret the unclear contents of article 239 in the way in which a judge can reflect the process of giving meaning to constitutional articles based on his personal like and dislikes as the will of individuals seeking the justice. In pursuit of such avoidance court has to accept some hollow thoughts. First among such train of thoughts is this that society and the state contracting the constitution is not same which was in existence in 1973 and resultant constitution holds divinity Second thought seems to be a total supposition that constitution of Pakistan 1973 is static and insulated to alteration. The reason of being such thought as a supposition is it’s inherent ignorance towards factual processes like social change and social mobility explained in academic discourse. Third thought is this that if courts duty is to interpret the law then such duty of interpretation also includes the power of giving leverage to one article over other article which may disregard other provisions of the constitution(Beverley, 2005).

Meticulous evaluation of abovementioned thoughts and basic structure theory can be made by keeping the changing representativeness of legislative assemblies in two different time frames. Electoral behaviour, wishes, desire, demands, values, mandate, goals, objectives and ideas of Pakistanis in 1973 are different from that of those living now. All these terms between government and people continue to change. Due to these natural circumstances constitutional apparatus had been endowed with an instrument of dynamism in shape of article 238 and 239 which can switch over the constitution to new demands of transformed people and hence lessened the room for claim of divinity and omnipotence by constitution itself or its makers. Constitution-makers didn’t settle the basic attributes building up the structure of constitution before its enactment by the constituent assembly (The News, May 29 2010). They didn’t provide any procedure through which such structural attributes can be anchored to evolving political dynamics. Inquisitiveness about the questions of form of government and unknotted the religion from folds of law and politics arises(Awaz Today July 16, 2010;Ran,2010). Sticking to basic structure theory reduced the available channels of bringing change in constitution to revolutionary methods. When the decision of defining the basic structure of constitution is being monopolized by an institution who normally acts as a referee in the institutional game then conflict becomes inevitable and can be expressed and pursued through revolutionary politics but the major problem with revolutionary politics in Pakistan is the consequent creation of conducive environment for intervention of unconstitutional forces who succeed to attract public supportive opinion in power corridors of the state.

Supreme Court plays a vital role as a protector of Constitution in institutional framework. The instrument available with Superior Judiciary in any country in general and Supreme Court of Pakistan in particular is judicial review or constitutional review. Through usage of this instrument in its verdicts SCP gives its input in whole evolving process of basic structure theory. Hence constitutional instrument of judicial review empowers Supreme Court to block the laws enacted by parliament, which conflict with fundamental rights or constitutional provisions pertaining to basic structure theory (Simeon,2005). But usage of this instrument is prone to rewriting of constitution depending upon the mode of interpretation used by the judges (Imtiaz,1996).
Supreme Court through its verdicts has impeded incorporation of basic structure theory in legal structure of Pakistan. One aspect of this barricade is the acknowledgement of duty by Supreme Court of Pakistan to refrain from freezing the constitutional amendments and parliament’s limited role to alter the fundamental attributes of constitution. Second section of barricade is linked to instrument of interpretation which is used to amalgamate the apparently conflicting contents of constitution instead of amputating one organ/article of constitution for its out-of-line relation with another organ/article (Irwin, 1987; Donald, John and Gary, 2004). This second section of doctrinal barricade seems to be flawed because the notion that parliament is limited in bringing constitutional amendments on pretext of threatened basic framework but this notion is far better than that of India where usurpation on the jurisdiction of parliament is observed on the part of Supreme Court in handling of disputes pertaining to constitutional amendments. Such projection of limits on exercise of parliament in introduction of constitutional amendments has no foundations in juristic discourse. But ultimate fate of instruments used by Supreme Court depends upon determination of existence of authority to strike down the constitutional amendment. It also needs deep assessment to judge whether eighteenth amendment really brought that changes on the basis of which Supreme Court found justification to intervene and covered up the deficiency left in explanation of constitutionalism and abovementioned limited power in verdicts decided such as NRO verdict and PCO judges verdict ( PLD 2009 SC 265; PLD 2010 Supreme Court 879). Number of debatable points arise which give in-depth analysis of this case. First point is this that all institutions and individuals entail their boundaries of power from constitution within which they are allowed to play its role (Hilaire, 2010; Masterman, 2011; Richard & Daniel, 2010). Hence freedom to reject any explicit provision of law on the basis of particular legal argument through interpretation requires skilled application of mind for affirmation of limited domain in legislative issues (Robert, 1992). During such course of interpretation it is not beyond comprehension that superior courts usually stretch the effect of statutory law through interpretation to increase its jurisdiction but courts eligibility to ignore the limit put on it by constitution is not amenable to criticism when constitution itself puts such limits (Bradley, 2006). Second, coining the theory of implied limits put on domains of power by constitution on the part of superior courts is strange according to which it creates gap between meaning and words about narrowed boundaries of jurisdiction of parliament and court enshrined by article 239 of constitution of Pakistan. It means that words of articles in constitution do not mean what it holds generally or literary. Meanings of words used in constitutional article can’t be taken as what are perceived in daily life interaction rather meaning of such words can be clarified in verdicts coming out through following of different approaches of judicial interpretations (Donald, Russel & Ruth, 2012). Three the argument that any article or clause like 239(5) and 239(6) of constitution of Pakistan introduced by a dictator in constitution can be ejected is not amenable to criticism because if such argument is admitted then article 2A embodying the soul of fundamental structure of constitution i.e. judicial independence should be ejected as it was also entered by a dictator General Zia ul Haq. It is noteworthy that article 239(5), 239(6) and article 2A were entered in constitution in same amendment during the regime of General Zia. Four, Supreme Court uses its instrument of interpretation to integrate apparently conflicting and divergent provisions of law instead of making preferences between various contents of constitution and accruing weight to one article over other. Incongruities may probably be created within the constitution in ascribing particular constitutional provisions to certain level of importance over others. Hierarchical arrangement of constitutional provisions creates a chaotic picture of institutional chessboard which inherently provides leverage to one instrument over other because ultimately Supreme Court has to decide the explicitness and implicitness of a provision (Eisenstadt, 1991; Donald, John and Gary, 2004). Five, that decision of the case on the basis of rationality and logic substantiating justice in transgression of constitutional boundaries is different from doing the same but on the basis of constitutional mandate. Same fact was reflected by Oliver Wendell Holmes, Jr. when he said, “This is a court of law, young man, not a court of justice” (Buckner, 2010). There are two ways to dispose off the case. One is to deal with it in accordance to textual law. Other is to think about justice in prism of judge’s own application of mind which if is not meted out then he/she steps out of the boundary carved by textual law. This exposes our attention to a boundary thinning out between doctrine of necessity and basic structure theory as both the laws have no basis in textual law. Justice Khawaja during NRO cases delve into the distinguishing boundary between constitutional provisions and criterion deciding good or bad for the people which in no way is the domain of a judge. He said, “the court, while exercising the judicial function entrusted to it by the Constitution, is constrained by the Constitution and must therefore perform its duty in accordance with the dictates of the Constitution and the laws made there under. If the court veers from this course charted for it and attempts to become the arbiter of what is good or bad for the people, it will inevitably enter the minefield of doctrines such as the law of necessity, with the same disastrous consequences... Decisions as to what is good or bad for the people must be left to the elected representatives of the people, subject only to the limits imposed by the Constitution…” (pljlawsite, 2013). Such remarks clarify the doubt about court’s eligibility to discuss the efficacy of eighteenth amendment. Deciding the desirability and necessity of constitutional amendment in this regard seems to be out of Supreme Court’s domain. Sixth point deals with precedents as binding source of law for courts in Pakistan. Article 189 and article 201 of the constitution envisage the binding nature of early verdicts delivered by Supreme Court and
High Courts of Pakistan. Second justification of referring to precedents in judicial cases is historical similarities between our legal structure and English common law. Relying on verdicts delivered by superior courts of the country is then understandable in light of article 189 and article 201 but reliance on verdicts delivered by Indian Supreme Court on the issue of basic structure doctrine which is completely different in its application seems to be beyond comprehension. Indian version of basic structure doctrine makes her superior judiciary to forbid her parliament from stepping over fundamental rights during implementation of principles of policy provided by Indian Constitution. Verdicts delivered by foreign courts in different socio-political context with roots in a constitution embodying different legal structure are problematic in its applicability to our judicial cases. Precedents and their applicability depends upon the time period during which such precedents are relied upon by Superior courts and duration of antiquity of precedents build up judicial norms. Deriding a established norm due to its existence for four decades in shape of precedents characterizes judicial behaviour in various high profile cases as messy and incoherent. It becomes more criss-cross when is observed in context of institutional friction between executive and judiciary.

3. Supreme Court Of Pakistan’s Verdict On Eighteenth Amendment-An Overview: Leader of a major political party i.e. Watan Party Barrister Zafrullah challenged the eighteenth amendment in Supreme Court’s Lahore registry on ground of basic structure theory, disturbance of trichotomy of powers, and transformed shape of 58-2(b) by accruing enhanced powers to party chief who under the eighteenth amendment holds power to cancel the membership of political party(Daily Times April 21 2010). He considered deletion of article 172(4) as akin to strengthening of dynastic politics(Ibid). Later identical petitions had been submitted to the apex court(The Express Tribune May 13 2010). The apex court arranged full bench to hear the petitions challenging eighteenth amendment(Ibid). In its first reply government took exception to presence of Chief Justice Ifthikhar Mohammad Chaudhry in the larger bench because he serves a cause in appointment of judges(The Express Tribune, May 28,2010). Secondly absence of Justice Zahid Hussain was also one of the reasons for objection on larger bench by government(Ibid).

Many petitioners have made serious concerns and raised questions about the 18th amendment especially the Articles 1, 17, 17(4), 27, 38, 45, 46, 48, 51, 582(b), 62, 63, 63A, 91, 106,148,175,177,193,203c,209,219,226,245,260,267A and 175A which are the integral part of this amendment. They based their argument on the logic that various of these articles are not coinciding the main characteristics of Constitution of 1973 which means that the essence of the original Constitution would be destroyed. According to them, following are the main features of the Constitution which ensure its originality:

1. Parliamentary System
2. Islamic Democracy
3. Fundamental Rights
4. Independence of Judiciary
5. Federal state

3. Article 175(A) of the amendment is the main article which has been seriously opposed and defied by the petitioners which illustrates

Article175(A):

1. The appointment of the judges of the Supreme Court, High Court and the Federal Shariat Court(FSC) should be done by a Commission which will be known as Judicial Commission of Pakistan.
2. For the Supreme Court Judges, the Chief Justice will perform as the Chairman and the two senior most judges of the same Court are the members of the Commission.
   i. The Chief Justice with the assent of the two senior judges shall appoint the judge of the Supreme Court for a period of two years.
   ii. The Federal law Minister, Attorney General(AG) shall become the members of the Commission for a period of two years
   iii. Pakistan Bar Council(PBC) shall also nominate a senior judge as the member of the Commission
3. The President of Pakistan shall appoint the judge of the Supreme Court.
4. The rules of business will be decided by the Commission.
5. For the appointment of High Court judges, the Chief justice of the high Court, senior judge, provincial Minister and a senior advocate of Provincial Bar Council shall be its members for two years. In case of selection of the Chief justice, the senior judge of the court is replaced by ex-chief justice of respective court to be nominated by mutual agreement of chief justice of Pakistan and two member judges of the judicial commission.
6. According to clause 2, the judges of Islamabad high court are selected by the committee containing members i.e. chief justice of Islamabad, senior judge of Islamabad, high court, chief justice of four provincial high courts.

7. According to clause 2, for the selection of judges of Federal Shariat court, the commission says in the point 2 that it shall contain chief justice of Shariat Court and its most senior judges as member.

8. One member person is appointed as the member of parliamentary committee, as for a vacant seat of the apex court seat or any vacant seat of federal shariat court

9. In the Article It is provided that the parliamentary committee consists of eight members, four of upper house and four member from lower house respectively.

10. Out of the 8 members, 4 shall be from the treasury benches, 2 from each house, and 4 from opposition, 2 from each house.

11. The leader of the opposition made the selection of member of opposition benches and leader of parliament shall made the appointment of member of treasury benches.

12. Senate shall work as the secretary of the committee.

13. The commission shall confirm nominee by majority of votes on receiving the receipt paper of nomination within 14 days. If any nomination fails within 14 days, the commission shall send another nomination.

14. The conformed nominee shall be sent to President by the commission for the appointment

15. The rules of procedure shall be made by committee.

This provision has also been challenged as repugnant to the constitution of 1973 which ensure independence of judiciary. According to clauses 12, 13 of Article 175 A, the appointment of judges in this process came into contrast with the independence of judiciary which says that the parliamentary committee has been assigned the power of confirming the nominations of the commission, through voting of six out of eight members of the Parliament, and sent it to the president for approval. It has also been argued that the court should use its power of judicial review against the original constitution.

In several liberal or modern democracies the power of amendment of constitution is part of constitutional law. Many references can be taken from Supreme Court of India and Bangladesh. In Pakistani Constitution the structure is also acknowledged by this court in Mehmoed Khan Achakzai, Syed Zafar Ali Shah vs General Pervez Musharaf and many more cases has given reference to the constitutional provision

Highly qualified judges like Attorney General of Pakistan Moulvi Anwar ul Haq, Mr. K.K. Agha appearing for federation. Mr Wasim Sajad hold the view that any new concept amended in our constitution is strange to our jurisprudence and the court may not be favoured to review its own judgements as no good reason are there to defend them. A highly educated Mr. Shahid Hamid Advocate Supreme Court (ASC), in a fair play accepted that implementation of Article 175A may elevate certain issues and it will be more appropriate if it is referred to parliament for review of Article 267A of constitution.

All the articles were challenged. The court did not fully express its opinion on the merits of issues and other consequences but at first defer to the parliamentary opinion, on the Article 175A to this order

The structure of government based on three-dimensional powers has made the court thoughtful. As the powers are distributed between three organs executive, legislature and judiciary on the basis of separation of powers, the political sovereignty according to constitution belongs to the people as a sacred trust. The judges are supreme only in the interpretation of laws.

It is also a power given to the judges that they should provide justice on the basis of equality without any nepotism and favoritism. As independence of judiciary is the most important provision of our constitution as it concern with the implementation of fundamental rights as given in article 184(3). And under article 199 of the constitution “Rule of Law”. The judiciary has not been made part of the executive or the legislature under Article 7. It is separation between the three institutions. But under Article 177, the process of appointment of judges and removal under article 209 was kept isolated from legislature and opinions of the chief justice of Pakistan and chief justices of High courts were given priority. In all democratic countries, judiciary is in bad condition to the power of legislature as it create and set up the judicial structure like removal, appointment of judges.

In our country legislative power over judiciary is restricted and it is also under the attention of parliament as under Article 175A. Parliament cannot amend any point which is an interference to the independence of judiciary. Only the appointment process has been changed as based on the balance between legislature and judiciary.

The council for federation was aware of the fact that parliament is respected by liberal democracy. The rule of law and independence of judiciary in passing the eighteenth amendment has been taken care of. The provision can be in contradiction with the judicial independence like under Article 175A. It disturbs the overall structure of judicial system because of number of reasons. First, Superior judiciary in Pakistan works under the
leadership of Chief Justice of Pakistan (CJP). CJP represents the judiciary as an institution and hence channelizes and envelopes the voice of dispute-settling pillar of the state. Therefore he can rightly be said as head of judiciary. Before eighteenth amendment article 175 was interpreted in Al Jehad Trust case in the way in which input of CJP was declared as assertive and decisive in process of appointment of judges. As a result of eighteenth amendment article 175 was changed to the extent in which weight of CJP’s input in the process of appointment of judges had been reduced to capacity of a member of judicial commission. Then there seems to be jurisdictional imbalance between judicial commission and parliamentary committee charted out in eighteenth amendment. Parliamentary committee will be at liberty to reject the recommendations of judicial commission.

Second, Composition of judicial commission has been constituted in the way which gives leverage to executive. Two members of judicial commission: the Attorney General and law minister are part and parcel of executive branch of the state till the decision of procedure in favor of executive. Hence independence of judiciary has been eclipsed by interlocking of two institutions in one apparatus.

Third, Insulation wrapped around the judiciary by the constitution earlier which was ensuring institutional autonomy and freedom from tentacles of legislature, has been stripped down as new amendment empowered Prime Minister-the chief executive to nominate four members in eight members parliamentary committee.

Fourth, The dissolution of national assembly is discussed under clauses 9 and 10 of article 175A in which loopholes have been noticed pertaining to likely vacuum created in case of dissolution of assembly and consequent incompleteness of parliamentary committee. Article 213 of constitution in this regard does not contain clear cut directions and hence uncertainty and problem of clarity is present in it.

Fifth, Questions have also been raised on the composition of the judicial commission and parliamentary committee has a veto power. Unaltered articles were though vague but didn’t require any upside down change. It was observed that earlier constitutional provisions which required CJP to consult other senior judges before making of recommendation only needed formalization. Supreme Court envisaged following design of amending the article 175 in its verdict on Eighteenth Amendment to strike the balance among concept of separation of power and judicial independence.

i. Two most senior judges of Supreme Court should be part of judicial commission.

ii. Judicial Commission (JC) will recommend the names of judges for appointment. Parliamentary committee on receiving the names will deliberate on nominations and will approve with 3/4th majority of the committee. If reservations are expressed over the nominations then case can be sent back to judicial commission with strong reasons for reconsideration. During the reconsideration if judicial commission came up with maintaining the earlier recommendations then on sending the same recommendations for second time would leave no other way with parliamentary committee except to forward it with approval for presidential assent.

iii. Activities of parliamentary committee can be carried out in camera but formal detailed record such proceedings should be preserved and protected.

iv. Mian Raza Rabbani acknowledged the importance and significance of basic structure of constitution on the floor of national assembly by showing extreme cautiousness about the fundamental principles of the constitution. He ensured maintenance of such principles during his address.

v. He clearly stated that the new system under 175A and the appointment of judges should be from the recommendation of the chief justice of Pakistan.

vi. The personal made arguments and effect of Article 175A on independence of judiciary are also deferring to the parliamentary mandate. Reference to the Parliament has been made in the lieu of appointment process of judges.

vii. The serious note was given to the legislative in the constitutional history to think over on issues regardless of its legislative functions. The sovereignty of parliament and the independence of judiciary are both important and indispensable. It should not be contradicted in their legislation and judicial power so that the people can live in peace and in such society Rule of Law should prevail. We have to think as a nation over all the multidimensional issues we are suffering from. We should keep in mind that institutions have different and separate role to perform and function but the ultimate goal is one and common between them in a constitutional mandate.

Submission of eighteenth amendment to the apex court for decision of its fate has created new scenario in wake of appointment of additional judges before the enactment of eighteenth amendment. New appointments can also be in consideration. Without any link to pendency of current case on eighteenth amendment, the new amendment came into effect. The apex court during the hearing of petitions on eighteenth amendment issued the directions for insertion of an arrangement which must be in line with other constitutional
provisions and ensure judicial independence. For such a balanced approach following directives were issued by
the apex court regarding the channel of effect given to article 175:

Chief Justice of Pakistan on being informed about any vacant post of higher judiciary will call the
meeting of judicial commission. He will chair the meeting and then will propose names for vacant seat of justice
in Supreme Court of Pakistan. Chief justice of Federal Shariat court and that of provincial high courts will do
the same thing for vacant seat in Federal Shariat court and provincial high courts respectively.

Meetings of commission for appointment to vacant post of justices in higher judiciary will be
conducted according to appropriateness deemed by Chief Justice of Pakistan. Judicial commission will send its
proposed recommendations to parliamentary committee for acceptance. Parliamentry committee will conduct
meaningful deliberations over the proposed recommendations and then will forward it to Prime Minister for
further approval by president but if it took exception to recommendations then ball will again come to Supreme
Court of Pakistan with strong reasons of exception.

4. Institutional Role Of Supreme Court Of Pakistan: Huntington has attributed strength and scope of
political institutions to magnitude and efficacy of governance. The level of governance can be analysed by the
relations existing between the people running the political organizations and political institutions. Huntington(1975) has inked his views about institutions in following words:

“The institutions are the behavioural manifestation of the moral consensus
and mutual interest. Historically, political institutions have emerged out of the
interaction among and disagreement among social forces, and the gradual
development of procedures and organizational devices for resolving those
disagreements.”

Huntington underlines political organization as network or an apparatus built to ensure
order, judicious settlement of disputes, ascendance of hands-on leaders to representative positions, and
mushrooming of governance among various kinds of forces present in society. He shows dependence of
governance upon strength of political organization and processes in society as crucial for development. Such
strength is in turn hostage to scope of support among the general public and level of institutionalization. Before
mentioning the contents of institutionalization it is necessary to flash some light on Huntington’s definition
about institutionalization as a process which makes organizations and processes involved among organizations,
groups, individuals and various kinds of forces to value and follow it. Such following should be consistent in
time. He underlined various factors or contents of institutionalization as adaptability, complexity, autonomy, and
coherence. Supreme Court’s verdict needs to be passed through these avenues in order to analyse its impact on
good governance existing in Pakistan.

Which aspects of verdict on Eighteenth Amendment assure adaptability? Most of the aspects
assure it as it gears up the nature of environment among various political organizations and forces to higher
level of harmony. Sending it to parliament for reconsideration is the sign of enhancement of adaptability of
legislature to new dynamics of power. Adaptability of many political organizations has been increased.
Legislature and executive acquired adaptability by swallowing the bitter pill of constitutional amendment having
been sent back to its post. Judiciary faced augmentation in its adaptability to new nature of the case which involves
diverse questions of parliamentary democracy, federalism and basic structure of constitution at a time
with its focus on procedure of judicial appointment. Critics view this case as an addition of fuel to fire set in
shape of apparent clash among institutions. Increasingly charged environment among the institutions in wake of
hearing of eighteenth amendment case further increased the adaptability to situation where gaps and divergences
among political organizations seem to be widened. Here it is necessary to mention that Supreme Court didn’t go
to the extent of striking down constitutional amendment down but it sent it back to parliament. Such restraint on
the part of Supreme Court of Pakistan against the backdrop of apparently odd interaction between executive and
judiciary demonstrates the readiness of Supreme Court to not only adapt itself but also to move other
organizations with itself in gaining adaptability.

Complexity is the main thing which Supreme Court absorbed in carrying out its
constitutional assignments and actually incessantly increasing complexity in functions of Supreme Court in
shape of its verdict on eighteenth amendment like other cases is being perceived as thorny and suffocative by
forces and other organizations in institutional framework of governance. Earlier, Supreme Court of Pakistan had
already been made the centre of criticism regarding its attitude towards institutional boundaries in framework of
governance but this verdict further added the complexity in functions of Supreme Court when article 239 was
interpreted in a new way. Diverse functions funnelled to SCP through its interpretation of article 239 were the
determination of basic structure of constitution, deciding the procedure of judicial appointments on institutional
terms of Supreme Court of Pakistan, and alteration of pattern of federalism in Pakistan. It also added and
strengthened a sub-unit of Judiciary i.e. Judicial Commission in Supreme Court of Pakistan which is considered another sign of complexity necessitated by institutionalization in words of Huntington.

Autonomy was gained by Supreme Court to boundless extent in its verdict of Supreme Court of Pakistan. As main bone of contention in this case between executive and judiciary was procedure of judicial appointment enshrined in article 175, SCP in its verdict ensured ejection of executive in matters of judicial appointments. Such enormity in autonomy of SCP can be criticised on the ground of missing balance between two theories of separation of power and check and balances. Separation of powers was blindly accorded in this case by turning blind eye to concept of check and balance. But as far as essential element of institutionalization mentioned by Huntington is concerned that was achieved in toto. Organizational system of accountability was long ahead granted in shape of article 209. And now exclusive domain of recruitment has been acquired by SC to portray itself as apolitical organization. Though the ground of depoliticization of judicial appointment taken for such autonomy is opened to criticism, one can consider upper hand given to judiciary in procedure of judicial appointment as initial baby steps towards eradication of nepotism and favouritism in the realm of said procedure. Such autonomy drove the system towards transparency, freedom in shape of depoliticization and fairness in shape of incorporating merit in procedure of attracting new entrants in higher judiciary.

Coherence is obtained both in function and structure of Higher Judiciary in this verdict by Supreme Court of Pakistan. Machinery and structure was made complex and organized through passing back the amendment to parliament with exceptions taken to judicial appointments and basic structure of constitution. Structure of Judicial Commission which was proposed in its verdict on eighteenth amendment and had been translated in nineteenth amendment brought the various parts of provincial and supreme judiciary together on same platform. This platform enveloped the voice and demands of superior judiciary in shape of organized and shared institutional interest. In terms of functions, coherence was acquired in new function of scrutinizing executive’s wishes and having final say in judicial appointment, accrued to superior judiciary through apparatus of judicial commission.

5. Conclusion Verdict on Eighteenth Amendment Case is the verdict in which stance was taken by the Apex Court that question of court’s intervention in matters of judicial appointments decided by a Parliamentary Committee is not unequivocally excluded by the law. Logic would have been rational and judicious if it had accorded uniformity in its application and avoided selective approach. The apex court under the same logic didn’t submit itself to judicial review. The court however didn’t state that accordingly the recommendations of the Judicial. Due to contradictory approach in following the law Judicial Nominations Case seem to be opened to criticism. There is no denial of the fact that that independence of judiciary is sole theme of our constitution but it doesn’t mean that only monopoly over the decision of judicial appointment substantiate judicial appointment and without giving the power of rejection of Parliamentary Committees recommendations to Superior Judiciary judicial independence can’t be ensured.

Given the origins of our constitution in English Common Law, other Countries in the world are examples for us to follow where judges keep themselves at an arm’s length from procedure of appointment of judges of Superior Courts. Contradiction between the etho and function to be adopted, exists in the verdict. First judicial independence has been taken exclusively for judicial appointment and then judicial appointment has been taken for exclusive domain of Superior Judiciary. Attributes of institutional independence in context of liberal democratic system have been ignored. Transparency, participation, pluralistic consultation are the ethos to be transfuse in the mechanism of judicial appointment. The verdict instead focused on actors and its association to higher judiciary. Established approaches of judicial interpretation have not been followed. Constitutional words where its meanings were clear have been afforded new meanings. In the case reference have been made to Al Jihad Case in which Supreme Court of Pakistan equated consultation to consent of Chief Justice of Pakistan in matters of appointment to Supreme Court. Appreciation of AlJehad Trust case cant be attributed to approach of constitutional interpretation followed by the apex court but to its characterization as an attempt of freeing Supreme Court from the tentacles of executive. Such reason of appreciation was not justified but had been accepted due to particular socio-political situation prevailing at that time.

There is difference between the context in which AlJehad Case was decided and the context in which Eighteenth Amendment case was decided. Institutions involving political organizations are working in a different institutional environment. Judiciary which heard and concluded the Eighteenth Amendment Case was very different from that which heard and decided cases like Al Jihad Trust because it emerged to the institutional screen through a quasi revolutionary movement in shape of Lawyer’s movement. With enough scope of support as mentioned by Huntington necessary for institutionalization, post-2009 judiciary has no fear of executive overwhelming behaviour. In absence of such fear it is necessary to debate on making the procedure of judicial appointment more representative and democratic. Monopolizing the procedure to have the final say in the said appointment process superior judiciary will be vulnerable to adopts executive style of working.
Main point on which the apex court differed and went to the extent of sending back the said amendment for review to parliament is this that if Parliamentary Committee is empowered to reject the Judicial Commission’s recommendation then such leverage may make Judicial Commission dysfunctional or toothless. Secondly such preferable say of the parliament will politicize the process and ultimately political favourites will be ascended to higher judicial posts. Third, as a matter of logic, merit to be fulfilled by interested candidate for post of a judge of higher judiciary can best be judged by experienced and senior member of legal fraternity. But if these probable reasons of difference are observed with extreme sensitivity against the backdrop of liberal democracy where stress is applied on more participation, pluralism, constitutionalism, trichotomy of powers, debates etc then it is necessary to adopt different stance over same issue. Difference between stances and arguments pushed forward in support of stances can expose various actors of the game to variety of alternatives and options available for resolution of any problem at hand.

Verdict on Eighteenth Amendment created a complex scenario in which mistrust seems to exist among institutions. Though this mistrust has some historical and real time rational foundations, the very rationale of Parliamentary Committee can be questioned when its disagreement over judicial appointment with Judicial Commission is not allowed on the pretext that such disagreement may give rise to trespassing of judicial domain.

Verdict on Eighteenth amendment was not the result of judicial findings based on merit. During the course of hearings by the apex Court legal and political wizards were expressing their concerns about potential clash among the institutions. But sanity prevailed when Supreme Court of Pakistan delivered which struck a balance between judicial activism and judicial restraint. Supreme Court’s recommendation has already been adopted in the shape of nineteenth amendment which shows a positive and mature response from parliament in general and executive in particular. Governance was strengthened and had been made more responsive because institutional interests of both judiciary and executive have been taken care of which Huntington symbolised as indicator of public interest. If members of an organization increase their individual interest then public interest will be lost sight of institutionalization necessary for good governance. But if institutional interest is achieved then that means achievement of public interest.

6. **Recommendations** Judicial independence is quintessential for federalism because it plays an important role of referee among provinces and between province and federation in case of dispute. Such independence, in case of Pakistan, is not an easy task to achieve unless the appointment of judiciary is free, fair, transparent and apolitical. Though nineteenth amendment has already adjusted majority of reservations raised by superior judiciary in its verdict on eighteenth amendment but doctrine of necessity needs to be kept intact. Other institutions of government must have some rational say in appointments of judge to determine the rationality. After involvement of other institutions, rational methods, means and procedures should be established for making of best choices.

Amendment is an exclusive domain of parliament. Stretching of judicial interpretation should be avoided to prevent institutional encroachment. While interpreting eighteenth amendment, superior judiciary judges didn’t clarify the institutional boundaries. It set a wrong precedent which can resist the legislative powers of the parliament. Hence superior judiciary is required to override it in next cases, if submitted before it.

Basic structure doctrine should be brought in harmony with democracy. If the model of democracy is electoral or other, then such doctrine should not be left as hurdle in implementation of the voice of the people. In federal democracy voice of the people is supreme. Behaviours of the people and social dynamics change with time and space. Constitutional amendments are aimed at adjustment of such an evolving situation. Democracy and federalism, both are processes which can be stopped from evolution, if courts start intervening incessantly on the account of basic structure doctrine.

**REFERENCES**


POLITICS OF IDENTITY IN WEST BENGAL-
ANALYSIS OF TWO IDENTITIES: CASTE AND CLASS

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ABSTRACT: This paper is aimed at enquiring the different modes of political demonstration/expression underpinned by caste hierarchical structure of the society living in the west Bengal. Naxalite movement has curtained the internal diverse structure of the society in the West Bengal. Inter-tribal relations and divergences in their visions of society and socio-political objectives make the societal trajectory more complex. In addition the contradiction of ideological, political, cultural/tribal and caste identities boggles the mind of keen outsider observer and compels him/her to think about Naxalites beyond the class identity and stimulate him/her to unearth the internal socio-political structure Naxal society which is actually diverse, different, complex and folded. For example how being a Santhali or being Oaransi contradict with caste identity or being naxalites? How identity of peasant and socio-political interests attached to it confronts with tribal identity? How this internal contradiction is impacting the overall sociopolitical structure and variation of political woes? To answer such questions, the fact that societies involved in the Naxalite Movement are not confined to West Bengal rather it is spilled over to various districts of India will not be unnoticed but state of West Bengal is selected as a place for analysis. The main question which will tend to envelop all of the above questions is how varying identities or habitats of West Bengal society effects/varies the socio-political practices of the society in West Bengal? However as multiple identities and its perceived contestation has been pointed out but class-caste contest in West Bengal with its consequent contradictions in society of West Bengal will be the core focus of this paper.

1. Introduction

1.1. Literature Review: Sinharay(2012) regurgitates the argument of segregation of caste and class in West Bengal and considers less intertwined effect of the two on socio-political setup. He attempts to dispel the notion that caste matters a lot in West Bengal Politics. The question of caste for Sinharay creates a unique nature of politics in West Bengal vis-à-vis other provinces, due to apparently caste’s dormant play in society of West Bengal. Sinharay proposes that the caste question is considered as antithetical to modern politics in West Bengal and didn’t drive the electoral politics. He ascribe irrelevance of caste in political life of West Bengal to lack of united, shared and mutual caste interests. But empirical incidents about Matuas activities on the political scene have contested the Sinharay’s postulates. Inter alia other symbols of activism among Matuas’ political life temple controversy have further pushed up the question of caste in the province where politics usually is highlighted as class-based.

Roy (2012) has held the irrelevance of caste as a years-followed myth. Her ethnographic study reveals that caste relations and caste identities have overarching dimensions in the day-to-day politics of the study villages.
Though caste almost has less to function in relation to strict religious injunctions, under economic parameters the division of labor largely depends upon caste division. In the cultural-ideological field, the concept of caste-hierarchy seems to continue as an influencing factor, even in the operation of leftist politics.

Chatterjee (1997, 2012) has also stressed on the irrelevance of caste in society and politics of West Bengal. Class feeling has penetrated deep into the collective conscious of the society. Such collective conscious further speaks up in actions and daily life of the inhabitants due to dense presence of Left parties which are cutting across the fault lines of society not along caste lines but also along community-based divisions. But he doesn’t ignore the role which caste plays in politics and society of West Bengal (Ibid). Dominance of upper-caste middle class Bhadralok in politics of northern Indian states draws some lines of differences between politics in West Bengal and in northern Indian states which is not translated in collective conscious and collective response of the people towards their grievances.

Prasad and Gaijan(2007) while quoting “Caste-Class Situation in Rural West Bengal” by Srijan Halder, examine how the rural middle castes have become a political force to cobbled with the concerned contemporary issues, due to improvement in their economic positions. But the situation in West Bengal is somewhat different from that of the neighboring state of Bihar and some other states like Maharashtra, Karnataka and Tamil Nadu. Despite economic betterment and some political clout, the middle castes in Bengal are not able to take their part from the upper caste over control of superior positions in professions bureaucracy and higher educational institutions. In fact the middle castes have not been able to come up to a level that they could challenge or compete with the near monopoly of upper castes.

Prasad and Gaijan(2007) while quoting “In Caste Class and Politics in Colonial Bengal:A case study of Namsudras Movement of 1872-1937,” by Sekhar Bandyopadhyay showed how Namsudras had received support in a struggle against high caste Hindu from the colonial rulers, not because they espoused their cause but because the British wanted to show down the upper caste Mandarins in their own interests.

1.2. Theoretical Framework: The main interest and argument this work is about the confrontation of two identities: class and caste in the west Bengal which constitutes and drives the politics of identity and hence at times shift of identities has been witnessed. Power is the reason behind such switch of identities between caste and class and confrontation involved in it. At a particular period of time, at particular space and against a particular common belligerent a group claim and hangs on one identity and with the change of time, place and belligerents, identity and vehement claims of identity changes. It means West Bengal and the society of Bengal seems to be united against the State at large on issue of class interests but when the society is analyzed from inside then aforementioned interests in case of Matuas and Namsudras are seen to be violated, which push up the claims of caste identity. For such analysis two ways of Michael Focault analysis about power: contract-oppression and dominant-repression. In the contract-oppression approach that power is a genuine right which is surrendered by one side i.e. governed of dichotomy: govern and would-be governors, in favor of would-be governed to establish the inalienable right of control, management and administration for the state and sacred right of achievement of their rights enshrined in a social contract which could be written as well as conventional. Theme of dominant-repression distances itself from the former in terms of absence of any social contract. So in an absence of social contract, rights and duties can’t be claimed and invoked in the formal way but on the other side there will be disparity between privileges of some people and that of others. Such disparity, based on any power value such as land or any other means of ownership continues and goes on to continue, generation after generation. Such continuation establishes a conventional relation of dominant and repressed ones. Research will like to analyze the question of class in the prism of contract-oppression relationship because left parties-the symbol of class-based politics and society, are densely covering the West Bengal which through the instrument of elections paved way for entrance of the society in the framework of contract-oppression. Question of caste will be seen in the light of latter concept due to the element of continuity and resultant dominance accrued to a specific caste. But it does not mean that this division of analysis will be fixed because at times it can be observed that both the concepts will mix with one another in the realms of caste and class. Such mix-up will open the horizon for analysis of confrontation and contradiction between two identities.

2. Caste, Class And Power : In ‘Caste and Power in West Bengal’ Ranbir Samaddar argues that the struggle of the Schedule Castes is social as well as political. The continuity of caste and class together indicates persistence caste-class nexus that existed in British period. The left-front government has not done much to break this rigid nexus as the middle peasantry has acquired a stable place in the system (Ibid). Though the middle peasantry has not pauperized further during the left-front regime, but class contradictions have not sharpened further as expected during the regime of the present government under the leadership of Jyoti Basu.
Castes are ‘discrete’, segmentary and flexible. Class relations can be analyzed by juxtaposing them with caste, kinship, marriage and family. Studies of the nexus between caste and class have highlighted the multifaceted nature of social stratification. The structural-historical perspective in particular is found relevant for analyzing the historicity of the nexus. What is more important here is the fact that the studies of caste and class have moved away considerably from the hierarchical model of consensus, resilience and summation of roles and statuses. These studies have emphasized the emergence of ‘caste free areas’, downward social mobility and incompatibility of pollution purity principle with the entrenchment of middle and lower castes in politics and modern jobs. The increased quest for equality among the weaker sections as well as the highly aspiring middle castes and classes too overrides the traditional bases of status and power.

Both Caste and class are corporate as well as individualistic entities; and the two have fixity as well as flexibility. Caste is not being replaced by class, and caste is still changing rapidly finding a place for itself in non-conventional and secular domains of social, political and economic life. Whichever caste aspires to use it for upward social mobility makes use of the ‘caste idiom’. The castes which become economically and politically dominant also make use of caste for further upward social and cultural mobility. Caste is appropriated for economic and political goals in the first instance and for socio-cultural mobility afterwards. It is opined that instead of ‘caste and class’ it would be appropriate to refer as ‘class and caste’. However there is no uniform pattern of the nexus between caste and class.

The functional significance is one of the basic features of caste system. In the caste system the relationship is conceptualized as one of the ‘economic interdependence’ resting on the bonds of co-operation, the hierarchies are organically linked in the system. The relationship between the classes is, on the other hand, one of competition or in the Marxian sense hostile opposition. The complexities in the class structure are ultimately expected to be reduced into binary opposition between the two classes, the haves and have-nots. Bailey (1958) therefore distinguish between the two systems of stratification by describing the former as a ‘closed organic stratification’ and later as ‘segmentary stratification’, cooperation and competition being the two principles determining inter-group relationship in the two system. The former gives rise to dominant-repressive power and latter to contract-oppression when facilitated by the structure of the state and its institutions which vehemently relied on formal documentation and codification of law not only among individuals but also among have and have-not i.e. among land title –holder or owner and sharecroppers. Cooperation and competition are two main reasons which trigger the shift of identity from class to caste and from caste to class in the context of social composition. When cooperation seizes competition emerges and class identity is emphasized and when competition seizes then cooperation determines an identity.

Cooperation and competition has a lot to do with the power which is inherently intertwined with the structure of society at any place. Same is the case with West Bengal. Roots of cooperation and competition lies in power which on the one side control the society on the other part it also changes. But before telling the reason why it does the two at the same point, it is first necessary to locate the catchment of power i.e. where it is existing or what is the source. It can be posited that the structure of West Bengal society is the first place to search out. Structure of society itself is the reason of producing a particular type of power pattern which compels the societal actor to cooperate and hence continuity of an identity sustains. On the other side the same power pattern makes the societal actors to compete with another and leave others behind, so that collective interests of a class can be preserved/cemented. How this power pattern of West Bengal is produced and modified, is a question which can be answered by analyzing the social composition of West Bengal. It will tell us how different actors of West Bengal society are linked to one another which as a result produce a pattern of power responsible for cooperation and competition.

3. Social Composition Of West Bengal: Social composition of West Bengal will further clarify this class-caste confrontation and hence knots tied between castes and classes of the West Bengal’s society will be untied to grasp the complexities of politics of identity in west Bengal. As mentioned before the main reason behind interchangeable and interdependent shift of class and caste identities is power which is both dominant and constitutional, so in this context we can describe the social composition of West Bengal under the following identities: a) Tribal Elements b) Poor Peasants c) Landless labor. This division will be looked into historical context which underlines it as the background of naxalite movement but here reference to it is aimed at digging out the reasons of shift from one identity to another and the points where it contradicts with one another.

Tribes of West Bengal have been distinguished for their peculiar traditional pattern of life. They were divided into two significant entities not only within the urban sector but also in the rural sector. They did not wish to give up their distinct traditions (Irani 1968; Patel 1972, 1974).
List of schedule castes in West Bengal, taken from data of Backward classes Welfare Department, government of West Bengal, is as following:

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According to the census of 1961 the population of tribes in West Bengal was:
- a) Santhal Tribe 1,200,000
- b) Oarans 297,000
- c) Mundas 160,000
- d) Bhumijas 91000; other small communities, for example Tarai Gurkhas, Gondas, Hajongs came to about 37904 (Irani 1968, Franda 1971, Gupta 1974). The same proportion existed in Naxalite area. Thus since the proportion of Santhal tribe was comparatively large, the leadership of the ‘naxalite’ or ‘Maoist’ movement remained in the hands of Santhal tribe. Leadership role of Santhal tribe will help us out in understanding the leadership pattern of tribal people and its role as one of causes in shift of identity between caste and class. It will be discussed later on.

This statistical data was though old and confined to the boundaries of rural areas, more particularly to Sarbanapur of Birbhum district, but it holds good for understanding of reasons behind class-caste shift and a number of other similar cases. It has already been mentioned that the Santhal tribes comprised 87 per cent of the total population of the tribes and that among these 87 to 89 percent were directly engaged as agricultural laborers (Patel 1972).

In the proceeding section how aforementioned tribes cooperates or competes with one another which ultimately lead to switch/shift of identity, will be discussed. The main thing which connects various societal actors with one another and then gives rives to a particular kind of aforementioned power pattern is the means of production. This means of production demarcates the boundaries of identities. Here two identities which are relevant to means of production and is the focus of discussion, are class and caste. On one side means put one in the box of
Talking about interjection of two identities, caste and class, Bose(1986) discovered a three branch system of social sectioning which he considered as ‘demense labour complex’. Various communities of this system are ‘bhadrakol’, ‘chashi’ and ‘majur’ or ‘chotolok’. Bhadrakol in this system are observed as handful of major landowners. They enjoy highest status in the ladder of this system. After that the category of owner cultivators comes, who enjoy the middle position in the system. Tribes which come in the perimeters of this section of the system are Mahisya, Sadgop and Aguri etc. In the lowest section of society lives those who don’t own land and only put their labor to earn basic livelihood. This section consists of tribes such as Bagdis, Bauari and Namasudra. Now here in contention of Bose it is required to draw attention towards few complicated points. Is it the capacity of landownership which is making the caste of Bhadrakol ‘clean’ or high? or is it the religious-rooted link which some social scientists in their typical urban centric view classified the rural world into two social groups, i.e. bhadrakol
and *chotolok*, which is vastly oversimplified. Such a view emphasized on the social differentiation among the part of the population ranked below the landlord classes.

Here in case of identities such as *bhadralok* and *chotolok*, both type of relations: contract-oppression and dominant-repression. When identity based on caste is pushed up then it maintains the former type of relations and when the means of production i.e. land, its production and labor is highlighted, the latter one comes on the screen and dominates all other identities. But as in certain cases where the analysis of both caste and class has been done, it has been inferred that both type of relationships cross one another and grey areas in the realm of identity emerge. On the other side middle-class status and high caste of *Bhadralok* determines the shifting nature of the identity which one can easily observe in state elections. In class-oriented politics of West Bengal they secure their financial support from their co-caste people by clinging on their caste identity and secure votes of people by chanting slogans of classless society.

5. Means Of Production-Cooperation And Competition As A Reason Of Shift Of Identities (Caste/Tribal To Class/Maoists): Tribes living in Terai area of West Bengal cultivate tea on land. Land is the basic means of production. Tea is the crop which brings cash money for them to run their houses. But the lands on which cultivate tea do not belong or are not owned by them. Landlords are the real owner of the land who can set and change the terms of engagement. Permanent ownership can’t be secured by them without use of violent and rebellious means. Where there dream of having their own land dashed, there they hardly manage their basic necessities of life from the money they get in return of the labor they employ in land. Colonial era maneuvered this hierarchical structure of society for maximum extraction of revenue. Therefore, such extraction accrued final say in major decisions to colonial power. Under this trajectory caste can also be termed as building up of power in cultural context. In cultural context, construction of power passed through various changes which give a clear understanding of how power relations work in Indian society. Such power relations premised on economic means of production give leverage to a specific group to claim the privileged status from where it can steer the whole structure of power and system of distribution of power. On the other side, landless cultivators have rare chances to change the pattern of power. Such a situation narrows down their alternatives for negotiations with those who are in possession of power. Under these depressive economic conditions they had no alternative but to join the Maoists who were pleading their cause and teaching them effective methods to emancipate themselves and to expropriate the expropriators. When the cooperation broke down due to its failure of catering the basic needs identity from caste(tribe) shifted to class identity(Maoists) struggling to create and define its position in the competition process.

When the means of power and the value attached will be a piece of land then it will give rise to particular agrarian relations defined on the terms of various actors of power. Agrarian relations in India varied from state to state because there were no uniform laws governing them in the past. Such agrarian relations constituted the dominant-repressive and remained intact till the emergence of constitutional-oppressive power. There were no customs and traditions either and the landlord’s sweet will determined the economic status of the poor peasants. Tenancy Act 1954 didn’t unravel the oppressive structure of power in any manner. Weight and gravity of seriousness towards the demands of oppressed people by various stakeholders involved in it drives their life standards. India at one time was an agricultural country which she still is to a great extent where more than 50% of population depends upon primitive tools and outmoded methods of production and they produce barely sufficient to keep the bodies and soul of their people together. Out of this meager produce a big chunk is embezzled by the influential landlords-the rural elite. Because of these factors, the phenomenon which was common in these areas was that in this agricultural society the poor peasants and share croppers did not draw the attention of the society. Their interests were not protected from any quarters and they suffered in two ways: the misuse of the labor by landlords and insufficient facilities provided by the judiciary to the poor peasants against this exploitation (Mellor, Weaver and Simon 1968; Jawaid 1979).

There was a particular pattern of dealings and share of activities attached to land and its ownership. There were three categories of groups were involved in activities pertaining to it. As already mentioned, that dealings and activities associated to land, attains variety and hence subsequently produce different power patterns. For an instance, it is a long-practiced dealing that big landlords who were the owners of land give their land on contract to petty or intermediate landlords known as *jotedars*. These *jotedars* arrange all of required tools, raw material and machines for cultivation. Then they give it to landless laborer and cultivators on the condition that half of the production will be retained by croppers and remaining will be given to *jotedars*. This pattern changes with the change of terms of engagement. For an instance, if *jotedar* don’t arrange the required material for share croppers...
then in that case sharecropper can retain sixty percent of total production. These systems of dealings between various categories of actors linked to land have its own consequences. Jotedars in this system of dealing usually do not keep one group of sharecroppers engaged. Less time of engagement creates fear of insecurity and uncertainty among sharecroppers. Juxtaposed to the system of direct dependency upon big landlords, such engagement seems to be more unreliable for their basic survival as it puts employment into inconsistency and unreliability. This lack of security forced them not to see beyond certain limits (Irani 1968). Such changing patterns of dealings produce various pattern of dependency in power patterns. There would be a sort of increased dependency fuelled by insecurity and unreliability. Sharecroppers rely on jotedars for their problems. During the time of famine, drought, floods, epidemic diseases they seek financial help on stringent conditions. Such conditions losses the grip of nooses around their necks for temporary period of time, but in the long run put them in a vicious circle of dependency.

In complex system of caste and tribes, cooperation under the aforementioned patterns of powers, in economic sphere was forced on the classes and castes in the vulnerable category. Such imbalance of power in the result of material dealings of production of land categorizes the characteristics, roles, functions and statuses. Big landlords, jotedars and sharecroppers held specific category with specific features in the hierarchy of statuses. The jotedars of West Bengal served three purposes in village economy. First, they were absentee landlords; secondly they were money lenders; and thirdly they ultimately became political leaders (contractual-oppressors). In all position they could protect their interest against the poor disgruntled poor peasants as well as the land reform enactments of the governments. When the crops get ready for cutting, the jotedars became happy and the poor sharecroppers felt miserable. The jotedars went about collecting their debts with interest in the form of cash, seeds and foodgrains, and became prosperous, while the sharecroppers had to pay back the loans with unbearable of rates of interest and were unhappy (Gupta 1972). In this web of interactive relations determination of cooperation, dependency and interdependency are not decided by the demand of any class or caste rather it is the given chunk of power which set the red lines between those who sets the rules and those who have only option to obey the rules.

It may also be noted that all contracts and other relevant papers and legal documents were prepared by the Jotedars, sharecroppers being utterly ignorant. It was the initial stage of introduction of contractual-oppression power which had been harnessed by jotedars. The sharecroppers were made to affix their thumb impression at the place pointed out by the wicked jotedar. He read out the terms and conditions of these loans and charged whatever he wanted. In these circumstances jotedar became masters of sharecropper. The jotedar refrained from using fertilizers as they thought that it was not in their interest.

Demographic status of landless labor in West Bengal further clarify their vulnerability vis-à-vis other castes and classes in context of time. Out of total population recorded in 1968, 15.3% were laborers. Two categories dichotomize that portion of population. First category was of ascribed landless laborers and second category was of those who were holding minimal tracts of land and had given away under various conditions of loan to money lenders. Ascribed landless laborers mean those who were landless by birth. Many of them failed to secure back their mortgaged land because of their failure to fulfill the stringent conditions including high rate of interest. So as an alternative they have to work for very less amount of money and such vulnerability out of indebtedness had to continue for generations. According to the report of Agriculture Labor Enquiry Commissions the laborers were mainly drawn from local tribes and were generally indebted to their employers from whom they obtained loans when they were urgently in need of money. The commission also stated in its report that some employers allotted one bigha of land to attached workers on the condition that they would work in employer’s field during the busy season on daily wages. The way in which these laborers were treated inevitably led them to the acceptance of the Maoist Revolutionary strategy.

The landless laborers were so desperate that they did not worry about the dire consequences which could be expected as a result of resorting to the Maoist revolutionary activities. Actually they didn’t find any fruit in cooperation with big or intermediate landlords, which was actually strengthening the dominant-repression and also accruing results of initial contractual-oppression in favor of owner who owned means of production. On the other side state was also indifferent to their deteriorating vulnerability. State policies in many cases reinforced the predatory structure. So if all the choices in front of them were worst then they had to go for lesser worst choice. They have not been left with anything to lose so that out of fear of losing anything they could cooperate or continue to accept dependency. The basic reason for this was that they thought that for them there was not much for them to lose.

Above data gives us understanding and in-depth structure of the society at West Bengal. Society is complex and divided, not only along the tribal or class lines but also along the caste lines. So it will not be enough to
divide the society in upper, middle and lower classes. The cross-tribal, cross-class and also cross-caste nature of the society, manifested by leftist parties is usually stressed by many writers (as mentioned in the beginning of the paper) to eclipse the fault lines of caste. Most of the reasons which navigate the identities over different hinges and anchors have been discussed in preceding paragraphs and more will be discussed from different vintages to sketch a coherent picture of politics of identity and the power value underpinning such politics driving confrontation and contradiction of diverse identities.

6. Empirical Evidences And Facts-Religion As A Reason Of Identity Shift (From Class To Caste/Tribal):
Dalits are different from Adivasis in the sense that they hold a central portion in mainstream culture, society, and economy but have been put in the lowest tier. Such hierarchical position of Dalits or any other section of society in social structure is made complex by Hindu theology rooted in doctrine of Karma and the Dharma. Sometimes, such complexity is noticed in the form of cementing of hierarchical caste system. Divisions in the society are not only on the basis of financial means but it is also dependent upon gender, caste or faith. None of the above factor effects or determines the position of an individual and his/her behavior in society independently. All of these factors affect the individual’s social position at a time. Sometimes, one factor affect more than other. For an instance, accumulation of wealth may enhance the bargaining power and subsequent strength of say of an individual in day-to-day decisions in spite of his/her low caste.

As religion and culture have intertwining relationship with one another, division of the society on the basis of Hindu theology has cemented the hierarchical caste system. Tiers within society, interaction among them in various spheres of life and privileges and incentives attached to it depend upon not only theological divisions but also on other identities. These identities include gender, tribe, caste, and economic class. The complexity in this scenario of identities emerges when various identities are contested and confronted. Such contestation and confrontation do not come into play across the groups only, rather it operates in relations among individuals within the same group and sometime individual finds it in his/her behavior in different time and different place. Such complexity usually increases the dispossession of that group which has been put at lower tier of society in a relative way. Same is the case with untouchables in West Bengal. Theologically speaking they are known with different names Panchama (the fifth) or Antaja and Pariah or Atisudra. Weather is not sunny for these adivasis to make inroads to variety of resources of power and social mobility involved in it. Exclusive behavior of state towards them practically categorizes their citizenship. Such exclusive behavior can be witnessed by a cold-blooded incident, occurred in April 2004, at Bengal, which had not been highlighted by media to its due extent because of elections which were approaching at that time. Local people also didn’t react to it the manner it must be reacted to. The real story was about a girl hailing from Hari community (mentioned in the above table) and a boy who was a Brahmin. Boy’s family was not in favor of wedlock between the couple due to low caste status of girl which in their view could impure the family goddess. As a reaction, fallen-in-love couple in extreme frustration, committed suicide. Here two points can be raised. One, inter-caste rift in the context of class-based polity of West Bengal and dynamics of society are not in sync with that of politics. Former is the symbol of dominant-repression and the latter is voicing the melody of contract-oppression as mentioned in my main argument.

Such exclusion from incentives created by different institutions of the state at local level spearheads their reaction to policies of state, class movement of Maoists and their inter-group alliances. Such ascribed dispossession and expropriated position in society affects their behavior and interaction with those who form and run the overall movement in West Bengal against the state i.e. ‘Maoists’ or ‘adivasis’. These restrictions are still witnessed particularly in West Bengal, in one form or another, where presence of Leftist parties tends to ensure the absence of caste conscious (Bayopadhyay 2004). Therefore it can be said safely that contestation of sharply variant identities translates into function and performance of overall movement.

The heart-burning event didn’t stop here. Later treatment meted out to the dead bodies of lovers spoke volumes about embedded existence of caste’s conscious in West Bengal society. Local people, by any prick of conscious didn’t feel humane to pick the dead bodies for cremation. All this was happening during the phase of election when candidates were campaigning in the name of caste-less society which would further bridge up the gap between classes of society. Days after the climax of the luxury which the couple tried to have dead bodies got rotten. Here the element which boggles one mind is that caste is so much entrenched in the society that the politics based on class pegged to it has failed to penetrate. It could also be conceived as failure of penetration of class-conscious in the impervious society embodying caste sentiments, still at some noticeable level. Secondly, the social recognition and sustenance of caste-conscious is also a barrier and reason behind confrontation and contradiction of two identities
Caste and class. Same is the case with the politics of west Bengal. These two identities and confrontation involved in it speaks up in the polity and due to the same reason factionalism among the political parties is demonstrated by splinter groups which usually emerge after specific period of time.

Bayopadhyay(2004) summarized what he had come across. In a question-answer session with a teacher of a school at Rajarhat near Calcutta, engendering of identities has come into discussion. Stereotypes play an important role in construction of identities. Inter-tribal nostalgia was rooted in the perception of childer belonging to a particular tribe. The teacher claimed that schools were hosting children of all the families. Byopadhyay(2004) responded to that claim by referring to number of children fishing in a canal, on his way to the school and asked the teacher about their status. The reason with the teacher for their not joining of schools was their belongingness to the tribe of Kaoras. Such perception on the part of that teacher was akin to process of making of identities and inter-tribal conflicts emanating out of this process. Here, one result can also be deduced that identity is not just about what particular group claims to be, rather it is an interactive process of what others think about a particular group. Socially, such thinking of both sides about each other, creates the sense of a feeling which can be put in the dichotomy of ‘us’ and ‘them’. Such otherness and recipients of it give rise to that social interaction which hampers organization and collective function of overall class movement against the state.

Bayopadhyay(2004) noticed the same phenomenon in response of other teachers. A teacher of a secondary school in Bankura village expressed same feelings about the children of Bagdi, Bauri and Khaira families. He attributed deteriorating situation of education to studying of children of above families in schools(Ibid).Such perception clearly shows the exclusionary mentality on micro level. It takes a serious situation when such caste-based perception and intolerant ideas about other groups and tribes are in operation in social institutions such as education houses where a part of process of socialization of individuals take place.

7. Social Mobility/Transition: Societies all over the world are organized in a hierarchical manner which gives rise to different social echelons within the society and also variations among different societies of the world in general and India in particular. This has definite impact on the dialectical interaction among the individuals, their social prestige, influence and importance in West Bengal particularly. Individuals or groups are normally engaged in endless endeavor to enhance their statuses, move from lower position to higher position and vice versa. Simplistically, such movement across the strata constitutes social mobility, can be defined as transmission of an individual or social object or value-anything that has been created or modified by human activity-from one social position, such as economic, political and occupational to another. In caste stratified society, such definitions become problematic more so in case of upward mobility as it becomes meaningful only when the consequent change of social status is accepted by the larger society more particularly by the peers in new stratum. But in caste based society, such social acceptance of achieved status of those who moves or who tends to move from one stratum/echelon to other stratum/echelon, by the larger society is seriously limited. It can be viewed as social mobility as shift and ranking occupations, consumptions, social power and social class composed of individual accepting each other as equals and qualified for intimate association. Their view appears to be more amenable to understand social mobility in caste based society. But qualifying for equal treatment and intimate association alone won't suffice our need. It is also crucial that the mobile individuals are accepted and accorded due respect befitting their newly acquired positions by their subordinates in the official hierarchy and the larger public outside, irrespective of their caste status. This may be termed as social acceptance. Suitably modifying the aforesaid view, social mobility as a positional shift of individuals in the social, economic, occupational and political structures are described in such a manner that the new incumbents qualify for social acceptance irrespective of their caste or ascribed ties. So two things social recognition as discussed in preceding section and social acceptance of newly introduced ingredients of globalized world in context of free market economy has also to do with changing and switching of identities.

Though Indian state in the shape of its constitution and political parties has tried to downplay and feeble the caste identity by attempting to integrate west Bengal in liberal free market wave of globalization but still it is intact and has to be addressed properly by juggling with the determinants triggering the privileged behavior of one caste over the other or one class over the other or at that junctures where it intersects with one another. Natural resources in West Bengal are abundant. Technology couple with the process of globalization has put life in economic progress. Calcutta in this regard is worth referring to. Natural resources, availability of lands for installation of industries and interests of investors have made West Bengal an attractive place. State, both at local
and central level, is thus supportive towards corporate sector and takes every essential step to ensure law and order, stability and peace because investors always need prior guarantee and security of their investments. Such encouragement from the side of the state has made flourishing of industries of information technology possible. Industrialization is gaining momentum. NASSCOM-Gartner has declared West Bengal as most suitable place for establishment of power infrastructure in entire India. Such variety of corporate and market-oriented activities have enhanced the importance of land and people living on it. Social environment is a moderator in abovementioned number of processes and stakeholders associated to these processes, involved in it. For long term, reliable and sustainable economic growth state willingly or unwillingly has to take aforementioned complex contested identities into consideration. Such cognition by the state will enable the state to negotiate with holder of these identities, so that grey areas can be found out.

Calcutta is now host of range of corporate companies. Headquarter of every major company is now situated in Calcutta. In these range of companies, names of the companies which are worth mentioning here are: ITC Limited, India Government Mint, Kolkata, Haldia Petrochemicals, Exide Industries, Hindustan Motors, Britannia Industries, Bata India, Birla Corporation, CESC Limited, Coal India Limited, Damodar Valley Corporation, PwC India, Peerless Group, United Bank of India, UCO Bank and Allahabad Bank. All of above companies are carrying out their economic projects in West Bengal in different sectors. ITC Limited is in dealing of businesses such as agri-business, Fast Moving Consumer Goods(FMCGs), Hotels, Paper boards and speciality papers etc. Like ITCs, all of above companies are engaged in diverse economic activities at various forest-abundant places of West Bengal. Land, people and infrastructure are fundamentals to performance of diverse businesses.

Government of India formulated a policy of ‘Look East’ in 2010 and laid a trade route to China with the name Nathu La Pass in Sikkim. Adoption of this policy and number of projects triggered by it, has engulfed different areas of West Bengal in General and Calcutta in particular. Web of engagements have opened West Bengal not only for investors from neighboring countries but also for investors from the west. Position of West Bengal in this context of economic growth and development has enhanced the importance of West Bengal regionally and globally (wikipedia). But every business has its cost. As mentioned above land is required. For some businesses, wood extractable from forests is also important as a raw material for industries. In the near past, provincial and local governments of Chhattisgarh, Jharkhand, Orissa and West Bengal have come into nascent agreements with corporate tanks. These parties will invest in power sector, mining sector, and factories of minerals. Materialization of these behind-the-screen agreements requires ejection of people from the local land (Roy 2010, outlookindia.com). Reactions, resistances, and frictions are results of conflicting identities. Corporate involvement has added to complexity of identities in social domain which is pertinent for smooth function of corporate sector in West Bengal. Given all this, negotiation must be preceded by the understanding of power dynamics predicated on mosaic of identities. It is interesting to know that attempts have been made by merging two approaches of Foucault concept of power: contract-oppression and dominant-repressiveness, in case of West Bengal but in both cases identities are not obliterated, rather it raised more as a vibrant voice. Perhaps reasons behind such owning of identities such as tribal and caste and its shift to other identities, voicing class consciousness might be lack of gearing of globalized and capital-oriented programs to caste patterns of society. It means that there is a need to co-opt or to create a breathing space for these tribal people and the people aligned on the lines of caste in growth-led projects. An insensitive and unmindful gap between the significance of society and growth-led policies of state can be witnessed in such futile attempts of suppressing the caste-based identities.

Failure of the state to understand the dynamics of identities and power attached to it, has created a difficult-to-manage gulf between state and society with multiple and interjecting identities. Steps to transpire trust in dissenters have been lukewarm. State prioritizes the market results over the concerns of locales in its negotiations with aggrieved. Such divergent objects have led to complete and absolute mistrust of Maoists in state-headed processes of election, parliament, and negotiations. They now want nothing less than independence for which overthrow of state structure in their places is first requirement. Given the entrenched power of the state, overthrow of state structure is far from possibility in near future but such conflict will consume the energies of both sides. Result will be a pendulum-like. Sometimes government will be victorious when it launches successful operations against secessionists and sometime rebels are successful when it launch onslaughts on government officials and installations. Economic progress will also continue along all this but speed will not be like that which can be achieved in the case of inclusive and integrated arrangement between the state and local inhabitants. Any thinking on the part of the state that it can crush or bulldoze the resisting voices of oppressed people is without any
foundation. History of tribal people and other oppressed classes and castes reveal that resistance before and after the Independence of India, against the state have never been uprooted completely. Case of Naxalbhari village in West Bengal is an ample example where such conflict didn’t end in silence and invasion of people, rather it resulted in creation of a vibrant identity with the name naxals. Again, it should not be left unattended that these class based identities involve various other tribal identities such as The Ho, the Oraon, the Kols, the Santhals, the Mundas and the Gonds underneath (Ibid).

8. Conclusion: In the light of above various aspects of politics of identity which has explained confrontation between class and caste, various reasons have been witnessed behind the shift of one identity to another identity. The framework which is followed for this shift is contract-oppression and dominant-repression relationship among different factions of the society. Four major cases which can later on be opened for observation in further directions, have been discussed. First was the social composition of West Bengal in which it has been noted that both kinds of approaches of power: contract-oppression and dominant repression was inherently present. Such approach was actually determining the structure of society. The reason for shift of identity to Maoist was the imbalance in this approach which started depriving lower class and low caste people. There were various tribes and various scheduled castes which were actually downtrodden. They were diverse within themselves. The identity which can embody their diverse identities for fulfillment of their basic subsistence was of Maoists.

In second case of Bhadralok and chotolok, both class and caste seemed to cross one another or intersect one another. Identity of class and caste first seemed to be crossing one another in case of Bhadralok. Their relationship with other classes was not only of contract-oppressive type but also of dominant-repressive type depending upon the caste.

Third major reason behind the shift and confrontation of identities is social mobility. Social stratification is continuously going through the change. Competition among different actors is at its peak. Everyone wants to grab more and more. Globalisation and free market economy has added to this mess. Identities seem to be shifted from caste to class based on free capital.

Fourth one is the confrontation of religion and the class-based politics in West Bengal. In this case both identities has maintained its boundaries till now. They neither intersect nor merge. Depending upon the time and space both of the identities came to surface by pushing down the other. This case is strange keeping culture of politics in West Bengal which totally stamps out the presence of caste in society.

9. Recommendation: Methods, principles, ways, and channels are required to have its place in institutions of state and society where various identities can not only be accommodated but also can negotiate with one another. Exclusion of identity of any kind will absorb energy and time with no results. There will be no win-win result at the end. Both sides: powerful and powerless lose something.

When it comes to state, then the first institution which warrant attention in the discussion of inclusive policies making for indigenous identities is constitution. India has already done in this regard. But it still needs much to do for complete implementation. Implementation will create sense of ownership.

Local governance which is on its way with full swing in India can make a difference. But it requires specific apparatus and outlets through which dissenters can enter into the mainstream political life of the country. Functions of local governance need to be taken over by the local people.

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ISLAMIC INSTRUMENTALISM IN MOVEMENT OF NON-VIOLENCE BY KHAN ABDUL GHAFFAR KHAN

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ABSTRACT: Khan Abdul Ghaffar Khan—a pushthun and a staunch Muslim who practiced, propagated and institutionalized concept of non-violence during his life. His political life was dedicated to anti-imperialist movement along Islamic lines. Paper compares non-violent movement run by Ghaffar Khan with other leaders of the world who led the same movement at one moment of the history. Futuristic analysis of source of legitimacy for his anti-imperialist non-violent politics was rooted in Islam which was not only catching essence of his highly organized political movement but also a symbiotic platform for popular and religious faction of politics. Instrumentalization of religion through forging of non-violence in social reformation and politics of pushthuns-dominated region had been witnessed for the first time. Institutionalization of religiously inspired non-violent Ghaffar’s legacy can bring peace specifically in terror-riddled Pakistan. Alternatives with state are available to deal with religion in politics.

Keywords: Non-violence; Instrumentalization of Islam; Political Movement; Institutionalization of non-violence; Anti-imperialism.

1. Introduction: Non-violence simply means negation and absence of violence. Concept of non-violence is present in various traditions, civilizations, religions and personalities of the world. Striking distinctiveness about Khan Abdul Ghaffar Khan’s usage of concept of non-violence in his life and politics was an amalgam of religion, popular politics and non-violence. Such amalgam makes a point that religion which is prone to monopolized maneuverability by religious elites and hence gives rise to violence can also be instrumentalized for purging the society and politics of violence. South Asian region where identity crises long lines of caste, class, tribe and religion is expressed in variant forms of conflicts within the society and between society and state, importance of interwoven relationship between religion and non-violence in politics of a country can’t be ignored. Non-violence with its roots in religion is required to dissolve the strident friction among ethnic or nationalistic identities. Ghaffar Khan did the same thing. He extracted non-violence from Islam and incorporated in his politics to coalesce people around the concept of non-violence. He fostered this politico-religious concept of non-violence among his adherents for the fight against anti-imperialism. The popularity and intensity of adherence emanating out of spiritual and moral sanction of Islam and success of resultant political movement against imperial power proved that Islam, politics, populism and non-violent resistance can be enveloped peacefully to wage a highly effective way of resistance in a unique way where politics and religion can complement one another in today’s modern world if a charismatic and selfless leader like Ghaffar Khan is present to lead.

There will be four parts of this paper. First part will delve into position of non-violence in major religions through a comparative approach for underlining generalized significance of religion. Role of religion is very important in matters of peace and politics in South Asian countries specifically. Second part will be combination of literature review and leadership approach towards analysis of non-violence. Third part discusses personal life of Khan Abdul Ghaffar Khan and will attempt to enquire non-violence through trait approach i.e. in the light of personality traits of Ghaffar Khan. Fourth part will discuss his politics revolving around alliances/association with
religious leaders and religious issues. Fifth part will discuss link between religious movement and Ghaffar’s politics. Sixth part will analyze the amalgam of Islam and politics in institutionalization of non-violence. Seventh part will enquire how non-violence predicated on religion spoke up in popular politics. Conclusion will give alternatives to policy makers of those societies including Pakistan where religion has become inseparable.

2. Concept Of Non-Violence In Major Religions: Hinduism, being the oldest religion of the world will be a interesting point to start from keeping in view our(Pakistanis) obsession with Indians and Gandhi-Ghaffar alliance in view. In Sanskrit, the religious language of Hinduism, himsa is doing harm or causing injury. The “a” placed before the word negates it. Very simply, ahimsa is abstaining from causing hurt or harm. It is gentleness and non-injury, whether physical, mental or emotional(Himalayan Academy, 2014). It is good to know that nonviolence speaks only to the most extreme forms of wrongdoing, while ahimsa (which includes not killing) goes much deeper to prohibit the subtle abuse and the simple hurt.

The Bhagavat Gita , which is considered to be very sacred by the Hindus, equate anger(krodh), pride(mad), arrogance(darp), cruelty(kruratv), slaying the enemies(satra hatya), hatred(dhavesh), as demonical qualities (asura pravritti), in contrast to the divine qualities (asura pravritti), which are harmlessness(ahimsa), absence of anger(akrodha), peace(sanit), compassion(daya), forgiveness(kshama), and absence of malice(adhiroho).(Hindu Website, 2014) Presence of non-violence in the oldest religion confirms two things. First, that Ghaffar Khan was not coining something new, rather he was reviving a dormant concept in his society i.e. pushthun society. But it does not mean that he incorporated his version of non-violence from Hinduism as the later part will prove it.

Core of Hinduism contains the essence of Ahimsa or non-violence (Bondurant 1988). List of five moral principles also include non-violence (Ibid). Cycle of reincarnation embodies violence in a particular status but accords non-violence a status which brings a Hindu towards religious enlightenment(Fried 1999,156). Such a prominent and preferable position of non-violence does not stop Hindu nation, predominantly living in India, from being less violent than other nations(Fischer 1997).

Shastri and Shastri noted that ahimsa as concept is not only confined to religion in its meaning and attributes but also has its roots in philosophical and ethical realm. As a “positive doctrine of love friendship and equality among all living beings in the universe” ahimsa is an antidote to violence in the world. It embraces both the pursuit of good of humanity and devotion to the good of all living beings and the environment(Mayton 2009, 76-77).

Shastri and Shastri stemmed out arguments from four Vedas in support of Hindu view of non-violence.They observed that Hindu view of non-concept was coined and evolved hundreds of years before rabbinic and Christian writings. the Hindu reference to the concept of the golden predated rabbinic and Christian writings by hundreds of years. They further underlined horrendous consequences caused by departure of players from one another in any type of interaction. Hindu text evokes belief and interest in the notion of combination of individual and all except that individual. When an individual feels himself/herself as a part and parcel of what surround him/her and God, he/she can’t exercise violence because violence, in such a case, would be akin to harming one own self. The unification with others is according to intertwined view of self (Ibid).

Buddha became well-known for the doctrine of Panchasheel which included abstention from violence or himsa, undue appropriation, sexual corruption, lying and drinking(toxication). Grace(daya), charity and non-violence(ahimsa) were three principles of propagation of Kapila. Yoga’s centre of evocation of interest in his followers involved the yamas or social necessities-refraining from violence, stealing and appropriation, saying of truth and chastity. White Hahn(1993) in concord with other Budhist scholars, believes that harmony and peace of mind are required for practice of nonviolence. An engaged Buddhist deals with nonviolent action which transcends the mind. He doesn’t tackles with non-violent speech and actions but also faces nonviolent inaction. Silence and unresponsiveness in a situation do more wonders than other way around by creating hesitation in others to say or do something harmful because of our positive presence.

Jains have highest regard for nonviolence and consider it as a unsurpassed religion. Base and fountain of all principles and ethos of Jainism is mentioned in Jain scriptures as nonviolence out of which all other principles emanate(Natubhai 2004,108). Jainism recognizes the inherent and innate weaknesses and vulnerability towards sins. In view of these facts , Jainism provides a unique system to attain inner peace and
happiness (Jainstudy 2014). Bhagwaan Mahaveer propounded five virtues nonviolence (ahimsa), truth (SATYA), non-stealing (ACHAURYA), continence (chastity, BHARMACHARYA) and non-possessiveness (APARIGRAH). Non-violence implies consciousness free from attachment (love) and aversion. Violence is also akin to rejection of equality and provision of justice on the basis of religion, race or social status. Untruth (falsehood), stealing, intemperance (unchastity) and possessiveness (greed) involve mental and physical violence of others. Thus the virtues of truth, non-stealing, chastity and non-possessiveness are integral part of non-violence. In his famous work PUURUSHART SIDDHYUPAAYA, Acharya Amrit Chandra Suri states that all moral practices are included in non-violence (Ibid).

**Hazrat Esa (A.S.)** or Jesus characterized God as nonviolent and viewed domination system and violent. On such juxtaposed dichotomy he crafted non-violent resistance embodying the preferable aspiration of being killed over killing others. Nonviolent attitude or behavior on the part of Jesus showed his encounters with a non-violent God. Jesus’ death on the cross testifies that God’s power, whatever it maybe, is invitational and not violent or coercive. Jesus disapproved commandments of God and history rooted in the wrath and negative sanctions of God (Nelson, 2011). Horsley (1986) equates theme of ‘love your enemies’ with the essence of morality of non-violence embedded in the legacy of Jesus. He has explained the social context in which Jesus propagated and practiced non-retaliation (Davis 2005, 24-25).

Walter Wink propounded the thesis in his essays on Jesus’ sermons following the lex talionis given in Mt. 5:38-42, which rejected both notions of Jesus’ advocacy of passivity and Jesus’ violent action. Instead his thesis gave a third choices rooted in Jesus’ legacy known as ‘active nonviolent resistance’ (Ibid).

Finally, talking about Islam as a source of non-violence doesn’t need any explanation because life of **Hazrat Syedna Mohammad (S.A.W).** is an evidence enough to furnish the contention that Islam not only in its holy literature but also in its practical version (life of Hazrat Mohammad (S.A.W.)) stress on non-violence, tolerance and forbearance. However, it is necessary to draw attention towards a very important point present in all the religions in one form or another, which demands its followers to adhere to midway between the two extremes in any context. It means that religions do not deny the presence of evil forces of society and where there is a principle demanding the follower to abstain from wrong-doing there it is also ordained that stop the wrong-doing on seeing it. Therefore, extreme of any in general and of non-violence in particular is also not welcomed. To articulate it, versus of Qurans merit attention which require Muslims to rise up against any foreign power with full preparation and on the same time discourages them to do if there is peace and non-aggression from infidels.

3. **Western Discourse On Non-Violence:** Non-violence is a process which is not confined to absence of violence only. Its description with reference to absence of violence augments the significance of description of non-violence. It is the time-consuming and energy-consuming process in which agreements are forged on contested points of issue before hand (Cox, 1986). The belief that parties to conflict have equal probability of having won builds up the foundational block for nonviolence (Meyer 2000, 8-9). This highlights the necessity of measures that fosters mutual respect and that exhorts individuals to commit to the objective of securing the best results for all participants.

Gene Sharp has highlighted tactical-strategic and pragmatic-ideological as two major dimensions of concept of non-violence. He underlined nine major types of non-violence: Non-resistance, Active reconciliation, Moral resistance, Selective non-violence, Passive resistance, Peaceful resistance, Non-violent direct action, Gandhian non-violence (Satyagraha) and non-violent revolution. On the basis of these dimensions of non-violence, he categorized four types of exponents of non-violence. Four kinds of exponents of non-violence, according to Sharp are Tactical exponent, strategic exponent, Pragmatic exponent and ideological exponent. While tactical exponents of non-violence focus on attainment of certain goal in particular context of time and place, strategic exponent exercise long-term mission of bringing change in society by its transformation. Pragmatic exponents consider non-violent ways as most beneficial and fruitful means towards achievement of their goals. Ideological exponents adopt non-violence as a way of life due to ethical and moral reasons, through amalgamation of means and ends, which can satisfy the needs of all.

Mark Garavan equated ‘politics of moral force’ with ‘conventional, parliamentary politics on the one hand and physical force or violence on the other’. Shared concerted resistance without help of formal institutions or due
processes of the state in which positive or negative sanctions are used for attainment of political and social goals defines nonviolent political action.

Michael Randle considers civil resistance as a nonviolent political practice in which ordinary citizens and civilians don’t use formal political structure or any of its parts. organizations ( such as political parties). Roots of such nonviolent political action exist in apparatus used by civil society which is not included in formal institutional or constitutional body.

Tolstoy finds essence of his moral commitment to nonviolence as Christian. His interpretation of Christian principles enabled him to remain consistent follower of nonviolence. Tolstoy found in his interpretation of Christian teachings that love is the law which is capable of not only governing the human lives but also of uniting human souls and practices emanated out of such unification.

Gandhi influenced the extent of Martin Luther King’s commitment to non-violence. His view of nonviolence was also monochromatic i.e. love. Love is the centre of nonviolence from which centripetal force is provided to nonviolence for its application. King underlined and drew a comparative picture of ‘three words for love in the Greek New Testament’-eros,philia and agape. Eros is the attribute of soul which enables the soul to aspire for getting itself familiar with divine. Aesthetic or romantic attachment as an emotion of love constructs the meaning of Eros. Development and nurture of this love is linked to perceptual attribute of lover. He distinguished between eros and philia by underlining meaning of philia as cherished and extreme care between friends. Philia means a kind of mutual love: love is exchanged with love. Finally King explained agape as the status of independent, global or mixed love that supplies the stimulation or devotion for non-violence as an instrument to block injustice and oppression(Atack 2012,1-16).

Life of Ghaffar Khan: Abdul Ghaffar Khan was born in 1890 at Uthmanzai (Charsadda) district Peshawar (Khan, 1983,1). His father Bahram Khan was a well-to-do landowner of Mohammadzai clan. Abdul Ghaffar Khan was the fourth child of Bahram Khan. According to the then popular tradition, Ghaffar Khan was sent to the local mosque to take early lessons in the Holy Quran. The Pushtunwals have great respect for religious education and majority of them send their children to mosques. There was hardly any government school in the rural areas and thus, in education, the NWFP was one of the most backward areas in British India. Moreover, unlike the state patronage of Ulema in other parts of the sub-continent, in the NWFP the Ulema remained at logger-head with the establishment, indeed preoccupied with Jihad to get rid of the British rulers in that part of South Asia(Ibid).

Ghaffar Khan was deeply influenced by teachings of Quran so much so that later on this influence had been translated into his public life (Shah 2007). His learning of Quran during his early life inculcated many islamic principles in his mind. The environment and society in which his earlier grooming had been done was purely Islamic and it would be unrealistic to believe that he had been insulated from his society. Islamic principles were embedded in pushtun culture and respect and sensitivity for Islam was widespread. It can be observed by going through Shah’s account:
“According to the popular tradition, he was sent to the local mosque to take early lessons in the Holy Quran. The pushthuns have great respect for religious education and majority of them send their children to mosques …Moreover, unlike the state patronage of the Ulema in other parts of the subcontinent, in the NWFP they remained at logger-head with the establishment, and indeed were preoccupied with jihad against the British rulers in that part of South Asia.”

Cognitive, behavioral and cognitive-behavioral psychological approach convince one on Islamic grooming of Ghaffar Khan and building of his behavior in an Islamic direction. Sigmund Freud¹ and his daughter Anna Freud² were proponents of psychodynamic theories of development merit citation. Their importance given to first few years of life strengthens the argument in favor of religious development of Ghaffar Khan’s behavior.

5. Association With Haji Fazl E Wahid And Shiekh Mahmoodul Hassan: As it is out of the scope of this paper to ascertain the sincerity of Ghaffar Khan for the Islamic cause of Pakistan, it is required to focus on Islamic experiences faced by Ghaffar Khan and translation of such experiences in his political philosophy. Ghaffar Khan in beginning of his adult life came across an ultra Islamic personality who was opponent of non-violent inclinations.

Abdul Ghaffar Khan commenced his social activities as an educationist and came into close contact with another social reformer of the area, Haji Fazli Wahid, popularly known as the Haji of Turangzai. Ghaffar Khan had collaborated with Haji Taurangzai to set up Azad Islamia Madrassas as alternatives to British missionary schools in Uthmanzai, Bannu and Kohat before the Haji moved to the tribal areas in 1914 (Haroon 2007,156). Their combined efforts resulted in the opening of educational institutions called the Dar ul Ulum at Uthmanzai and Gaddar (Mardan) in 1910. Apart from religious education, students were imparted the concept of patriotism. No details are available about the exact number of these Madrassas or the number of students, teachers and their sources of income (Shah 2000,18). The two were joined by some other pushun intellectuals including Maulvi Fazal-i-Rabi, Maulvi Taj Mohammad, Fazal Mahmud Makhfi and Abdul Aziz, the majority of them being the graduates of the Deoband seminary (Tendulkar, 1967,22). Abdul Ghaffar Khan was also in touch with Mahmud ul Hassan, the Chief Divine at Deoband, and Ubaidullah Sindihi, the ‘revolutionary scholar’ and a noted pupil of Mahmood Hassan. Ghaffar Khan had also participated during the early years of Maulana Mahmood ul Hassan’s tehrik, travelling and living for a time with the Babra Mulla and taking bait at the hand of Haji Turangzai. However he disagreed with the Tribal Areas mullah’s militancy and their charismatic authority and distanced himself from their methods (Khan n.d.,1-100) They even had planned for the establishment of an anti-British centre, deep inside the tribal area, but it did not materialize (Khan 1983,1). In the year 1914, he visited Deoband secretly. Such visits were later on referred to by him during his visit to India he said at Darul Uloom Deoband, “I have had relation with Darul Uloom since the time the Shaikh-ul-Hind, Maulana Mehmud Hasan, was alive. Sitting here, we used to make plans for the independence movement, as to how we might drive away the English from this country and how we could make India free from the yoke of slavery of the British Raj. This institution has made great efforts for the freedom of this country” (Jamiatulamaihind Mysore, 2014)

Many deliberations took place. Understanding was created. Plot was set under the shared understanding that first a hub of support of India’s complete liberation would be constituted in Frontier tribal’s areas, then Ghaffar Khan along with his Pashtun friend Maulvi Fazle Mohamed would reach Bajaur Agency after passing through Fazle’s village, where they would wait for Maulana Obaidullah Sindihi to get themselves ready for next step.

Under the same consensual understanding Ghaffar Khan announced at Uthmanzai that he would visit Ajmer Sharif for pilgrimage. He left his village on the same pretext but in reality his journey was destined for Maulvi

¹ Sigmund Freud, born in Germany, on 6 May 1856, was an Austrian neurologist who became known as the founding father of psychoanalysis.

² Anna Freud (3 December 1895 – 9 October 1982) was the sixth and last child of Sigmund and Martha Freud. She compared to her father, her work emphasized the importance of the ego and its ability to be trained socially.
Fazle Mohammad’s village. Having left Fazl there, both Ghaffar Khan and Fazl’s relative proceeded to Bajaur. Ghaffar Khan visited many villages of Bajaur but at the end stayed at Zagai—a village situated in Mohmand—where he spent his period of secluded prayers known as chillah in mystical terms. Chillah ended but Ghaffar had yet to see Maulana Obaidullah Sindhi for whom he stayed. Unwillingly Ghaffar Khan returned to his village Uthmanzai. (Gandhi, 2008, 49-51).

Ghaffar Khan not only had reverence for Islamic ethos but he also followed the political guidelines propagated in the garb of politics. It is observed that he was not against the use of religion in politics. Had it been so he would not have responded to religious calls of leaving India after Khilafat movement. In addition to this it also suits here to refer to his earlier joining of religious chorus and his role in opening of religious institutions. So to say that Ghaffar Khan and his movement was a secular one and consist of elements attracting communist ideas is preposterous.

6. Hijrat Movement-Turning Point: Hijrat movement was an offspring of Khilafat movement. In religious discourse and debates dominated by Ulemas of that time encircled India as Dar ul Harb (Land of War) and exhorted Muslims to consider leaving Dar ul Harb and settling at Dar ul Islam as their religious duty. Afghanistan was and is our neighbor country. Government at that that time in Afghanistan was of Muslims with whom Indian Muslims were feeling their political, religious, cultural and ethnic affinity. Such feeling attracted Afghanistan towards them as their choice of selection of Dar ul Islam. Ghaffar Khan also migrated to Afghanistan along with innumerable pashthuns (Shah, 2007). Ghaffar Khan’s migration was a follow-up signal to not only religious command but also to Islamic ideology of any polity. A secular Ghaffar can’t respond to religious calls. He could have refused to migrate on the pretext that the notion of danger to Islam was an eyewash. The time, in which he had been responsive towards migration for Islamic cause was also noteworthy. By that time he had installed machinery of his organization based on principles of non-violence. Therefore it can be inferred that he had no qualms in adhering to state ideology of Pakistan which was theoretically Islamic and very appealing to innocent adherents of Islam. But he was aware of the refuge taken by upper class of society in the realm of religion and their ill intentions to grab the power by stressing on their Islamic identity for the sake of preservation and protection of class interests.

Anti-British feelings and objectives brought the then Amir of Afghanistan, Amanullah Khan and religiously inclined Muhajrin on the same. Such coherence between ideas and objectives left no other option with Amanullah except to offer asylum to incoming mohajreen. As a result Afghanistan became the host of 60,000 Muhajirin. Most of Muhajrin got themselves recruited in Afghan army at Jalalabad (Qureshi 1999). They found that life in Afghanistan was not a bed of roses. Others became weary of idle life and held protest meetings. The enthusiastic, emotional and sentimental youngsters, especially those belonging to the Frontier, passed an ‘ultimatum’ to the Afghan government to equipped them with weapons so that they can wage jihad against the British or else facilitate them for their departure to Anatolia or return home. (Ibid) In fact a provisional Azad Hind Government was formed in Afghanistan with Raja Mahendra Pratap as President and Prof. Barkatullah as Prime Minister (Ali 2005).

Amir responded administratively and mollified the charged muhajrin by sending his message through Abdul Ghaffar Khan that they should behave responsibly and rationally (Ibid). He knew that haste makes waste. Amanullah suggested proper military training and patience in making due strategy as a pre-requisite for Jihad. Soon, charged environment and over-ambitiousness of muhajrin tighten the noose against the necks of policy makers in Afghan government regarding their absorption and deliverance to their demand of Jihad (Shah 1987, 128-36).

7. Anjuman-I-Islahul Afgahna And Azad Islamia Madrassas: After discussing his earlier Islamic-ridden life which preceded his non-violent movement, it is necessary to analyze the foundations of his non-violent movement. The first brick of a building determines the foundation of building and foundation of building determines the whole infrastructure. Ghaffar Khan’s first brick to constitute his non-violent movement was made up of Islamic material. The organization, foundation of which had been laid by him in April 1921 had to work and unify its supporters along Islamic lines of action. On 1 April 1921, He founded Anjuman-i-Islah-ul-Afaghana (the Society for the Reformation of Afghans). He himself became its President and nominated Mian Ahmad Shah as its Secretary. Operational body of the organization declared The stated objectives of the Anjuman included:
promotion of unanimity amongst the Pushthuns about political and social affairs; ejection of social evils such as blood feuds; prevention of extraordinary expenditures on social events such as marriages and birth of child; emboldening and propagation of Pashto language and literature, and igniting the fire of ‘real love’ for Islam in the heart of Pushthuns (Shah 2000,18). Rauf(2006) pointed out this element of real love for Islam and Anjuman’s tendencies towards Sharia Laws in his reliance on annual report of Anjuman:

“The Anjuman aims at propagating the cause of Islam and imparting national and religious education in the Pashto language to the Muslim community. It has hitherto been found impossible to reform the Afghans in the matter of party feeling and morality under the existing foreign education and law. The Anjuman will try to put a stop to the evil customs which are against the laws of Shari‘at and have impaired the Pathans financially.”

Unity among pushthuns remained a stumbling block throughout the history. Lindholm consider pushthun society as a society where there is no leader. So society where centrifugal pulls were very active Islam was the only instrument which could have united them and rubbed out the tribal sharp lines among pushthuns. Here it is necessary to link this tribal friction in pushthun society to tribal quarrels prevalent in Arab society centuries ago. Before descent of Hazrat Mohammad(S.A.W.) in Arab society there was complete societal chaos and tribal battles and racism was on its peak. Then advent of Islam with the passage of time Arabs had been blended into religious colors to impart unity among them. However such an example is not aimed at all to compare two movements, as it was quite clear that the change which had been brought up in Arab society was unparalleled. But it shows the extent to which Ghaffar Khan was in need of Islam as building blocks in his movement because he knew that it is the only key to eradicate blood-feuds and tribal rifts.

Second challenge for him was lavish spending on social events by Pushthuns. He was keen observer of class stratification, class society and class struggles going not only across the sub-continent but also with in the pushthun society. On the other side he was also cognizant of the pride which pushthun families take in heavy spending on their cultural gatherings and rituals such as occasions of marriages. He didn’t want to repeat the mistakes of Syed Ahmad Shaheed who violently banned such traditions with the intention of eradication of social evils. He adopted the non-violence face of same Islam which was exercised violently by Syed Ahmad Shaheed and more interesting thing to note in his endeavors was the institution which he intended to use. He first made the institution i.e. schools and organization which will engrained his ideas into minds of recipients of his educational curriculum.

Last objective of the society for reformation of Afghans has the potency to characterize it as Islamic movement only. Love for Islam as an objective is enough for an organization to show his Islamic nature. But when stress is on real love for Islam then it means that vacuum is still there to fill up. It drove the organization in a quest to achieve something more Islamic which was already prevalent in the society. Such an objective in initial stages of movement clearly showed the courses in which seed had to germinated, plant had to come out and develop in full fledge trees. Islamic state for pushthuns where shariat would be functional in letters and spirit could be the ultimate end of such an objective because the only roadblock in the way of implementation of shariah had been resistance and reluctance of society. Such reluctance was lacking in pushthun society where rituals of Islam were more stresses as compared to beliefs.

Story of new project of reformation of pushthun society started on On 10 April, 1921, when he opened the first branch of Azad Islamia Madrassa at his own village Uthmanzai. Later on more outlets of same project were constructed in different places of the Peshawar Valley. One can’t say with full conviction about the number of Azad schools because meticulous reading limits the choice of selection of number of schools to 70. Subjects which were taught at those schools were Holy Quran and Hadith, Fiqha, Islamic history, Pashto, Mathematics, English and Arabic. Before discussing the curriculum of the schools, a moment must be given to think about the name of such schools: Azad Islamia Madrassa. The name was actually aimed at combining two ideologies. ‘Azad’ meant freedom in English and had been pointing towards freedom from tentacles of actors who were ultimate benefactors of concentration of wealth. On the other side Ghaffar Khan was aware that pushthun society would never welcome any ideas antithetical to Islamic doctrines which according to most of pushthuns but not all can be produced and interpreted rightly by madrassas. So he took work with his political and societal vision. The name being symbiotic of two ideas had been given to accommodate and integrate the doctrinal differences. By this and
the later work which will be discussed later on, he also proved that Islam does not only discourage financial, societal and political disparity but also has arrangement of depleting the wide gap among social statuses of society.

He installed various schools to propagate his ideas. He knew that educational institute is the hub from where ideas can not only be propagated but ideological grooming of youth in his colors could also be done rapidly. Approach was bottom-up, that lower echelon of society, where most of the people are young and belong to lower class, will be targeted. Next generation who will be the product of these schools will constitute a core group responsible for mobilizing pushthun society on a large scale. Azad Islamia Madrassa was opened for provision of education. One of the major objectives of the school was impartation of religious education moral reformation and true spiritual representation of Islam. Thus theology comprised one of the important sections of the school. The Holy Qur’an, Hadith, Fiqh, history of Islam and Arabic language were included in the section separately dedicated to theological studies which was important in many aspects(Raaf 2006). Maulavi Shah Rasul and Maulana Muhammad Israel were two prominent forerunners of this section. This section made the splash in water by producing students skilled in variety of fields. Some were fluent in recitation of Quran. Others were endowed with deep insight knowledge of Quran and Hadith. One lot as witnessed in one of annual ceremony of Anjuman held considerable command over Arabic language. In that gathering, a debate was held among the students to evolve conciliation among religion, modem education as well as technical and industrial assignments taught at school (Ibid). From curriculum it clearly seems that inclination of non-violent Anjuman tilted vehemently in favor of Islam. Four out of seven subjects introduced were aimed at acquiescence of Islamic Education. Teachings of Holy Quran and Hadith were to make pushthuns aware of the coherent picture of Islam in which balance among every various aspects and different quarters of life is emphasized. He was confirmed about madrassas working in sub-continent. In other parts of sub-continent where patronage to Ulema was provided by the colonial state but in North West region as mentioned above were arch rivals of colonial Masters. So he was facing two main challenges. First challenge was to present a balance picture of Islam to pushthuns following which they could offer resistance to colonial invaders and also to alleviate any loyal inclinations if had been transported from those areas where state-patronized madrassas were working. Second challenge was to insulate pushthuns from violent fanatics who were arch rivals of colonizers. Actually culturally society was full of blood feuds and if violent principles based on Jihad had been penetrated then it could have fanned the bloodshed.

Fiqh is the legal circle of Islam where the Islamic jurisprudence evolves. Fiqh as a subject was necessary because the legal interpretation of dispute and administration of justice was based on it. Two things for the non-violent Anjumans were very important. First was to envisage a justice system where justice must be speedy, inexpensive and blind towards all statuses of society. Second was to prevent pushthuns from following Fiqh which had been tailored to vested interest of Ulemas and which could have made Ulemas omnipotent. Because in that case purpose of dispensation of justice would have been killed and Islam would have been equated to sayings of Ulemas as today it is witnessed in the same area. It is the death of legacy of Ghaffar Khan which have led the situation to the place where pushthuns are equated to talibans.

8. Islamic Essence Of Anjuman Movement: Ghaffar Khan brought change in his line of action after attending the Grand Conference held in Mecca in 1926, by laying down the foundational stone of an organization with the name Pushtun Jirga (Pashthun Council). Three walks of life: politics, culture and education was touched upon by this organization in pursuit of its program. Body running the organization possessed the same lot which was educated in schools founded by him. Embryonic organization attracted many towards its structure and functions and in 1929 new lot of volunteers joined it to form organization of Anjumans(servant of Gods)(Stepha, 2009).

The ideology and course of strategy was wholly solely Islamic in the sense that the source embodying legitimacy among its adherents required to inject power and life in the body of organization was lessons and teachings of Hadith and Quran. He strongly believed in Last Prophet’s legacy of patience and forgiveness. He presented this legacy as strength and source of power for Anjumans. He told people that he was going to give them such a weapon that the police and the army would not be able to stand against it. That was the weapon of the Prophet but they were not aware of that (Tendulkar, 1967,22). ‘That weapon was patience and righteousness. No power on earth could stand against that.He further directed his adherents to tell their brethren
on reaching their villages that there was an army of God, and its weapon was patience and to ask them to join the army of God. Endure all hardships. If they exercised patience, victory would be theirs (Ibid).

Ghaffar Khan was fully conscious of what nonviolence had meant to a pushthun. He ruled out feeling of surprise about according to practice nonviolence. He referred to centuries-old practice of Last Prophet Hazrat Sayedna Mohammad (S.A.W.) to show that what he introduced is not something impossible to do for pushthuns. Secondly it is ordained by religion Islam and necessary for faith. Third it is a prophetic means of getting rid of an oppressor’s stranglehold (Dallmayr 1999; Lal) and hence is a distinguished kind of Jihad in which a jihadist do jihad without violence.

Ulemas in North West region of colonial India were anti-establishment and so were followers of Anjuman movement (Shah, 2007). This informal, unorganized, and implicit alliance further strengthened the Islamic character of non-violent movement. Moreover the participation and membership of various ulemas in Anjuman movement clarify that a particular faction of ulemas ratified the Islamic legitimacy of movement because had it been against the Islam then Ulemas wouldn’t have participated in it.

The oath taken by Khidmatgars was not free of religious inclinations. Oath consisted of message of selflessness which also remained the message of Sufis. Oath in itself is clarification about the nature of work which a follower has to do and can be considered as term of reference for loyalty to any organization. An Islamic term of reference can only be undertaken if organization will be Islamic along with its objectives. If taking oath is agreement with the objectives of organization then those who took oath before joining Anjuman Organization were agreed over Islamic mission and were doing so out of their religiosity. One of the terms of oath was ‘All my efforts will be decided to seeking the will of god and not towards mere show or becoming and office-holder’(Ibid).

Legacy of non-violence and its legitimacy were entailing from Islam. Source of inspiration was Last Prophet Hazrat Mohammad S.A.W. which shows fundamental Islamic picture of the said movement. He knew that pushthun will not be easily ready to do away with their cultural code of revenge unless they had been compelled by religious injunctions. If Ghaffar tried to convince them out of the secular love for peace or out of allegiance to leadership of Ghaffar Khan then no doubt that pushthuns might reject not only his ideas but his leadership straightaway as well. But a pushthun couldn’t finalize his infidelity by questioning the religious injunctions used for legitimacy, let alone the rejection. This fact was in full cognizance of Ghaffar Khan. He created the perception among his followers that non-violence is the sunnah(act) of Hazrat Mohammad S.A.W and choice is yours(of pushthuns) to accept it or reject it. Who could have dared to reject it being a Muslim and then being a pushthun-Muslim? But he didn’t touch upon the Jihad which was also the sunnah of Last Prophet S.A.W. and had been a source of legitimacy for his contemporary ‘violent’ Ulemas. This duality was not a contradiction rather it was a message of middle way between two extremes by Last Prophet S.A.W. which had been missed by Ghaffar Khan.

Ghaffar Khan was accused by some of his close associates, including Mian Ahmad Shah, Abdul Akbar Khan Akbar and Mohammad Akbar Khadim, for merging the Anjumans with the Hindu-dominated Congress. They were indignant over it as they saw the Anjumans losing their separate identity in their merger with the Congress. Ghaffar Khan, however, argued that he had sought the merger as a last resort because the Pushthuns needed help from outside the province. He saw no harm in the merger with the Congress. He gave examples from the life of the Holy Prophet who made alliances even with Jews and Christians to protect and safeguard the interests of the Muslims( Shah 2000,18).

Secondly Khidmatgars didn’t compromise on their religion as a precondition for alliance with Congress. When Ghaffar Khan saw no light at the end of the tunnel and had been turned down by his co-religionists then he unwillingly turned towards All India National Congress. Muslim League-a Muslim dominated body remained always the first option of Khidmatars in general and Ghaffar Khan in specific. But there was no space for the wishes of common people or lower class of the society. Feudalistic mindset didn’t welcome the objectives of Khidmatgars based on classless society. Such class-oriented objectives were perceived threat for class status of political leadership of Muslim League (Ahmed, 2010).So from this, one can also draw the assumption that leadership and politics of Ghaffar Khan was a unique blend of popular politics and religion
because symbols, slogans, political figures, sources of legitimacy and attraction of recruits for his movements were linked to Islam in one way or another.

Thirdly, the reason for his alliance was again an Islamic one. He referred to Holy Prophet(S.A.W.) and such a reference was apparently very convincing. It had legitimized his alliance with Gandhi and All India National Congress. In Pakistan, it is the dominant discourse of political and academic circles that anything against Islamic injunctions is clearly against the Pakistan. But such an allegation of being leaguer of Congress had been brushed aside by Ghaffar Khan himself during his lifetime by following Islamic ideology of Islamic law and acting upon Islamic tradition.

Ghaffar Khan brought the act of acceptance of partition plan by Congress in notice of leading activists of that time in a joint meeting between Frontier Provincial Congress Committee, Anjumans and other associated organizations which took place at Bannu on 21 June 1947 and tried to evolve a consensual strategy among participants of meeting. All the parties were very disappointed over betrayal of Congress. They vowed to establish an autonomous Pashtun state which will be run under a constitution crafted on traditional Pashtun culture and values. The institutional framework for application of such constitution will embody Islamic concept of democracy, equality and social justice as its governing principles (Ibid; Khan n.d., 1-100).

He was not a frontier Gandhi. He incorporated his non-violence out of true Islamic traditions. His cause, personality, behavior, line of action and means to organize his followers was Islamic. Moreover the perceived constitution of Islamic democratic state of autonomous Pashtuns was planned as Islamic. So if the yardstick to gauge the ‘Pakistaniat’ is to measure the adherence of Islamic principles then no one among the forefathers of Pakistan can be more Pakistani than Ghaffar Khan.

9. Conclusion: His way of practicing Islam and view about it was not evolved against backdrop of society and politics. Picture of Islam with his natural as a religion can be sketched from his personality. Personality of Ghaffar Khan embodied the basic feature of religious piouness which was complete submission to Allah almighty. Such submission denotes annihilation of self. Suffering in life ends when self is finished. This fundamental lesson of selflessness was not only highly regarded by Islam but possesses a valued position in every religion.

The dominant discourse sees Khudai-Khidmatgar movement with its non-violence essence as a ultra secular organization which was in league to atheist communists. Such discourse is not only owned by its colonial writers but also is ratified, propagated and reproduced by pashtun nationalists to burnish the image of Pashtuns as indignant of talibans. But on the other side ‘official nationalism’ of Pakistan demanded its pioneers to characterize non-violence of Ghaffar Khan as anti-Islamic due to his alliance as a last political resort with Gandhi. Such dominant discourse has shadowed the activities going on beneath the surface which were intrinsically of Islamic nature. The slogans, the purpose, the ideological machinery and above all leadership i.e. Ghaffar Khan, all were Islamic. Therefore Anjuman movement seems to consist of some staunch Islamic principles/elements. Hence it is necessary to enquire the Islamic nature of what widely known as ‘secular’, ‘nationalist’ and ‘communism’

Keeping in view, the practical and ideological commitment of Ghaffar Khan to Islam, criticism over his faith seems to be unfounded and baseless. He made his all-out efforts to install Islam as a social order for evolution of an ideal, utilitarian, just and perfect society embodying peace and harmony among the people. Individualism, based on selfishness was pointed out by him as the cancer of society out of which all forms and kinds of violence emanates.

10. Recommendations: Historians in particular and intelligentsia, needs to imbibe the universalistic essence of non-violence rooted in life of Ghaffar Khan, in their discourse on pushtun’s nationalism. Narrative can thus be generated about non-violence and its recognition in the society of current pushtuns who are passing through deadly wave of intolerance. Such narrative will resolve many disputed issues about which general public are in deep confusion. Confusion about contentious contradiction between secularism and religiosity can be clarified. Debate on contradiction in particular context of pushtun’s culture will gain diversity.
Government of Pakistan should carve out the ways and channels through which legacy of Ghaffar Khan can be installed in educational structure of Pakistan. Educational sector consists of important social institutions such as school, colleges, universities etc. All such institutions carry out socialization of individuals living in the society and hence build up the collective behavior and response towards range of issues faced by society. Insertion of contents on non-violence movement of Ghaffar Khan in curriculum will drive the process of socialization towards tolerance, magnanimity, brotherhood and peace. Here it is pertinent to mention that proposed insertion is not opposite to ideology of Pakistan, because both are rooted in Quran and life of last prophet Hazrat Mohammad S.A.W.

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IMPACT OF BIOGAS ON SUSTAINABLE LIVELIHOOD IN RURAL AREAS-A CASE STUDY OF SWAT, PAKISTAN

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ABSTRACT: This study assessed the efficacy of biogas plants installed in rural area of District Swat Pakistan in terms of its impact on socio-economic and environmental factors. A questionnaire survey was conducted using random sampling technique among the beneficiary populace covering the utilization of biogas, operational issues, economic benefits, changes in the consumption of fuel-wood and other energy sources, health, pollution and waste emissions and locals’ approval of the biogas technology. The findings revealed that the introduction of biogas in the area appreciably affected the livelihood of the people as cheap and convenient energy source principally used for cooking and heating while also providing organic manure for soil fertility. The survey deduced a marked decrease in indoor air pollution, respiratory diseases, CO2 emission, deforestation and waste generation due to the decrease in burning of fuel-wood, dung and crop residues. On the economic side, the beneficiaries were able to save, in some cases up to PKR 20,000 per month by spending less on utility bills and purchase of other fuel sources and fertilizers. On the contrary, production of odour indicated by a small fraction of the users and financial constraints in installation of biogas plants was also found however, with the approval of nearly 90% respondents in favour of biogas and its positive economic and environmental impacts, biogas offer prospective alternative solution to cater for the energy demands of rural population in a sustainable manner.

Keywords. Biogas; economic; environmental; questionnaire survey; sustainable; Swat

Introduction: Energy is a fundamental requirement in today’s world to sustain the quality of life, ensure better living, economic production and growth, and employment. any shortage in the supply of energy to the national economy could disrupt the economic process and livelihood of people. this is the case with pakistan, which is facing serious energy shortfall for the past few decades due to poor planning and mismanagement and now increasingly relying on non-renewable fossil fuels energy spending almost 7.0 billion us dollars annually (amjid, 2011). shortage of energy for electricity generation and fuel is a major hurdle in the path towards development, economic growth and prosperity in the country. as the demand for these two is increasing, a significant rise in prices is also observed, which further makes the situation precarious for the predominantly poor and middle-class populace.

In Pakistan, the fuel used for domestic consumption, particularly in urban areas is natural gas. In rural areas where natural gas is not available, liquefied petroleum gas (LPG) is used after fuel-wood, dung and crop residues. However, it is becoming unaffordable for the people as its price has jumped in recent years. Due to the overburden of urban population on limited natural gas, it is becoming impossible to supply it to rural areas.
Likewise, fuel-wood supply is also decreasing due to over-cutting and deforestation. In such a case, renewable and sustainable energy resources are best substitute to the conventional fuels and energy sources. One of the potential alternative energy sources in rural areas is biogas due to the abundance of biodegradable livestock and agriculture wastes. Biogas is a combustible mixture of gases comprising mostly of methane (CH₄) and carbon dioxide (CO₂) and is formed by anaerobic bacterial decomposition of organic matter. The actual composition of biogas depends on the characteristics of material decomposed, but generally it is composed of CH₄(55-70%); CO₂(27-44%); hydrogen sulphide (H₂S), hydrogen and ammonia (1-2% each), and carbon monoxide, nitrogen and oxygen in trace amounts (Chun et al., 2009). Biogas, besides replacing conventional fuels in rural areas such as fuel-wood is also a waste to energy concept which leads to better waste management strategies for future.

Pakistan, being an agricultural country, has a great potential for the installation and production of biogas due to a large population of rural livestock, availability of animal dung and agriculture waste. On one hand, it is a cheap energy source thus cost-effective while at the same time also environment friendly. Domestic biogas plants were started in Pakistan in 1959 and at present, alarge number of such working units have been installed especially in backward, deprived and disaster affected regions. One of such regions in District Swat in the northwest regions of Pakistan, which is energy deprived and was drastically affected by the flash floods in 2010. To cater for the energy needs of rural population in District Swat and their rehabilitation, the World Wide Fund for Nature (WWF) with funding from the United Nations Development Program (UNDP) installed around 100 biogas plants in flood-affected rural dwellings of District Swat having plenteous availability of organic matter for biogas production. The cost of installation of a biogas plant at the household level was approx. US$700 which was either totally or partially born by the project while labour was provided by the beneficiary. This study was aimed at evaluating the efficiency of biogas plants in Swat, its socio-economic, health and environmental impacts on the community and acceptability by the consumers using a questionnaire survey of the project beneficiaries.

2. Materials And Methods

2.1. Introduction to the project area (Swat, Pakistan): District Swat is located in the Hindukush mountain range in the Khyber Pakhtunkhwa province of Pakistan with a total area of 5337 square kilometres. It is situated at 34°-40 to 35°-55 North Latitude and 72°-08 to 74°-06 East Longitude. Swat is one of the districts of Malakand Division and it is one of the greener parts of Pakistan that is blessed with natural resources like forests, fresh water and fertile soils that having a remarkable support to the biodiversity. Once the entire area was covered with thick forests, which has declined over the years due to overuse of forest resources. Administratively, Swat has been divided into two parts, the Swat Kohistan and Swat proper. Again there is a sub-division of Swat proper into Bar (upper) and Kuz (lower). The entire population of the district was 12.5 million while average annual growth was 3.37% in 1998. People are mainly Pushhtuns belonging to “Yousufzai” tribe with Pashto as the local language. Being located in a temperate zone, Swat has its climate controlled by a number of factors like latitude, altitude, summer monsoons and the cyclonic currents in winter that comes from the Mediterranean Sea. Winters are severe with a minimum temperature of -2°C, while comparatively, summers are moderate with a maximum temperature of 34°C. Average annual precipitation is about 1000-1200mm.

![Figure 1: Location of the project area in Pakistan](image-url)
2.2 **Biogas facility design:** The biogas plants studied in the current study are fixed dome type plants (Figure 2). Such plants comprise a digester in the form of a shallow well with a dome shaped roof over it. The digester is connected to the inlet and outlet through sloping channels. The gas pipe is fitted on the crown of the dome shaped digester (Singh and Sooch, 2004). These require less maintenance with low footprint while being underground however maintaining the gas pressure in such systems is challenging and require diligence (Amjid, 2011). The biogas plants were installed by WWF as part of the UNDP restoration aid intervention to the local affected population in District Swat. A total of 100 plants were installed in Matta, Swat, Kabal, KhwazaKhela, Charbagh, Barikot, Babozai regions (Tehsils) throughout District Swat, Pakistan.

![Figure 2: Configuration of the installed dome based biogas plants](image)

2.3 **Data collection:** Questionnaire survey was conducted to obtain primary data. Each questionnaire comprised of 15 questions (both structured and unstructured) pertaining to different aspect of biogas facilities. The questionnaires were filled from 40 randomly selected biogas plant owners covering all the villages in the project area through interview schedule. Formal and informal meetings were also held with the local people and relevant experts (field engineer, field supervisor and project in charge) to get additional information about different aspects of the biogas plants. In addition, field visits were also made to the sites where biogas plants were installed to physically observe the status and take GPS readings of the sites.

**RESULTS AND DISCUSSION**

3.1 **Uses of biogas:** Biogas in the study area was principally used for cooking as indicated by its consumption in 83% of the households (Figure 3). In 13% of the cases, biogas has also been used for miscellaneous purposes such as lighting etc. On the other hand, generation of electricity from biogas plants was negligible with only 5% employing it for electricity production primarily due to the lack of awareness. With major amount of gas produced directed towards cooking and heating, biogas has reduced burden on the non-renewable natural gas as well as fuel wood collected from forests in the mountainous region.

![Figure 3: Purpose of biogas plant](image)
2.4 Slurry management

The digested bovine dung was released as by-product on daily basis in the form of slurry. About 47% of the slurry produced was used as fertilizer or soil conditioner, 15% was sold in the market, 35% was disposed of at dumping sites while 3% was stored for future use as shown the Figure 4. The fertilizer produced from biogas digesters is reported to be of good quality rich in nitrogen, phosphorus and potassium contents (Gautam, 2009) and its use as soil manure improve micro-flora and building the soil structure and texture (Myles, 2004). This causes a dual benefit as it not only treat animal wastes but also save income spent on purchase of synthetic fertilizer and reduce environmental risks related to animal wastes thus promoting sustainable development (Engler et al., 1999). Dumping, compared to selling in the market or for future use was prevalent mainly as very few people were aware of the economic value of slurry or compost as a fertilizer that is preferred over synthetic fertilizers in terms of cost-effectiveness and nutrient recycling.

3.2 Effect on fuel-wood and gas consumption: Decrease in fuel-wood consumption was considerable. The major energy source for cooking and heating in the study area was fuel-wood sourced from the forests that has over the years, significantly declined due to excessive deforestation in the area (Khan and Khan, 2009). Biogas has successfully contributed to decreasing the rate of deforestation in Swat. This is demonstrated from the opinion of 87% of the respondents pointing towards a decrease in fuel-wood consumption and therefore tree cutting. This portrayed biogas plants as an eminent green technology adding to sustainability in terms of environmental protection and resource conservation. A reduction in fuel-wood consumption of up to 2 tons has been reported with the use of biogas that contributed significantly to reduce deforestation rates and overall improvement in the environment (Gautam et al., 2009). The reduction in fuel-wood consumption has also reduced the drudgery of women and children in collection of fuel-wood, which enables them to carry out other productive activities (Myles, 2004).

Figure 4: Usage of the released slurry/compost
3.3. **Economic benefits**: The shift over to biogas resulted in significant cost savings and about 67% of the households survey observed considerable decrease in amount spent on purchasing liquid pentane gas (LPG), which is used as the common source energy beside fuel-wood. From an environmental standpoint, the substitution of LPG with biogas is beneficial for conservation of non-renewable fossil fuels while at the same time reducing the burden on the economy through savings in the national exchequer allocated for the import of LPG. From the community point of view, cost savings in general were achieved due to lesser use of fuel-wood, procured gas and in some cases from electricity generation. It is estimated that the expenses on conventional biofuels like LPG, dung cakes, fuel wood and chemical fertilizer account for about PKR 3550 while health maintenance costs account for about PKR 1000 (Amjid, 2011). According to the survey, 40% of the households were saving up to PKR 5000 per month, while 35%, 5%, and 5% saved up to PKR 10,000, PKR 15,000 and PKR 20,000 respectively which favourably supported the economic benefits of biogas.

![Figure 5: Decrease in fuel-wood cutting/deforestation](image)

### Effect on indoor air pollution disease prevalence

Burning of solid fuels such as biomass fuels (fuel-wood, dung, crop waste) and coal at homes and the resulting smoke is associated with the prevalence of a variety of indoor air pollution (IAP) diseases such as lower respiratory disease, chronic obstructive pulmonary disease, eye disease, cancers, and others mostly in poor countries (WHO, 2008). According to (WHO, 2002), in Pakistan, annually 300-400 deaths per million population are caused by indoor air pollution. In the study area, in general, reduction in the incidence of IAP diseases have been indicated by the respondents with 70% suggesting significant decrease in the intensity of respiratory and eye diseases citing the reduction in smoke as the primary cause. Meanwhile, 15% were of the view that IAP diseases such as eye irritation and coughing due to smoke have vanished whereas remaining 15% were of the view that smoke-free indoor environment has enhanced the health and well-being of women. Reduction in indoor air pollution is also associated with decline in in the concentrations of formaldehydes, carbon monoxide and suspended particles (Gautam et al., 2009). In addition, the burning of wood and dung cakes produced unpleasant odours, which was lesser with the biogas burning as evident from the 83% favourable response. The detectable bad smell indicated from the 17% responses was sourced from leakage from anaerobic decomposition in the biogas plant. Similarly, conventional fuels such as fuel-wood and dung created bad taste in food that was absent with the biogas.

3.4 **Reduction in greenhouse gas emissions**: Biogas in general results in no net production of greenhouse emissions. The material digested in biogas is mainly of plant origin, therefore it only inducethe cycle completion from atmosphere to plants and animals and then back to atmosphere. However, digestion significantly reduces CO₂ emissions compared to burning of the same materials. Myles (2004) reported that burning of 1 Kg dried dung produced an average of 2.5 Kg CO₂ emissions whereas biogas plant with a capacity of 2 m³ can digest about 50 Kg (equal to 10 Kg dry dung) while emitting 40% less CO₂ than burning dry dung (dung cake). According to these estimates, biogas plant with a capacity of 10 m³ (average plant capacity in this study) will emit 75 Kg CO₂/Kg dry dung compared to 125 Kg/Kg with dung cake burning. This means a significant reduction in CO₂-emissions from the digestion of only dung. Carbon dioxide and methane production would also
have been reduced with decrease in burning of fuel-wood that produce CO₂ and CH₄ at a fraction of 1.83 Kg/Kg and 3.9 g/Kg respectively.

3.5 **Change in production capacity:** Decrease in the productive capacity of the biogas plant with time is a common problem. Since the surveyed area plants have been recently installed, therefore no significant decrease (63%) was observed. Only 12% of the respondents witnessed decrease while 25% have no idea about the decrease in productive capability. The decrease was mainly attributable to effect of temperature on the production of biogas because the degradation rate of organic matter is more rapid at elevated temperatures (Chae et al, 2008). Temperature decrease can be a problem since the production of methane gas from hydrogen is fastest at 65 °C. Biogas digester recommended temperature is below 60°C to facilitate thermophilic digestion to avoid effects of fluctuating temperature on microbial activity. The winter season of the study area is comparatively longer than summer and temperature of the area throughout the year did not exceed 38°C. About 35 % of the respondents observed decrease in production with lower temperature during rain and/or arriving winter, while 65 % of the respondents did not associate any effect of temperature on biogas plant efficiency.

3.6 **User’s appraisal of biogas:** In view of cost-savings from biogas, lowered health problems, social uplift and beginning of reestablishment of the forest cover, local populace in general were approving of the introduction of biogas technology in the area. With regards to the performance of biogas facilities, 90% of the respondents were satisfied with the plants’ operation. The remaining 10% disagreed mainly due to operational issues. Safety problems associated with operating biogas plant were negligible since all of the respondents didn’t report any associated safety hazard from the biogas plants.

![Figure 6: Consumer satisfaction and people willing to install biogas plants](image)

On the other hand, 92% of the people were eager to install biogas plant due to the associated benefits while 8% of the respondents were not ready to have biogas facility primarily. The reasons cited were cost unaffordability, lack of expertise, lack of livestock, lack of communication with concerned people, lack of interest in investment, lack of space/animals and unwillingness to pay total cost. According to the results 52% respondents were facing economic problems in installing biogas plants, 15 % lacked livestock, 3% complained about the lack of expertise while the rest cited other issues as mentioned above.

**Conclusions:** Biogas Production And Consumption Induced Significant Socio-Economic And Environmental Impacts On The Livelihood Of The Rural Dwellers. The Produced Biogas Was Mainly Used For Cooking And Heating, With Lesser Electricity While By-Product Was Mainly Used As Soil Conditioner. Decrease In Indoor Air Pollution, Respiratory And Other Smoke Related Diseases, And Co2 Emissions Have Significantly Reduced With The Switch Over To Biogas. Meanwhile, Deforestation Also Decreased As Well As The Time And Effort For Collection Of Fuel-Wood From Forests. Savings Were Also Achieved However, Reported Presence Of Foul Smells By Some Respondents Possibly Due To Leakage Of H2S And Methane From The Digester And

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Financial Constraints In Bearing The Cost Of Biogas Plants Are Some Of The Factors Hindering The People From Installing Biogas Facilities. Nevertheless, Large Majority Of Surveyed People Favoured Biogas To Cost-Effectively Cater For Their Energy Demands.

REFERENCES

EXPLORING CAUSES OF REQUIREMENT CHANGE

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ABSTRACT. Software development process is dynamic in nature and it has contrasting impact on software development based on Return on Investment (ROI). It plays an important role in successful software development and can also create difficulties during the software construction in terms of increasing effort, schedule and cost. Factors of changing requirements, prediction of requirement change and the strategies to deal with them are needed to be analyzed for better management of requirement change. Regardless of all research efforts based on requirement change, there is still a need to analyze the factors of requirement change from industrial evidences to minimize its negative impact on software development. The aim of study is to highlight main and sub causes of requirement change that can disrupt software development process.

Keywords: Requirements Change, Requirement Uncertainty, Organizational Considerations, Customer Needs, Technology Change

1. Introduction. In 21st century software engineers faced many challenges during software development that are; change, uncertainty, emergence, dependability, interdependence [15], among these causes changeability is growing day by day due to the changing environment of business and technology. Impact of change can be minimized by research for development of paradigm to support software change and real world case studies for validation of software change causes [14].

Several aspects of requirement change and its associated terms have been studied by the researchers but relatively small numbers of empirical studies are present in literature that specifically consider the requirement change and its associated terms. The studies found relevant to this type of research are integrated with other software development factors rather than requirement change itself. Multiple causes of requirement change have been identified from the literature but this does not deny the fact that there are other causes of requirements change. During this research identification of causes for requirement change from literature will be focused.

2. Related Work. Causes of requirements change are discussed in literature by various aspects. Some of these studies are highlighted in text for exploring factors of change. A study evaluates the change requests over maintenance [16]. Another study explores one major cause of change and considers requirement uncertainty as a major cause [2]. A research study identifies the causes of requirements change based on casual analysis method during a software development life cycle [4]. One more Study finding is based on a single project and its purpose is to explore the impact of requirement change on change effort [3]. An Avionics Safety-Critical Case Study by [6] analyse the requirements change process by metrics. An author explores the causes from GSD perspective [7]. The case study [1] highlights those factors which affect the RE process quality. To explore how some projects better deal with changing requirements. A study gives an idea to map the perception and theory [8]. In a study by [11] change management framework is designed using the literature study and framework is validated and modified using 106 data set of Change Request Forms (CRF) from a change management history.

Several causes (more than 60) are identified from the literature study to form requirement change source
taxonomy [5] but no empirical evidence is provided for these causes. A non-empirical [17] study lists 8 situation related to the kinds of requirements change. According to the results of the study, critical need changes should be more focused than the requirements change. So, need change is the major cause/ driver of requirement change.

According to the Systematic Literature Review (SLR) [18], there are only five studies that provide the causes of requirement change from the industry. After reviewing all these studies it is found that no empirical evidence from the industry is provided to explore the causes of requirement change specifically rather the Requirement Change is discussed through integration with other software development factors.

3. Main Causes of Requirements Change (Essential / Accidental). Classical paper “No Silver Bullet” by F. P. Brooks[19] categorized software difficulties in two major categories, that are defined as essential and accidental difficulties faced by software practitioners Ikram et.al. [18] in his work considers these categories as two dimensions of requirements change, further explored and categorized these causes in three sub dimensions referred as business, organizational and project. Figure 1 shows main causes of requirement change proposed by Ikram et.al[18].

3.1. Business Essential. Business essentials are high level functional requirements that are mandatory to run day to day business. Change in these types of requirements cause major adjustments in software development process.

3.1.1. Customer Needs/ Market Demands. Business requirement are normally customer focused and based on market demand, both plays major role in core business functionality. Change in software requirements depends on minor/major change in customer trend and market demand or supply. These factors are further subcategorized in functionality enhancement’s requests, change in business processes, external and competitor’s pressure as shown in figure 2.

![Figure 1 Main Causes of Requirement Change](image)

3.1.1.1. Functionality enhancement due to market demand. Software functionality enhanced due to varying demand of different interfaces (i.e. web, desktop, mobile etc.), development techniques and technologies by consumer and also derived from changing market trends [5] [7] [11].
3.1.1.2. Change in business processes of enterprises. Requirements change due to change in business processes is an important factor. Change in business environment is inevitable so requirements of software related to businesses are mostly changed. In context of Globalization this factors contributes as trigger to change [5] [7].

3.1.1.3. Competitors pressure from competitors. Requirement change incurred due to competition of proprietary solutions of different vendors. Competitor’s pressure having high impact on change in today’s global environment [4] [7].

3.1.1.4. Change in external factors. External factors include all other factors excluding market demands, competitor’s pressure, business processes. Government regulation is an example of external factor [5] [7].

3.1.2. Changing Environment during Development. Factors of change in software requirements occurred due to change in technology, environment and 3rd party hardware or software change during software development process[4][5][6][7]. Figure 2 shows sub causes of changing environment during developing stage.

3.1.2.1. Technology change during development. One of environmental factor that can cause requirements to be changed is change of any technology during development. It could be development technology or any other technology that is directly related to system which is being developed [4] [5] [7].

3.1.2.2. Change in developing environment during development. Factor of technology change also cascades with this category in taxonomy of change. Development environment may be a kind of language change, framework change and change in software development approaches [4].

3.1.2.3. Change in hardware and software due to change in 3rd party software Factors of non compliance, partial compliance and hardware modifications determined a cause of change. These factors fall in the category of hardware/software change in 3rd party software [6].

3.2. Organizational Essential. Organizations essentials such as policies, by laws, strategies, goals and external demands by consumers either error corrections or change in test scenarios is a major cause of requirement change as shown in figure 1.

3.2.1. Organizational Consideration Organizational consideration is comprehensively focused on customer satisfaction and product quality and plays a major role in requirement change. Organizational consideration are subdivided in two major sub causes i) Change in goals and policy about enhancement and release ii) Change in product strategy by market groups as shown in figure 2.

Figure 1 Sub Causes of Requirement Change

Figure 2 Sub Causes of Changing Environment during Development
3.2.1.1. Change in goals and policy about enhancement and release. Organizations have their own goals and policies about functionality enhancement and release of their products. Any change in goals and policies of an organization may affect continuing software development projects, which automatically results in requirement change [1].

3.2.1.2. Change in product strategy by market groups. Change in requirements through market[4] pressure is usually determined by market groups of an organization. Product strategy can be changed based on recommendations of these market groups [3] [5].

3.2.2. Functionality Enhancement Due to External Demands. Functionality enhancement requests usually initiated by customer, in a variety of changing test scenarios, error correction and feature change request during software development shown in figure 2.

3.2.2.1. Error correction by customer. Any kind of error which is detected by customer due to specification error is a cause of change. Loosely defined initial requirements and stated goals could be reached with fewer goals also fall in category of error correction by customer [3] [9] [11] [12].

3.2.2.2. Feature change instigated by customers. Customer demands are outlined by market demands. Customer can claim any type of feature change which results in requirement change. Changing legislation during projects is a category of feature change by customer [1] [9] [12].

3.2.2.3. Change in test scenarios by customers. Customer needs and organizational policies results in changing the feature of software which further impacts on test scenario. Customer can also demand change in test scenarios, starting from Graphical User Interfaces to the flow of navigation. Change in test scenarios may highlight errors that were not identified yet [4] [11].

3.3. Project Essential. Causes of requirements change originated from developer side are known as project causes. Causes of requirements change of project essential are; increased learning to the system and internal demands of functionality upgradation by software developing teams as show in figure 1.

3.3.1. Increased Learning to the System. Learning to the system is greater than beginning as development practice proceeds because perceptive of developer to the functionality of system increases and system strength or independency also improves [7] [13]. These sub causes of requirements change shown in figure 2.

3.3.1.1. Learning to the system increased by the developers. During development process developer’s knowledge to the system increases gradually. This increase in knowledge is an essential factor of requirement change [7].

3.3.1.2. Effort to increased system's strength and independency. Some obstacles for handling failures and anomalies are; Inconsistent requirements, poorly understood requirements and handling inconsistency. These lead to a main cause of change that is effort to increase system’s strength and independency [13].

3.3.2. Functionality Enhancement Due to Internal Demands. Functionality enhancement requests initiated by developer/ developer organization are documented as internal demands. Internal demands originated by developer are error correction, change in test scenarios, design improvements, feature change and functionality enhancement shown in figure 2.

3.3.2.1. Error correction during and after phase of development. Defect fix during development may be a result of error correction in requirement specification. After development usually errors are corrected at initial stage of review and testing by developers as mapping with requirements specification. Both type of error correction may change the requirements of software [3] [11] [12].

3.3.2.2. Functionality enhancement of product originated internally. Functionality enhancement of a product by internal demands or by developer’s team is another cause of change. Increased understanding to the system may be one form of this change; mostly customers are unaware of specifications so change is
demanded from developer side to increase the functionality of system [5].

3.3.2.3. Feature change instigated by developer. Feature change instigated by developers occur mostly due to shrinking budgets, running out of schedules, missing requirements and due to the fact that stated goals could be reached with fewer requirements [4] [9] [12].

3.3.2.4. Design improvements. Any kind of design improvements of a system may possibly lead to change in requirements [4] [5].

3.3.2.5. Changes in test scenarios by developers. Change in test scenario by developers mostly occurs due to unexpected errors. Adaptive, corrective, perfective and preventive approaches of test scenarios can be factors of change [4] [11].

3.4. Business Accidental. No sub causes is listed in literature as business accidental. Business accidental causes may vary from project to project. All causes found in literature related to business are essential in nature.

3.5. Organizational Accidental. Organizational or customer side factors of requirements change taken place by mistakes of developers are listed under requirement uncertainty, considered as main cause of change shown in figure 1.

3.5.1. Requirement Uncertainty. Uncertainty in requirements is considered as an important factor of requirements change. Causes of requirements uncertainty are ambiguous vision, partially evaluated business case and dropping feature due to budget or time deficiency, shown in figure 2.

3.5.1.1. Ambiguous product vision. Requirement uncertainty is a major cause of change. This major cause has a mixture of drivers and root causes for requirement uncertainty [2].

3.5.1.2. Lack of thorough evaluation of business cases. Some of requirement’s uncertainty factors are; business case not thoroughly evaluated, requirement not sufficiently specified and analyzed, vague product vision, Key stakeholders not involved, Unknown project dependencies [2].

3.5.1.3. Dropping a feature due to budget shortages. Budget shortage usually results in reduced requirements set which may force on requirements to be changed [4] [8] [9].

3.5.1.4. Dropping a feature due to time deficiency. Running out of schedule is an important factor of change. Mostly projects failure cases are reported with slippage of time schedules. Project team and project management play an important role for occurrence of this cause [4] [8] [9].

3.6. Project Accidental. Factors of requirements change related to project (developer side) can occurred mistakenly. These mistakes of developers come into view as issues of requirement uncertainty, incomplete/incorrect requirement specification and inadequate training or manual provided with the system to guide users shown in figure 1.

3.6.1. Requirement Uncertainty. Ambiguity in requirements is a crucial issue that may impact the software very deficiently. Requirement uncertainty caused by developer’s organizations include factors related to stakeholder identification and involvement, communication issues, redundancies, dependencies, conflicting requirements and detailing the requirements, shown in figure 2.

3.6.1.1. Later identification of stakeholders. Later identification of stakeholder and overlooked to stakeholders is a major cause of requirement uncertainty [2] [5] [9].

3.6.1.2. Inadequate involvement of stakeholders. Insufficient key stakeholder’s involvement during requirement engineering process causes requirements to be changed [1] [2] [5] [9].
3.6.1.3. Communication gap among external and internal people. Communication gap among customers and developer team may results in requirements change. This factor is mostly highlights in global software development context. Projects having strong communication between internal and external people usually are better dealt with requirement specification and changing requirements [7] [8].

3.6.1.4. Unknown dependencies on other projects. Unknown project dependency in context of traceability and compliance factors is somewhat related to requirement uncertainty also cause requirements change [2] [5] [6].

3.6.1.5. Initially broadly stated requirements. Requirements are usually broadly stated by customers. Later on, during specification and development process these requirements may shrink down and may cause in requirement change [4].

3.6.1.6. Resolving interdependencies among requirements. At initial phases requirements are dependent on other requirements due to ambiguity. This dependency is resolved during specification process. Resolving interdependencies among requirements usually results in diverse requirement set as compared to defined earlier [4] [5].

3.6.1.7. Resolving redundancies among requirements. This factor of change is also associated with resolving ambiguities of requirements [4].

3.6.1.8. Adding details to initial defined requirements. Adding details to initial defined requirements is a factor of requirements uncertainty and initial set of requirements are more specified after adding necessary details [4] [2].

3.6.1.9. Initial requirements were loosely defined. A loosely defined initial requirement is a sub factor of requirement uncertainty and ambiguous requirements which generally results in requirements change at later stages [2].

3.6.2. Completeness and Correctness of Requirement Specification. High quality requirements specification leads to high quality system at the end of development. Correctness, accuracy and completeness of requirements specification are listed under this category of requirements change, shown in figure 2.

3.6.2.1. Inaccurate system requirement specification. Requirement not sufficiently specified and analyzed cause requirement specification to be incorrect, inaccurate and ambiguous as factors of requirement uncertainty [2].

3.6.2.2. Incomplete system requirement specification. Business case not thoroughly evaluated and vague product vision are important factors that cause requirements to be uncertain. Incomplete requirement specification is an attributed factor associated with above uncertainty factors [2] [3].

3.6.2.3. Incorrect system requirement specifications. Requirement not sufficiently specified and analyzed cause requirement specification to be incorrect, inaccurate and ambiguous as factors of requirement change [2].

3.6.3. Inadequate Training or Manual. Manual is prepared with the development of software for ease of users and afterward to incur changes in software. Correspondingly training is arranged for understanding of system in case system is complex to understand solely by a manual. Omitted or partial training/manual is a cause of change instigated by developer side, shown in figure 2.

3.6.3.1. Unavailability of user manual. Factors which affect the RE process quality are Requirement change, Missing requirements an incorrect requirements. These main causes may occur due to customer unawareness of requirements change and change without formal approval. Customer will remain unaware of requirements in absence of user manual. This will cause change request from customer/ user, even though requested functionality already exist in the system [1].
3.6.3.2. Inadequate details of user manual. RE process quality factors are also occurred due to insufficient user manual details. As user manual unavailability will cause requirements change. Similarly continuous update to user manual is very crucial to Requirement engineering process [1].

4. Discussion. Classical factors of software development difficulties presented by F.P Brooks are accidental or essential that are further reflected as a dimension of change along with another dimension of originated source as project, business and organizational factors by N. Ikram, et.al 2010 and also listed 10 major causes of requirements change as a result of systematic literature survey. We have explored 37 sub causes alongside these 10 major causes from literature while adjusting and updating 10 major causes identified in literature. After adjustment requirement uncertainty appears an important causes both in project and organizational type of change factors.

5. Conclusion and Future Work. In this research article, we present all possible causes and sub causes that can happen within requirement specification, development, design and testing phase of software process. These causes can disrupt the software development process and consequentially enhance software development cost and never ending development results in project failure. So there should has some proactive strategies and policies exist to overcome continuous requirement change during software development process. Suggested causes and sub causes of requirement change guide software practitioners to identify and solve these type of problems during requirement specification and project execution phase. As a future work these causes will be validated and verified from industry survey, expert opinion and consumer feedback. A comprehensive requirement change framework can also be developed based on these causes.

REFERENCES


HEGEMONY OR EMPIRE: A CRITIQUE OF U.S ROLE IN WORLD POLITICS

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ABSTRACT: It is generally believed that U.S is a benign hegemon and the liberal agenda like promoting free trade along with globalization, spreading of democracy, liberal institutionalism and humanitarian intervention, launching of cosmopolitan enterprise, which U.S pursues is for the benefit of all human beings. But if one delves deep into all these good looking and altruistic agenda items, there are clear ulterior motives that favor mostly the capitalists who run the show in the U.S under the garb of Liberalism and Neo-liberalism, Neo-Conservatism. Marxists and especially Neo-Marxists explain this position of U.S in a clear, distinctive and comprehensive way. The research paper would highlight almost all the seemingly altruistic agenda items, the "unquestioned common sense"-clad hegemony of the U.S and the criticism leveled by the Neo-Marxists who take clue from the classical Marxists writings.

Key Words: Free trade, globalization, democracy, humanitarian intervention, cosmopolitanism, Marxism, Neo-Marxism, Hegemony.

Introduction: It is hard to ignore the debate about free trade which would accrue fruit to all; globalization- the world has become a "global village" and it is the time of "death of distance"; democracy as the best form of government and it is to stay for long as it has won the battle for the “end of history”; norm-based international institutions- WTO, IMF, IBRD, but who are the decision makers, ‘who, whom’? are the right questions; human rights- it is all right, if you are on the right side of history(ally of the West), ‘we are seriously concerned’, if you are on wrong side of history(strategic competitor); humanitarian interventions, if ‘black gold’ is there, and threatening the importunate protégé( the likes of Israel), no problem, if not; cosmopolitanism- all humans are one, but visa regimes get stronger, body searches at air ports stricter, surveillance of own citizens normal and legal.

The disproportionate media coverage has made all these topics as almost common man topics, which in real sense are not an iota closer to reality. The reality is that there was a gap between the developed and the developing world, and is not only intact, but has increased manifold: rich are becoming richer while poor became poorer, and this is unfortunately the stark reality. What are being covered is talk the talk, and walk the walk has been put on a back burner. How all this was “manufactured” and who did all this, let us have a look.

How U.S manipulated international financial system to pave the way for “dollar-Wall-street Regime” and the becoming of U.S as a hegemon?

The great depression of 1928 shook the world. There were many causes of the great depression, but for George Maynard Keynes and Dexter White, two factors were important: Flexible exchange rate and free movement of funds (Gowan, 1999, p.16). In order to construct a new, rule-based and stable international monetary system, they proposed fixed exchanged rate, with gold as the anchor, freely convertible into dollar i.e., 35 dollars an ounce of gold, while other currencies to be adjusted to dollar, and ‘financial repression’- no free flow of funds save for foreign productive investment ( Gowan, 1999,pp.16-17). The system was called Bretton Woods regime.

Cardinal Rechelieu once put that “states have no principles, only interests” and that is true for the U.S as well. The vagaries of international politics were at full display, when two powers, U.S and U.K became hostile to some of the
basic tenets of Bretton Woods system, which they themselves had devised. U.S was unhappy over the free convertibility of dollars into gold (Gowan, 1999, p.17), its structural deficit problem due its entanglement in Vietnam War, and the vulnerability of U.S to the price hike of OPEC, according to Jackson and Sorenson (1999, p.177). U.K was angry over the ‘financial repression’ clause as it led to the diminished significance of London as an off-shore city. It was for these reasons that Bretton Woods was scrapped by the Nixon administration in August 1971.

This is what is known to almost everyone who have interest in International Relations and International Political Economy, but what is less knows is the facts that there were clear corrective measure like disentanglement from Vietnam, depreciation of dollar against gold, reducing imports through domestic deflation, but instead of doing all this, the system itself was put to an end, so that a way is paved for the “Dollar Wall-Street Regime”. Secondly, the jacking up of oil prices was the decision of U.S government to put pressure on U.S allies in the Western Europe and Japan( intra capitalism conflict for classical Marxists) and to give U.S private banks more important role in the international Financial institutions opines Gowan( 1999, p.21).

Gowan (1999) also argues that “this ‘dollar seigniorage’ gave a potent political instrument in the form of new regime Dollar Wall Street Regime( DWSR) along with many economic and political advantages: it catapulted private banks to the center of international financial system, pushing out the dominance of the central banks; it opened up an enormous hole in the public supervision of the international financial operators; it made the financial system and exchange rate of the other states, especially those of the South to the developments in the American financial markets; It generated powerful competitive pressures within the OECD countries and gave U.S the leverage to figure out what kind of competitive pressure and what kind of international regulations should exist Dollar and Wall Street reinforce each other, and in 1981 Wall Street was given off-shore status” (p.26).

Concomitant to all this economic leverages were strategic advantages as well. It helped U.S to establish hegemony in the regions which were outside the control of USSR in pre 1991 period and almost across the globe in the Post Cold War era.

According to Michael Mastandau (1998) ‘in the post World War II era, economic and security were intertwined, drifted apart in 1970s, but in the post cold war time both U.S statecraft and IR scholarship are stressing the integration of economic and security, the reasons being: First, distribution of material capabilities; secondly, perception of strategic environment; finally, perception of U.S in international economic competition’ (pp.825-854).

Here comes the question of ‘linking economy with military strength, and strong economy is essential for sustaining military strength in the long term’ contend Gill and Law (1988, p.72). The wealth of nations is related to the forces of production- land( natural resources), labor and capital, and in modern times human capital is singled out as the most important as certain types of knowledge are crucial for a range of productive activities, according to Gill and Law (1988, p. 72).

It is pertinent to quote David and Law ( 1988) that ‘Military expenditure also impacts economy, and spending too much on military spending may act as a drag on national productive activities, hence the difference between wealth-creating activities i.e., investment in human capital, plant, equipment and in research and development and wealth-distributing activities i.e., income redistribution through welfare program, subsidies, and tariffs for particular industries, becomes significant’ (p.73). So, it is correct to assume that the bigger the economy, the stronger the army, the greater the say in international politics, hence Power.

Power is a loaded and highly contested term and needs some elaboration. For Professor Dahl, power is a capacity of A to get B to do something which B would not otherwise do, or power is a “successful attempt”( possession and willingness) to get B to do something which B would not otherwise do, so power is related to behavior for him. This refers to as one-dimensional concept of power: One-Dimensional view of Power which Focuses on: a) behavior; b) decision making; c) (key) issues; d) observable (overt) conflict; e) (subjective) interests, seen as policy preferences revealed by political participation, informs Lorenzi (2006, p.89).

Then there is a two-dimensional view of power given by Bachrachand Baratz (962, p. 949) ‘to the extent that a person or group ^ consciously or unconsciously creates or reinforces barriers to the public airing of policy conflicts, that person or group has power’, and they cite Schatt schneider’s famous and often-quoted words: “All forms of
political organization have a bias in favour of the exploitation of some kinds of conflict and the suppression of others, because organization is the mobilization of bias. Some issues are organized into politics while others are organized out”.

Steven Lukes (2005, p.29) gives three-Dimensional View a critique of behavioral focus, deals with: “a) decision-making and control over the political agenda (not necessarily through decisions); b) issues and potential issues; c) observable (overt or covert) and latent conflict; d) subjective and real interests”.

How power brings hegemony with it? And Gramscian understanding of hegemony is that people are not always ruled by force but by ideas as well as the research of Mukherjee and Ramaswami (2000, p.367). Gramscian concept of hegemony is only understandable in terms of an analysis of structural and behavioral power and highlights the role of ideas and culture, in that they serve to shape preferences and constrain perception of what is possible, according to Gill and Law (1988, p.77).

For Gramsci, power was like a centaur: half-beast, half-man (coercion and consent), and in terms of North-South relation the direct and coercive force of the colonial powers has given way to an indirect and even consensual face, in that market constraints, as well as a set of aspiration on the part of the elite and mass in the developing countries come together to motivate their productive arrangements as well as constrain their potential for economic and cultural development, say David and Law (1988, p. 78).

What is new in Gramsci use of hegemony is that previously hegemony was thought to be imposed through the use of force or coercion, but for Gramsci, hegemony could be enforced through consent...created and recreated through by the hegemony of the ruling stratum of the society and it is this hegemony that allows the moral, political and cultural values of the dominant group to be widely dispersed through out society and to be accepted by subordinate groups and classes as their own, according to Baylis and Smith (2001, p.212).

Gramsci concept of hegemony is applicable to a state, not to international politics and it was Robert Cox who developed Gramscian approach to international politics and IPE. Cox opines: “successive dominant power in the international system have shaped a world order that suits their interests, and have done so not only as a result of coercive capabilities, but also because they have managed to generate broad consent for that order even among those who are disadvantaged by it” (Baylis and Smith, 2001, p.213).

Thus hegemony, which took the form of “unquestioned common sense” is established with the connivance of the elite of the periphery, and the masses are put in the dark so that they are unable to know as to what kind of struggle is going on against them and they start believing that ‘things really go better with coke’ and all this is done to give longevity to hegemony. Why hegemony? It is because that the situation is in the benefit of those capitalists who are associated with trans-national capital and their collaborators in the developing world.

Free Trade and Globalization: People do argue that free trade and globalization are for the benefits of all and there are no hidden agenda involved. Free trade will benefit everyone and there is no harm in doing free trade across frontiers, but for Radical Marxist, the issue is not that much simple.

Prebisch and Singer as quoted in Stefanović and Mitrovic (2011, pp.348-349) developed the hypothesis during the 1950s: “that the Third World countries are drawn into the international exchange that transfer economic surplus into the developed capitalist countries. In fact, less developed countries in the capitalist division of labor, specialize in producing and exporting primary goods, while developed countries export manufacturing goods. Free trade between the two groups benefits the development of developed countries while harming the development of less developed nations. This situation is the result of structural differences between the economies at different levels of development and unequal distribution of economic power on international scale...the result of such relations of exchange is the transfer of income from poor to rich countries”.

For Samir Amin, ‘it is meaningless to consider the underdeveloped and developed societies independently, because both are parts of a single and unique entity -world capitalism. Every time capitalism enters into a relationship with less developed socio-economic formations, through the mechanism of primitive accumulation, it draws value from them. This mechanism is also present nowadays in the relations between the capitalist center and the periphery. It is represented by the transfer of value in favor of more developed parts of the world...therefore, the underdeveloped
states act as sources of accumulation on a world scale...Position of the less developed countries in the world economy determines their socio-economic structure...so that the growth on the periphery produces not true development, but the development of underdevelopment' Stefanović and Mitrovic (2011, pp.349-350). That is why Samer Amin recommends to the developing world to sever of all kinds of relations with the developed world.

For Wallerstein, ‘Capitalism as a world system exhibits tendencies to 1) hierarchization of space, 2) the class polarization on a world scale, and (3) the emergence of states of unequal power that corresponds to hierarchization of space. The world system is characterized by the states of the center, semi-periphery and periphery, which differ in the degree of capital intensity of production processes, level of real wages of skilled workers and the percentage of people who manage human capital and have a medium-high income, Stefanović and Mitrovic (2011,pp.348-349).

For Beams (2011), ‘Free trade is being preached by the West as a panacea for many evils: it would create interdependence, increased economic growth with simultaneous increase in life standard of the people, deflation and creating jobs, etc. But the problem with the freed trade preaching is that everything is not brought to the fore so that people/states are in a position to decide whether free trade is boon or bane for them. Take the example of Basle accord III: ‘no regulation of the unregulated sector’(hedge funds, etc..) and the activities of the bankers will only come as a shock to those who have failed to examine the historical evolution of the capitalist economy and the ever-increasing parasitism of its leading financial components,[also]global ruling elite is organically incapable of making such a change and the present ruling order, in which the interests of humanity are subordinated to the dictates of a super-rich elite, cannot be reformed and that of Washington Consensus'. The IMF push for capital-market liberalization for all nations was driven by financial-market ideology,” says Joseph E. Stiglitz, a vocal IMF critic. "They have conceded defeat, but only after the damages were done.”(Business Week: 2000)

Globalization is a catch phrase and is ‘essentially contested’. On the positive side of globalization, it is argued that it has created millions of jobs from Malaysia to Mexico and a cornucopia of affordable goods for Western consumers; it has brought phone service to some 300 million households in developing nations and a transfer of nearly $2 trillion from rich countries to poor through equity, bond investments, and commercial loans; it's helped topple dictators by making information available in once sheltered societies, and now the Internet is poised to narrow the gulf that separates rich nations from poor even further in the decade to come (Business Week, 2000).

Berg Berberoglu (2003, p.viii) contends that globalization is now under conditions of transnational monopoly capital, the highest and most accelerated stage of capitalist imperialism-that is, it is a global extension of transnational capital and the entire capitalist system that has penetrated every comer of the world and has done so with exceptional speed and intensity. For Peter Gowan, (2001) the economic globalization and Liberal Cosmopolitan discourse run parallel to each other deals with the market – the world economy, and just as liberal-cosmopolitanism radicalizes the old liberal internationalism, from a harmonious order between states to a liberal-cosmopolitan order above states, so liberal economic globalization theory says: ‘We are no longer in a liberal international economy, where the international economy is essentially the sum of its parts. Instead, we’re in a global market, a globalized market which dominates all the national economic parts and so each national economy now is subordinated to the logic of the global market.’

**Liberal Cosmopolitanism:** As globalization deals with the market side of liberalism and Cosmopolitanism deals with the political side of Liberalism. So, the Liberal-cosmopolitan idea is a notion that the Western states, called by Michael Doyle the ‘Pacific Union’, this Kantian union of states – Western Europe, the USA, Japan, and so on – called by Martin, the ‘Western state’, are striving for a global state. What they are talking about is cosmopolitan governance – that is, cosmopolitan rules and norms, not about everything, but about certain fundamental things, namely human rights, and, of course, some global governance in economic field. That’s why I say that these people are cosmopolitan liberals, not actually democrats, even though they may well say that they are democrats, and no doubt they are good democrats when it comes to domestic activities. But the world order they want is to be a liberal one, not a genuine democratic state.

Liberals are asserting that we are moving towards a new, norm-based world, which Marry Kaldor (2003) refers to humanitarian regime: ‘notion of humanitarian norms that override sovereignty, establishment of the International Court of Justice, Strengthening human right awareness’ (p. 588). But Gowan (2001) looks at these norms and institutions with suspicion that how these norms reflect the reactions of the “West Pacific Union” and doubt their respect for these institutions by arguing how all these norms were flouted by those who helped devised them:
• “Secretary General, Boutros Boutros Ghali was supported by all for the second term except U.S and it was the ‘one’ that won the day;
• Erosion of the power of IMF as clear from its role in Mexico crisis in 1995;
• U.S grabbing $25 billion off the Europeans without so much as asking;
• Korea, November 1997: an absolutely incredible subversion of the articles of agreement of the IMF, openly manipulated by the US Treasury; the most unprecedented taking of a can opener to the Korean economy, in a way that we’ve never seen before – by the way, action by the USA described in the Financial Times by an unnamed German Central Bank official as ‘financial terrorism’;
• The GATT and the World Trade Organization (WTO), in the Uruguay Round – the USA has refused to subordinate itself to any law of WTO except one that is fair to the U.S;
• The International Criminal Court flagrantly violates the rule of law as it is not applicable to the five permanent members of the UNSC”(p.5)

There are also complementary differences: the globalization discourse is cognitive and fatalistic. It says: ‘We may like or dislike economic globalization, but it’s there to stay. If you want to be competitive you’d better adapt to it.’ Cosmopolitanism is normative and activist and exciting; it says: ‘Look, there is an inspiring dynamic opening up. If you join it you can bring it about.’ But these two things can run hand in hand – you can get depressed about the global economy, but let’s get into the global cosmopolitan liberal order, and so on (Gowan, Panitch, Shaw, 2001, p.5).

**Spreading Democracy:** One of the hallmarks of U.S foreign policy is to spread democracy across the globe, the rationale being that democracy is a far better system that have been “tried from time to time” and that democracies don’t find each other. But this does not mean that democracies don’t fight war with other states, especially with non-democracies/ authoritarian states and are not less brutal as well, Hiroshima and Nagasaki are cases in point.

It would be a tenable argument to make that U.S in most cases sacrificed democracy for the sake of an iota of stability. It was what was done by the U.S during the Cold War and she was willing to stand by those states which were not Communists and provided order…[and] Washington first and foremost focus was spreading capitalism, as it was easy to integrate ‘forward-looking authoritarian leaders’ into world economy,(Zachary Keck, 2013). ‘U.S support for Jordan, Saudi Arabia, Kuwait, Husni Mubarak’s Egypt, Yemen, etc., show that U.S has not given up the policy of supporting non-democratic states’ (Glen Beck, 2013).

Another important point to note is that U.S spreading “polyarchy rather democracy”. What US policymakers mean by ‘democracy promotion’ is the promotion of polyarchy, a concept which developed in US academic circles closely tied to the policymaking community in the United States in the post-World War II years … polyarchy refers to a system in which a small group actually rules and mass participation in decision-making is confined to leadership choice in elections carefully managed by competing elites … Democracy is limited to the political sphere, and revolves around process, method and procedure in the selection of ‘leaders’ (Robert Went, 2002). Here comes the duplicity of the U.S-les Western world: democracy promotion, when national interest demands; extending support to authoritarian regimes too, when national interests demand.

**Humanitarian Intervention:** Humanitarian intervention means intervention by the world community (say U.S-led West) in states where there is gross violation of human rights. It is grandiose project, and is being applied quite selectively. So what one has in this group of Western states pushing forward, across the globe, a new world order in which state sovereignty will be made conditional upon states respecting certain minimal rights of citizens – minimal human rights and democratic rights – and thus the old Westphalian concept of sovereignty becomes conditionalised rather like a dog license in Britain. In other words, you can have a dog in Britain provided – on condition – that you treated it right. If you treated your dog badly, the British authorities would remove your dog license and end your right to a dog. Similarly, states will face an international community, which above all means the coalition of Western states centered on the USA, and this international community will grant them sovereignty on condition that they respect basic rights of their citizens; and if not, if they don’t want, then the sovereignty license will be taken away and these developed states also known as ‘international community’ will intervene to various extents and in various ways in the delinquent state (Gowan, 2001).

U.S-led humanitarian intervention in the Balkans in 1990s was to exacerbate the already simmering tension France and Germany over the issue of whom to support whom and the same was repeated in Libya in 2012 , which was
seen more as “an enterprise of Anglo-Zionist axis, headed by US imperialism, having focused their attention on this particular “dictator”, with whom they have tried to come to an accommodation in recent years in order to complete their hegemonic role in the region for their imperialist interests” (Marxist Update, 2011). Therefore, one can infer from this that so-called world community has to respond to human right violation in those areas where major economic and strategic interests of the guardians of human rights are involved (Baloch nationalists and rebels/freedom fighters have also requested UNSC for humanitarian intervention in Balochistan against the “atrocities” committed by the state, and the issue would be taken up, when Pakistan is not toeing the line of U.S).

**Nation-State System:** The Westphalian state system is under pressure, what Rodrik refers to as **trilema:** the basic idea behind is that the nation-state system, deep economic integration, and democracy are mutually incompatible…We can have at most two out of these three. If we want to push global economic integration much further, we have to give up either the nation state or mass politics. If we want to maintain and deepen democracy, we have to choose between the nation state and international economic integration. And if we want to keep the nation state, we have to choose between democracy and international economic integration (Robert Went, 2002).

The dilemma with the nation-state system is that on the one hand it is under pressure from MNCs, TNC, humanitarian interventions, etc., but on the other hand some states like U.S and some Western states are pushing this order on to other states, as is reflected in the already discussed Rodrik’s Trilema.

**Conclusion and Recommendations:** It is to remark that some of the liberal and neo-Liberal agenda, whether it is free trade, or democracy, or humanitarian intervention, or globalization and cosmopolitanism, etc., are looking to fairly in the interest of the human beings across the globe, but after scrutinizing them from neo-Marxist perspective, then Robert cox was right to say that “all theories for someone and for some purposes, or what Foucault calls Soveroir poi (knowledge-power) combine: all knowledge for domination/hegemony.

And the whole hype about neo-Liberal institutionalism, the process of decision making in these institutions, the pursuit of selfish national interest in the garb of interest of all, seem be a façade, when looked at from a different angle. And no better conclusion than this:

“However, it can be observed that during this process international institutions do not merely remain the arena for contestation of dominance... because of the political dominance of the hegemon in the process of decision making and its ability to coercively promote a specific agenda, and international institutions are reduced to the status of subordinate offices”(Malik, 2011, p.100).

Here are some of the recommendations for the better arrangement of affairs of the world.

1. U.S needs to come of the duplicitous role like supports for those states which clearly violate human rights but are in sync with US policy and decrying human right violations by those states, which are considered to be competitors of the U.S.
2. All humans are equal and need to be treated equally: citizens of poor African nations have the same feelings and emotions as that of U.S citizens, then why so much inequalities in the standards of lives, access to economic opportunities and say in politics.
3. Globalizations, if that much for the benefit of humanity, then, the fruit must reach to the developing states as well.
4. Democracy is the cry of the day, so the Western World should make all necessary efforts and arrangements to help democracy takes roots in the developing states as well. The developed states can provide funds and training in this regard.
5. There needs to a judicious, appropriate and judicious use of the ‘humanitarian intervention’ rather than a selective, controversial and inappropriate use of the noble action like humanitarian intervention.
6. Every effort needs to be made to narrow the economic gap between the developed and the developing world. Furthermore, workers of the ‘Third World’ should have same facilities and privileges as are available to the workers of the ‘First World’, as sweat of a poor of a poor country is as valuable as that of a poor of a rich country.
7. It is good to talk about liberal cosmopolitanism, but it is quite difficult to implement it in its true spirit, therefore, it will be good, if appropriate steps are taken for the preservation of local cultures, so that the intensity of ‘cultural imperialism’ could me reduced.

8. International norms and institutions need to be respected even if the national interests of the developed states necessitate action to the contrary.

9. The ‘Third World’ needs to bury their hatchets and move in a responsible way on both economic and political fronts.

10. The developing world needs to understand the vagaries of international politics and play an effective role in countering the hegemonic designs of any state collectively.

REFERENCES

AFGHANISTAN’S SECURITY IMBROGLIO: STRATEGIC IMPLICATIONS FOR PAKISTAN’S FEDERALLY ADMINISTERED TRIBAL AREAS (FATA)

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ABSTRACT: Pakistan’s stability is interconnected with that of Afghanistan. Afghanistan’s turmoil has affected Pakistan’s internal security, economy and foreign policy. Recently, our foreign policy is ‘Afghan centric’, where fall out from western border has triggered militancy and extremism in FATA. There is strategic stalemate and Pakistan interests in Afghanistan have been transformed into challenges which need to be grappled at exigency. The incomprehensive skepticism has halted various developmental aspects. Both minor states of Pakistan and Afghanistan have common problems of militancy and insurgency with is a palpable gnaw and can be fissiparous to their state structure.

The US exit from Afghanistan is cross to bear for Pakistan policy making elites to direct their course of action. The recent past and ongoing strategic challenges need exigency and responsible role in likely situation in order to safeguard any infringement on national sovereignty and territorial integrity.

Keywords: Militancy, National interests, Extremism, Foreign Policy, Strategic.

1. Introduction: Pakistan interests in Afghanistan have been converted to challenge for Pakistan foreign policy due to turmoil in Afghanistan. Pakistan security has been deteriorated from the last three and half decades. During Soviet invasion in Afghanistan Pakistan role was applauded for curbing communism by freedom fighters (Mujahedeen). Besides, Pakistan was in great fear that this imbroglio and Soviet military forces might stretched to Pakistan province Balochistan and further to warm water of Arabian Sea, which has been proved only as paranoid only by Politburo. Pakistan President General Zia availed this juncture as an opportunity to secure his goals in the garb of Islamization and established Mujahedeen training camps on the soil of Pakistan. This pave the way to not only Afghan refugees, drug trafficking, Klashinkov but to sectarianism which led to numerous evils in society. The matter did not stop here, after Soviet exit from Afghanistan, there arise various challenges for Pakistan foreign policy as Pakistan embassy was set on fire by forces of Ahmad Shah Masoud, who deemed that Pakistan has backed Taliban in capturing Herat. (Sheikh, 2012)

In all this background Pakistan’s foreign policy has become subservient to the US. We are not only dependent with regard to our defense requirements but are also at the mercy of the US financially. Due to dependence, Pakistan’s foreign policy is also dictated by that country. (Khan, 2013) The Afghan war and terrorism spill over has ruined Pakistan’s economy and internal security. (Mir, 2013) There is escalation in cases of terrorism and extremism throughout Pakistan. The institutional distortion has exacerbated the existing infamous kidnapping, maladministration and sleaze in most of the governmental sectors. There are horrible
challenges looming large to the fortune of lay person. Above all the religious intolerance has aggravated sectarianism. (Khan, 2013) Much of this has happened because of our involvement in the Afghanistan conflict. We are in a difficult, complicated and despicable situation from which it is hard to escape.

In Pakistan militancy and extremism have been originated in the past military regimes of General Zia ul Haq and General Pervez Musharraf as both envisaged Afghanistan’s turmoil as an opportunity to facilitate themselves with the US assistance in multiple sectors. The menace of military dictatorship of these two mentioned dictators have dumped Pakistan with extremism and sectarianism. Resultantly Pakistan is suffering from multitude of miseries as weak economy, distortion of national image, undermined national sovereignty and to cap it all Pakistan is near to be an isolationist state. During Soviet invasion Pakistan had taken that insurgency quite normal which could not be followed by fall out for Pakistan. After Soviet exit from Afghanistan, the US had abandoned Pakistan in the midstream, no post war cautionary measures, pacification and adjustment facilities were provided to the hardened fighters so that they might accustomed to the society. (Ilahi, 2010, p. 140) The end of Afghan Jihad was start of Pakistani extremism. The first phase of extremism was in the shape of various bomb blasts in various parts of Pakistan, instigated by Indian conspiracy. It was prompted by Indian motive to revenge Pakistan for their patronage of Kashmiri cause in Indian occupied Kashmir and secondly to hoist Pakistan for its petered of supporting Sikh’s Khalistan stance in East Punjab. Pakistan alleged Indian role in the blasts with due grounds as proof of their complicity. (Ibid, p. 142) Second phase was started in late 1980s with collusion of three extremist organizations namely, Sipah e Sahaba Pakistan (SSP), Sipah e Lashkar e Jhangvi, Muhammad Pakistan (SMP) . These organizations had ruthlessly killed so many professionals, civil servants, clerics and carried their callous ventures until severely punished by Government as result of which some these extremists moved to FATA. Meanwhile, ethnic strife was alarming in Karachi, where Mahajar Quomi Movement (MQM) was troubling other factions in Sindh. At last resort Operation ‘clean up’ was launched in Benazir era to curb these uprising. (Review, 1996, p.628) Third phase was started in 2001, where Afghan Taliban infiltrated to Pakistan tribal area and gradually this area was turned to Al-Qaeda and Talibans’s hub.

On Afghan soil we have faced challenges and costs as we could an alternative transit path for Central Asia trade to the globe for transfer of fossil fuel to the South Asia so as to counter Russia dominancy. (Sheikh, 2012) Afghanistan turmoil will keep Pakistan with myriad security threats in shape of restive FATA, illegal infiltration, consequently refugees deluge, spike in drugs trafficking, uprising in Pashtun nationalism which will ignite Afghanistan imbroglio and both Pakistan and India will try to steal the march on each other. (Report, 2011, p. 24) Pakistan policy elites conceded with US allegation about Haqqani network and ‘Quetta Shura’ presence inside Pakistan but refuted about their dominant influence. (Yusuf and Zaidi, 2011)

Pakistan is accused for the presence of Al-Qaeda and Afghan Taliban who attacked coalition forces in Afghanistan. Al-Qaeda was originally the organization with norm and tradition of Arab countries especially Saudi Arabia and Egypt. Now Al-Qaeda has its cell in approximately forty countries. As far as Al-Qaeda is concerned then is clear that it became an organization against US forces occupation of different Muslim territories and it had fought against Soviet invasion in Afghanistan. In the garb of terrorism it wants to get rid of foreign occupation and to work for renaissance of the real soul of Islam. For them 9/11 was turning point to military and political joint venture for realisation of this goal and to prepare world as field for Jihad. (Aziz, 2010)

Al-Qaeda was arch rival of the US with no resentment against Pakistan, but when Pakistan launched military operation in FATA as per Musharraf’s order, since Al-Qaeda has been turned against military dictator without any grudges for the state. (Ilahi, 2010, p. 153) The motive behind Al-Qaeda arrival to FATA was to flourish its agenda of Jihad and to give tough time to the US, and for the same very sake another frontline organization was needed in order to escape from Pakistan state and army focus. This space was filled by Tehrik e Taliban Pakistan which remained active in Swat, FATA and so many other parts of Pakistan.

Tehrik-i-Taliban Pakistan is the alliance of various Islamic militant groups being known as Pakistani Taliban and are aboded in Pakistan’s Federally Administered Tribal Areas. This coalition of militants have allegiance of majority of groups who are working under the the agenda of TTP in all of the seven agencies of FATA. This organization emerged in December of 2007 under the command of Baitullah Mehsud, a hardliner who formed Tehrik Taliban Pakistan especially as retaliation of Lal-Masjid Operation. The Tehrik-i-Taliban Pakistan’s basic aims are to entangle Pakistani state in numerous hurdles in order to bring them to the point of
enforcement of Taliban conceived vision of Shariah and proved as unshakeable force against foreign forces of NATO in Afghanistan in the shape of suicidal assaults and the likely tactics in this regard. (Fair and Jones, 2010, pp. 161-188) TTP is validating their ruthless attacks inside Pakistan in retaliation of US engagement in Afghanistan and due to Pakistan key role in combating terrorism. Militants or Taliban have firm belief in Muslim Theologian Ibn Tamiyyah doctrine, to launch offense against Non-Muslim and who do not concede to Islamic fundamental mode of interpretation. (Siddiqa, 2010, p. 153) There existed Takfir ideology, which deem non-believers as Kafir. Ayman Al-Zawahiri of Al-Qaeda is with the same Takfir doctrine. (Mujahid, 2010) To sum up, the justification of aggression in the garb of Islam is contrary to the spirit of Islam. The two concepts ‘fitnah’ (sedition) and ‘fasad’ (corruption) are acrimonious political crimes perpetrated against Islamic political community (the Ummah). To label a Muslim as non-Muslim is the taking of Allah’s judgement in own hand which is committing of ‘shirk’ or most probably ‘kufr’. (Commission Report, 2013, p. 325) Al-Qaeda and Tehrik Taliban Pakistan (TTP) are interconnected and according to Aamir Rana an expert on terrorism, terrorist commander Ilyas Kashmiri, leader of HUJI is new commander of Al-Qaeda Pakistani wing. (Rana, 2010)

In order to ponder over the root causes of terrorism there have been different views. Those people, who have been berefted of socio-economic provisions, unable to keep body and soul together, illiterate having no judgement of right and wrong and to cap it all living in areas where exists no state writ are flourishing grounds to instill extremism and terrorism in minds. According to Ayesha Siddiqa the basic reasons behind militancy can be poverty as South Punjab and Upper Sindh are areas which are deprived of socio-economic provisions. There is lower Human Development indices of World Bank and Asian Development Bank. Lower education is also main cause. (Aftab, 2010) There are Madrassas where minds of youth are groomed for militancy and terrorism. (Siddiqa, 2010, p. 158)

There are three types of forces among Taliban as, various category is good Taliban, who are friendly and are aboded in North Waziristan Swat and the rest of Pakistan as TTP, LeT, JuD, JeM. They are longing for establishing political order conceived by them and deemed Mullah Omar as their leader. They get inspirations from him but operate on their own lines. Both Pakistan and Afghanistan Taliban are concerned about their respective states and are supporting each other. (Rizvi, 2013)

There is contrast in the activities of Al-Qaeda, the TTP, and Afghan Taliban. Albeit they have common enemy as West especially the US to fight against her, but Al-Qaeda is fighting against the US and her coalition allies, Afghan Taliban are fighting against foreign forces who have invaded Afghanistan since 9/11 and TTP is active against Pakistani state and against security personnel. (Haqqani, 2010) Mehmood Shah, a former security official in Pakistan’s tribal areas, said “there is no doubt that a link between the Haqqani network and the Pakistani Taliban exists” The insurgency and consequently military operation in FATA had been stretched to the US intervention in Afghanistan. The Al-Qaeda and its associates infiltration to Pakistan was triggered by the US military attack on ‘Tora Bora’ by taking it as safe haven for the former. This attack was carried out at the time when the US was not sure about Al-Qaeda’s presence, resultantly, there are divergent comments even among the US defence officials, as CENTCOM commander General Tommy Frank commented, that he adopted light footprint doctrine because there was uncertainty about Osama Bin Laden’s presence. (Samad, 2011, p. 37) Kerry contradicted Frank statement and emphasized that due to no more troops and to rely on Afghan forces has caused Osama to flee away from Tora Bora. (Kerry, 2005, pp. 2-3) Al-Qaeda was divided into two groups, as one infiltrated into Pakistan’s tribal areas Parachinar, harboured by tribes men of Ghilzai for which they were facilitated with satisfactory money and weapons. (Yunas, 2011, p. 38) This operation was conducted at critical area on Pak-Afghan border and Pakistan was kept in oblivion about it. Later on, when the militants spread to far flung tribal areas of Pakistan, only then Pakistan was assigned the task to trace them out. Consequently, Pakistan military was deployed to Miranshah and Wana with Frontier Constabulary and after an arduous search approximately 250 Al-Qaeda/ Taliban infiltrators were captured from Tirah valley. (CENTCOM, 2002)

This lead to consistent military deployment in tribal areas in order to curb militancy in FATA as in 2005 nearly 80,000 Pakistani troops were in Waziristan. Local residents of FATA sided with these militants by deeming military presence as an infringement on their sovereignty. The other reason of their favor can be the aggression of militiants, who cannot bear the resistance from these tribes. They have their own norms and traditions without any other consideration. Gradually, not only wazirs and mehsud but foreign non-state actors as Uzbek and Chechen had joined this rampage against the state of Pakistan and military with all possible aerial power which have turned it a war. Militancy get infested to all the seven agencies of FATA under myriad militant groups and strengthened the roots.
TTP is paid sumptuously for its service and in return has been enabled to maintain militia with this money. It is like a mercenary force and has provided base to Al-Qaeda. (Rashid Interview) Afghan Taliban have linkages with their counterparts in North and South Waziristan and they have been infested into Punjab, Baluchistan and Sindh which have deteriorated Pakistan security. Tehrik Taliban Pakistan (TTP) under Hakimullah Mehsud and some other similar groups have links with Al-Qaeda who had not deterred even from assaulting on Pakistan Military Headquarter (GHQ) and intelligence organization, the Directorate for Inter Service Intelligence (ISI) they have sanctuaries in FATA. (Siddiqua, 2010, p. 150)

Pakistani military have four level of approach ‘clear, hold, develop and disintegrate’ which have been used in Swat in 2007 and in South Waziristan in 2009. (Ibid, p. 151) Clear and Hold is an attempt to integrate these agencies into Pakistan which were apart from Pakistan legal and political system in past. Furthermore, the US is highhanded in asking Pakistan to launch military operation in north Waziristan but Pakistan has refuted because some Taliban groups in North Waziristan have ties with military on terms and conditions that they will never assault on Pakistani state until they would not be attacked. Besides Pakistan cannot afford war on all fronts. Operations at the same time on diverse fronts would undermine military capacities. Wherein, Positive public opinion is also indispensable for successful military operation as was in case of Swat and Waziristan operations. Keeping these reasons in consideration Pakistan military would prefer to held talks with Taliban. Rustam Shah Mohmad also deemed that military Operation in North Waziristan would be very expensive for Pakistan military. (Yusaf, 2010)

Mullah Omar stepped forward in December 2008 and the first quarter of 2009 by sending an envoy Mullah Abdullah Zakir for the very purpose of taking high command of TTP on board in order to give tough time to the US in the shape of integrated force of Taliban. A transitory Shura Ittehadul Mujahideen (SIM) was formed by Baitullah Mehsud, Hafiz Gul Bahadur, and Maulavi Nazir. They pledged to be abided by the very doctrine of Mullah Omar and Osama Bin Laden in dismantling the foreign forces but that alliance burst down in short a while without any fruitful outcome. Pakistan civilian government and security personnel are on the same page on the issue to curb militancy. Pakistan military has found involvement of external hand in assisting Pakistan Taliban. (Rizvi, 2010)

Militancy in FATA has been enhanced by the counterinsurgency (COIN) plan of military General McCrystal, by surge of troops in east and southern part of Afghanistan lying adjacent to Pakistan’s FATA so resultanty militants infiltrated to Pakistan tribal areas and trembled security inside Pakistan. Pakistan military and civilian government were on different terms with different Taliban groups along the border. Afghan Taliban abode at North Eastern part of Afghanistan in Kunar and Nuristan provinces have affiliation with non-state actors TTP and TNSM who have created battle fields in Swat and Bajaur. These Afghan provinces lies adjacent to Khyber and Mohmand agencies in FATA which were under intense military operations. (Khan, 2010) Afghan Taliban associated with Haqqani Network active in North and South Waziristan and with so called “Quetta Shura” confining forces in South as in Mccrystal means to pressurize Afghan Taliban based in North and South Waziristan and in Balochistan border.

Meanwhile the US was apprehensive of Al-Qaeda and Taliban activities in FATA on four grounds, firstly, FATA is in process to perpetrate another attack on the US from Pakistan, secondly, these local connections and associations are detrimental to both the US and Pakistan security which can make Pakistan a failed state, thirdly, if any assault launched on the US by these militatns then Pakistan would be accused for it. Fourthly, these militats are disrupting the US coalition efforts in Afghanistan. (Ilahi, p. 157)

There is major defect in Pakistan counterterrorism policy, that it is solely dependent on military and strategic goals. It goes towards strategic operation rather than to sort out root causes of terrorism and extremism. By contemplating the performance of Pakistan military its certain that it cannot be overridden by militants because it is stable and strongest institution. It has performed well in military operations in tribal areas since 2007 to subdue militancy.

Pakistan has availed services of the Army, the Frontier Constabulary, the Frontier Corps and Frontier Police in major operations against militants. (Fair and Jones, 2011) Pakistan Army has round about 550,000 Active duty organizational strength and 500,000 reservaties. It has nine Corps Headquarters in addition to the Army Strategic Force Command, and is called ‘Tenth Corps’ which is in command of all land based strategic assets of the country. The Frontier Corps is Federal Paramilitary that belongs to ministry of Interior but it is

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1 Each Corpse has two or Three Divisions and Is Commanded by a Lieutenant General . Each Division Holds Three Brigades and is Commanded by a Major General. A Brigade is Commanded by a Brigadier and Has Three or More Battalion. A Battalion has Roughly 600 to 900 Soldiers Under the Command of a
under operational control of the military. It consists of two separate forces, FC N.W.F.P (KPK), all are Pashtun and FC Baluchistan, who are not altogether Baluch. (Abbas, 2007) The Frontier Constabulary is a policing organization which is established to provide law and order in the settled areas outside FATA and cordoned the Afghanistan and Pakistan border. It has performed security duty in Swat and is currently performing in Islamabad and Punjab.

Pakistan Army is confronting two main challenges; one is to curb insurgency in all the seven agencies of FATA and second is to tackle overwhelming extremism in Pakistan. Albeit Pakistan Army is to defend the frontier against external threat but in case of inside insecurity and militancy Pakistan civil government can ask the Army to launch counterinsurgency operations. Military operation is lawful according to constitutional provision, as “To defend Pakistan against external aggression or threat of war, and, subject to law, to act in aid of the civil power when called upon to do so.” (Pakistan constitution, 1973) So military operation being launched in Zulfiquar Ali Bhutto era in Baluchistan in 1973 was lawful within context of ‘civil power. (Ziring, 1997, pp. 392-3) The same civil power is used to curb militancy in FATA by military operations as last resort. Pakistani military has launched following major operation in order to curb militancy.


2a. Rah-e-Haq operation: Swat is Switzerland of Pakistan with its natural marvelous beauty and fecund soil. The names found in ancient sources for Swat are Udyana and Suvasu because of the scenic beauty of the valley and name of the river respectively. Muslims occupied this valley in 10th century, and afterwards Afghans known as Swati Pakhtun came and settled here as an independent power. Yousafzai conquered Swat in 16th century and lived as tribal fashion headed by tribal chiefs called Khans and Maliks. In Swat khans and then chief arise with status of king type ruling. There were dictatorial rulers with austere ruling. (Rome, 2006) The state of Swat was coalesced to Pakistan on 28 July, 1969, by the then Chief Martial Law Administrator and President of Pakistan, General Yahya Khan; resultantly, the ruler domineering status come to an end. However, the special status of Swat remained unaffected in spite of abolition of state of Swat. Moreover, the Interim Constitution’s article 260 (which was later on retained in 1973 Constitution), given birth to the Province of Swat and Districts of Chitral, Dir and Swat beside other areas were brought into it in order to stretch basic provision of law and order passed by central and provincial legislature. The people of Swat nostalgically remembered the Swat state era, when judicial system at their disposal was quick and easily accessible.

Shariah was imposed in Swat under a religious Group Tehrik-e-Nifaz-e-Shariat-e-Muhammadi (TNSM) led by cleric Sufi Muhammad in 1994. Government’s agreement for established Shariah courts in Malakand under Nifaz-e-Nizame-Shariat Regulation, 1994 and Shari-Nizam-e-Adl Regulation, 1999 resulted in subsidence of the problem for the time being. However, the regulations were mainly procedural in nature and the grievances of the population remained unaddressed, which were further exploited by TNSM and other radical factions, who strengthened their roots there. Political leadership in the city failed to nip militancy in the bud. The matter came out of police control also. After 9/11 Tehrik-e-Nifaz-e-Shariat-e-Muhammadi (TNSM) come to government focus when it crossed border to assist Taliban in Afghanistan but mostly remain unsuccessful and on return to Pakistan, were arrested by Pakistani authorities. After Sufi Muhammad’s arrest his son in law Fazle Hayat under the nom de guerre of Fazal Ullah took over command of TNSM and started broadcasting from an illegal FM radio at Imam Dheri, in the Matta Tehsil.

First serious signs of trouble came, when polio vaccination teams were attacked in Swat and MMA government surrendered its own writ by taking ‘permission’ from TNSM for kids polio drops. Police was targeted all over the area and there were large scale desertions. Eventually, TNSM / TTPS took physical control of police stations besides Saidu Sharif Airport. Frontier Constabulary (FC) also surrendered in a large number. Some Afghan and foreign militiants, who earlier had crossed over into FATA, now found another battle ground and joined hands with TNSM and JM. For further strategy Fazal Ullah labelled his group as Tehrik-e-Taliban Pakistan Swat (TTPS) in Jan 2008 which facilitated a nexus with TTP to ensure that they are integral part of Hakeemullah Mehsud led TTP of Waziristan. (The News, 2008) These Taliban have played havoc with whole infrastructure and have disrupted time long practiced Malik system with killing of Maliks, and destroyed private property in order to establish their own writ in these areas. (The News, 2009a) Fazlullah and his associates were involved in detonating bombs, demolishing schools and turning these schools as their operational bases, to cap it all they captured security personnel. (The News, March 22, 2009) In spring 2009 when Fazlullah admonitory asked Police to leave their jobs or be ready for punishment then resultantly 700 of 1,700 officers deserted Police jobs. (Wiseman and Sheikh, 2009) TNSM with incendiary propensities were creating state within state by renouncing democracy as un-Islamic. They summoned that any one deviated from their conceived and established Shariah law would ultimately be killed. In Swat the TNSM had initiated ruthless killing of people by wildly segregating their bodily organs and even throwing corpses on roads to be viewed by other people. (The News, 2009b)

These callous and unbridled terrorist activities could only succumbed by military operations. At last resort Federal government deployed Pakistani Army for Operation Rah-e-Haq, in order to wrestle the control of Swat valley back from TNSM. Rah e Haq operation was launched by Pakistan’s army on October 25, 2007 against Taliban forces and this operation was with three phases. Pakistan army get victorious. Chief of army Gen Kayani instructed throughout operation that collateral damage be shunned. Triumphant of operation depends on conduct of strategies, minimizing collateral damage and managing Internally Displaced Persons (IDPs)’. The first phase of Operation Rah-e-Haq was started in November 2007 with the collaboration of local police in order to clear Swat Valley, but the militants were gradually infested into key cities. The operation continued for almost half a year and Pakistan Army partially managed to take the control of Swat back.
The second phase of operation began in July 2008 and continued throughout the year. The military operation was carried out in the Swat valley at the request of the provincial government, resulted in the death of 36 security personals, nine civilians and 615 activists. In order to fulfil promises made during the 2008 elections, the newly formed government of ANP in KPK, brokered a peace deal with TNSM by announcing the enforcement of Nizam-e-Adl Regulation and release of all prisoners. The matter of fact is that these Terrorist were not honest about Nizam-e-Adl regulation but were using it as garb for own interests to be secured. (Commission, 2009)

A 15 points resolution calling for eviction of Terrorists from the valley, agreed in All Political Parties Conference and passed by the Parliament, was aimed at developing national reconciliation in war against terrorism. National consensus against Terrorists was developed through media campaigns by exposing the true intentions of Taliban after they refused to abide by peace terms and enforcement of Shariah. Massive media campaign was launched to rally support for military operation and for projection of Army’s image.

Consequently, the army launched third phase of operation Raah-e-Haquin 2009 because the incendiary grudges of militants were unbribled and this time severe curfew was imposed where the militant would have fired on the first sight. TNSM forces retaliated by educational institutions destruction and assaulted security forces in order to dismantle the morale of military. The fighting ended in February as a result of an agreement between the government and the TNSM, popularly known as the Malakand Accord. There are myriad of militants groups who are lords of their respective areas as Tehrik-i-Taliban Pakistan (Taliban Movement of Pakistan, TTP), established in December 2007 by senior leaders of myriad of militants groups round about forty in number and all of them have unanimity. Led by South Waziristan based main commander Baitullah Mehsud, who got his fatal end in one of drone strike on 5 August 2009 and now by one of his aide Hakimullah Mehsud, the TTP is firmly connected to jihadi groups from Punjab including the Lashkar-e-Tayyaba and the Jaish-e-Mohammed.

A peace deal was made by ANP and TNSM in Swat which was signed on 16th February, 2009. The same fate was faced by it like the previous agreements and more or less the reason for its failure is attributed to the government’s inability to learn from experience that the Taliban know nothing of tribal traditions and ethos, where once entered in pact, a person will strictly abide by it. These militants were still with same propensities of rampage and were away from rationality. Moreover, Sufi Muhammad a hardliner was mediating between TTP leader Fazlullah and N.W.F.P government. (The Nation, March 2009)

In spite of peace agreements and imposition of Nizam e Adl regulation the brutal activities of Fazllullah and Baitullah Mehsud were not halted. By late April 2009, however, the militants had occupied shops and government buildings in Mingora, the capital city of Swat, and started moving forward into the neighboring districts of Shangla and Buner. They had assaulted police stations and unending attacks were instigated on NGOs, frontier constabulary personnel and built their check posts along roads.

The US was pressing Pakistan to launch military operation and at last resort Pakistan military launched Rah-e-Rast (the virtuous path) operation on 26th April, 2009 against TTP of Swat and other associates of them. (The Nation, August 2009) Army campaign was launched with 20,000 troops, air power by Army Aviation attack aircraft. The Army Chief General Kayani stated that this operation was launched with basic motive of reforming the misguided.

The Swat operation was successful and stretched to the Lower Dir, Malakand, Buner to eradicate the militant’s safe havens. For Army there were challenges, as they have to restore government’s writ, to carry out rehabilitation of Internally Displaced Persons (IDPs) and to enlist former soldiers in the police and have 25,000 police in the area. (BBC News, 2009)

b. Bajaur agency: Bajaur is Northernmost Agency lying close to Afghanistan’s Kunar province. This agency was hub of foreign militants with round about 2,000 militants including local as well. In Bajaur Harkat-ul-Jehadi Islami (Movement of Islamic Jihad) led by Qari Saifullah Akhtar, Islamic Jihad Union, Islamic Movement of Uzbekistan, Jaish-e-Islami led by Waliur Rehman, Karwan-e-Naimatullah (Carvan of Naimatullah now defunct) led by Haji Naimatullah, Qari Zia group. These militants had caused rampage to this agency and terrorized people there. There occurred many ambushes on convoy of military and intelligence agencies. Consequently, on September 9, 2008 Operation ‘Sher Dil’ (Lion Heart) was launched. Main aims of this operation were, to eradicate militants from Bajaur, to clear and hold Bajaur population and to secure Lines Of Communication (LOC). Faqir Muhamad was main militant leader. This Operation was grandiose with airpower, bulldozers and tanks. In Loe Sam, nearly all tunnels consisting houses were blazed by the security forces. By December 1000 militants and 63 Security personnel were killed. (Fair, p.
In Khyber agency militant groups comprised Ansar ul Islam, Ansar ul Islam-Qaida, have safe haven in Bajaur, style organization Amr Bil Maruf Wa Nahianilmunkir (promotion of virtue and prevention of vice) led by Haq, Amr Bil Maruf Wanahi Anil Munkir. This militancy began in 2003 when a Taliban-style organization Amr Bil Maruf Wa Nahianilmunkir (promotion of virtue and prevention of vice) was set up by Amir Haji Namdar Khan, who is behind both the Taliban of Afghanistan and international terrorism caused networks as al-Qaeda, have safe haven in Bajaur, with covert assistance from Pakistan military. (Washington Post, 2008) Recently curfew in Bajaur agency lifted away after four years of imposition. This agency was stroked by drone which killed 69 people, while the building being attacked has been considered as militants training camp. (Hussain, 2012)

In operation Sher d il Pakistan Security personnel have cleared Loe Sam from militants. It was ample manifestation of cooperation not only of the Army and the Frontier Corps but also of the US and Pakistan as well. Due to successful operation 28 points agreement was signed, according to which the militants would surrender, to lay down weapons and to stop training camps in Bajaur. (Ilahi, p. 126) After Sher d il operation the military, the Frontier Corps moved to Mohmand agency in order to tackle and curb militants there.

c.Mohmand agency: In Mohmand agency main militant groups are Ahle Hadith (now defunct) led by Shah Khalid, Muqami Taliban (Local Taliban) led by Omar Khalid. Operation Brekha (Thundar) has been continued in the Mohmand agency since April 6, 2011. Violence had escalated in Mohmand agency followed by the militant takeover of a mosque in Lakaro in July 2007, (Mohmand, 2007) leading to a series of peace deals which have taken place between tribal chiefs and military, in which the tribes vowed to break strangles of militants, including foreign fighters safe haven in the agency. These agreements came in vain within a year as miscreants escaped from the 2008 and 2009 military operations in Bajaur and were given safe haven in Mohmand agency, resulted in restoring of military action. (Khan, Dawn, 2009) Local leader of TTP Omar Khalid’s network conspired with that of Afghan Taliban leader of TTP in launching assault on military. (Opel and Shah, 2009)

Despite the apparent triumph of military there is continued skirmishes and the stubborn militants are putting the locale under various ban. Resultantly the children are crippling due to no access of polio vaccination. The clerics in Mohmand agency have termed it un-Islamic to facilitate the children with vaccination. In spite of killing of many militants there is still violence and security of the area is trembled.

d.Orakzai agency: Orakzai agency is of paramount value for militants because from here they launch assaults on military in Waziristan and Afghanistan. Here, minority of Shia is residing due to which perpetual rift existed between Shia and Sunni. Moreover, an ongoing tussle exists as SSP and LeT are in confrontation with TTP and Lashkar-e-Islam. There occurred several incidents which led to enhanced sectarianism as in October 2006, skirmishes happened between the two sects after Sunni hardliners tried to prevent Shias from visiting a centuries-old shrine, which is sacred for both communities. Sunni leaders through a summon abstained Shia from usage of roads in Shia dominated areas as well as from construction of new roads in the agency, essentially splitting the agency into Sunni/Shia groups. To cap it all, Militants have attacked Jirga convened to resolve sectarian conflict. (Paracha, 2008) Orakzai-based miscreants were master mind for the 9 June 2009 bombardment of the Pearl Continental hotel in Peshawar which caused great terror. The Pakistani military has to control miscreants by aerial strikes in Orakzai Agency in 2009. Orakzai agency is overwhelmed by miscreants and security personnel are engaged since long there to succumb incendiary propensities. Resultantly, military has vanquished militants to greater extent by dismantling their safe havens. (Daily Times, 2012)

e.Khyber agency: In Khyber agency militant groups comprised Ansar-ul-Islam (Brother of Islam) led by Pir Saif ur Rehman, Tanzeem Ansar-ul-Islam-Qari Mehboob-ul-Haq, Amr Bil Maruf Wanahi Anil Munkir led by Haji Namdar, Lashkar-e-Islami (Army of Islam) led by Mangal Bagh. This militancy began in 2003 when a Taliban-style organization Amr Bil Maruf Wa Nahianilmunkir (promotion of virtue and prevention of vice) was set up by Amir Haji Namdar Khan, (killed in 2008 by missile) who ordered an austere living style and punishment for breach of any provision of his settled code (included head covering for women and beards for men). This was aghast for local people, who were spending lives according to relaxed religious provisions. He used Tirah valley as a spot from where to assault into Afghanistan on coalition forces. At the end a targeted...
operation was launched in Malikdinkhel area Bara tehsil in Khyber agency of FATA on October 20, 2011 to curb insurgency.

The Khyber agency which is surrounded by orakzai, Mohmand agencies is hub of militancy. There are three main militant groups operating in Khyber Agency, Lashkar-i-Islam (LI) led by Mangal Bagh, who has been disconnected ideologically from Afghan Taliban and is operating independently, Ansar Islam (AI) led by Maulana Ghazi Meboob ul-haq has its own trial and court set up. (Crisis Group Report, 2009) and TTP which is headed by Tariq Afridi. There has been contesting ground among these three groups. For curbing militancy Special forces (SFs) have launched four operations. Pakistan military launched operations in this agency which afterwards succeeded in reconciling two militants groups by contracting agreement with them on July, 2008 but it had lasted only for one year due to adamant stance of militants. (The news, July 2009)

There was unbridled rampage from militants, for which in 2008 Sirat Mustaqeem (Righteous Path) operation was launched in Bara Tehsil due to mass killing of minorities by LI militants. This operation was followed by Darghlam (Here I came again) on September 1, 2009. The most recent operation Khwakh Ba Di Shum (I will teach you a lesson) was launched on November 24, 2009. Nonetheless, numerous operations have been conducted but in Khyber agency the militancy is in upward spiral. Albeit militants were vanquished and ousted from this territory but they were reinvigorated with receding military operations.

**f. Kurram agency:** Kurram Agency is spot of sectarian violence, where Shia Turi is fighting the Sunni Banghash tribe. Punjabi Talibis are troubling Shia communities by hindering their access to essential goods. This confrontation was escalated since April 2007 with an assault on Shia procession which have taken lives of fifty people and caused standoff in this Agency. Approximately eighty percent of Local population is Shia, who are affiliated with TTP Punjab based Deobandi groups backed by Lashkar-e-Jhangvi (LeJ) and Sipah-e-Sahaba Pakistan (SSP). Stern sectarian labeled TTP leader Hakimullah Mehsud and the "scourge of the Shia in Kurram", (Daily Times, August 2009) is dynamic figure in Kurram. The Lashkar-e-Islami has also been stretched to Kurram agency.

Operation Koh-i-Sufaid (White mountain) was conducted in Kurram agency between May 2, 2011 and August 17, 2011. Countless people of both sects have been injured and lost their precious lives.

**g. North Waziristan:** Graphically, the whole of Waziristan is a single unit. However for the administrative convenience it has been split into two agencies that are North and South Waziristan. Mir Ali Sub division lies in North Waziristan Agency. It is bounded by Kurram Agency and Khost District of Afghanistan in the North, Frontier Region Bannu in East, South Waziristan Agency in South, Miranshah in the West and Razmak in South West. The total area is 4707 square kilometers. The historical analysis of law and order situation is necessary in order to fully understand the recent situation. British never wanted to enter into tribal areas initially because of its economic insignificance. Henceforth Russian movement in Central Asia, forced them to maintain control of the area initially Britian maintained only a skeleton administration. As both the Wazirs and Daur used to be at logger heads amongst themselves, the Daur felt it best options for their protection from Wazirs and to establish peace in the area through British intervention. Henceforth, the footsteps of British touched this soil in 1894 by making contract with tribes. The Britishers introduced a registration system of land record and revenue administration for the most fertile part of the Tochi valley. In 1910, North Waziristan was made a full fledged agency, with its Head Quarter at Miramshah.

In 1919 during Third Afghan War, when Wazirs rose in revolt, British decided to buildup regular garrison in Waziristan so as to reduce the possibility of a similar debacle in future. The Jirgas in Waziristan decided in favour of joining Pakistan. Quaid-i-Azam decided to withdraw army from tribal areas and left the defense of the area to local tribes. Wazirs and Mehsuds formed the bulk of Lashkar that moved to Kashmir in 1947 from NWFP.

Afghanistan never enjoyed good relations with Pakistan mainly because of “Pakhtunistan” issue and had good relations with India. But Afghans never threatened our border during 1965 and 1971 wars due to presence of loyal tribes in FATA area. The area remained peaceful during Russian invasion of Afghanistan despite bomb blasts in various parts of Pakistan in 1980 with the involvement of Russian, Afghan and Indian Intelligence Agencies.

There was no worth mentioning incident in the area till 9/11. After start of “Operation Enduring Freedom”, tribesmen from all tribal areas in general and Waziristan in particular went to Afghanistan to fight
against Americans and Northern Alliance. Similarly after initial success of Americans in Operation Enduring Freedom, there was influx of foreigners in Waziristan.

Till 2005, situation in Waziristan remained bridle, nonetheless, infiltration to Afghanistan for operation against Americans and NATO was impeded, hardly any action was taken against army by the locals. It was only after 2005 when military permanent stationed in North Waziristan Agency and South Waziristan Agency, the locals felt betrayed and started operation against Pakistan Army.

North Waziristan has been deemed safe haven of foreign militants as Uzbeks and Arabs linked to Al-Qaeda’s by the US. Haqqani network is nightmarish for the US which has put the US on tenterhooks. Albeit Haqqani network founder Jalaluddin Haqqani and his son Sirajuddin Haqqani presence in Waziristan has been uncertain but the US is claiming so. The US has been in covert operations in the shape of drone strikes in Waziristan since 2004 which have caused death of civilians besides high profile militants. As regard the Taliban groups in North Waziristan, Pakistani Taliban groups led by Hafiz Gul Bahadur and Maulvi Nazir Ahmed are active members. Various peace agreements have been conducted with Bahadur, Nazir and other groups in the agency in 2006 and 2007. These agreements have remained unproductive and just provided space to the militants to operate against the coalition forces in Afghanistan. The Bahadur led group not only continuously launched attacks against NATO and ISAF in Afghanistan but have broken peace deal, in spite Pakistan military still abstained from launching operation against militants in North Waziristan while keeping some grounds in consideration. (The News, June 2009)

Tehrik Taliban Pakistan (TTP) is engaged in frequent suicide blasts which have costs thousands of innocent lives. Their callous propensities have been manifested by attacking fourteen years girl Malala Yusafzai of Swat, on the ground that she advocated female education. Simultaneous to this tragic incident, Pakistan interior ministry was considering military operation in North Waziristan. (Dawn, October 2012)

As contemplate the Pakistan and the US interests in north waziristan then there is difference, as for Pakistan Hafiz Gul Bahadur group is not troubling because they have only tussles with them within North Waziristan’s boundaries. They are enemies to the US because she deemed them supporting Al-Qaeda and assaulting coalition forces in Afghanistan. Due to this diverse interests both Pakistan and the US would always be at daggers drawn and with different strategies and policy options. The more the US wants include her demand for military operation North Waziristan, Pakistan is hitherto unwilling for this operation while keeping resources and troops in consideration. Pakistan must concentrate on own nation security rather than to concede with others dictation. (Yusafzai, The News Report, 2013)

South Waziristan: South Waziristan is with major tribes the Mehsud and the Wazirs. Waziristan is a safe haven of religious militancy, as TTP leader Baitullah Mehsud’s planned from this agency till his death in Drone strike. A Peace agreement was contracted between military of Pakistan and militants of South Waziristan by Maulana Fazlur Rehman’s Jamiat Ulema-e-Islam (JUI-F), the Mutahidda Majlis-e Amal (MMA), who lead NWFP government at that time as being main party in 2004. This agreement proved flourishing ground for Taliban as they had infested to far flung tribal areas and established their austere trial and tribunal system. The TTP, are closely allied to another terrorist group in Malakand district Tehrik-e-Nifaz-e-Shariat-e-Mohammadi (TNSM). The Al-Qaeda abode in Waziristan have given tough time to Pakistan’s military by kept them engaged in Lal-Masjid in Islamabad, Swat, Bajaur in the north, and Tank and D.I.Khan in the south in order to escape from focus in Waziristan. (Aziz, 2010) Al-Qaeda has realized that it cannot launch a successful operation in West therefore it is now in perpetual flux in perpetrating terrorism inside Pakistan and Afghanistan. It is flourishing sanctuaries in Pakistan for assaulting coalition forces in Afghanistan and escalating extremism in Pakistan. All the AL-Qaeda, Afghan Taliban and their associated are creating vaccine for their Jihad based activities. (Ibid, p. 11) Taliban have strengthened their roots in Waziristan, where they have killed more than 270 influential of different areas besides policemen and soldiers. These heinous acts are anguish of frustrated people at ruling class and state. Government writ has been vanished in those areas under stronghold of Talibans. (Ibid, p. 22)

Pakistan military has launched Tri-star one and two operation in South Waziristan to eradicate the menace of terrorism from this agency most probably on the U.S. pressure. (Iqbal, 2009) Militants have been succumbed to the greater extent and developmental work by civil administration has been also in process. (MacDonald, 2009) At last resort due to myriad terrorist assaults everywhere in country and military militant attack on military Head Quarter in Rawalpindi compelled military to launch major ground operation there. (The Dawn, October 2009) People of south Waziristan suffered a lot due to exodus and now after completion
of one year these people yearn to return but are scared of militants there. (Los Angles, 2010) Pakistan in order to curb Hakimullah Mehsud, strived to take Pakistani Taliban Gul Bahadar and Maulvi Nazir in confidence and to secure their support. But this arrangement was suspected by civil society for unreliable nature of Taliban, for being their engagements with Al-Qaeda in inflicting atrocities in tribal areas. Operation Raah-e-Nijat was launched and its three years after Sararogha had been cleared. How internally displaced people are allowed to come back to their homes. Main strategies used by militants are hit and run and to assault on security personnel’s. (Dawn, August 2012) According to figures announced by FATA secretariat in July 2009, 550,000 people were displaced from Bajaur and Mohmand; 80,000 from Kurram; 50,000 from North Waziristan; and 250,000 from South Waziristan, almost majority is from this agency and this figure is escalating with passage of time due to military operation. (Dawn, October 2009)

Recent military and paramilitary operations in Khyber agency in September 2009 have troubled and led to an estimated 56,000 to 100,000 IDPs. (IRIN, 2009) As during the military operations in Malakand in the spring of 2009, FATA residents are barely given notice of imminent airstrikes or sufficient time to leave before the imposition of curfew, resulting in high civilian casualties. Exact figures are impossible to calculate because the military denies access to local and international humanitarian agencies, or the media, to the conflict zones. “The curfews in FATA are different from curfews in normal cities”, said Mukhtar Bacha, a founder and steering committee member of the Aman Tehreek (Peace Movement), a secular NWFP-based grassroots coalition that includes labor unions, political parties, professionals and other civil society groups. “There are barriers preventing access to entire areas. The militants can cross them but it affect everyone else”. (Crisis Group Interview, 2009)

Baitullah Mehsud has escalated violent activities in Pakistan in 2008-09 after the failure of Operation Zalzala (operation Earthquake). (Fair Interview, 2009) There were 2,148 insurgent assault and enhanced suicide blasts in 2008 as there were 746 percent increase from 2005. (Peace Studies Institute, 2009) Chief of Army Staff Ashfaq Kayani made it clear that operation has been launched against foreign forces fighting there, who are callous militants and not against Mehsud tribe. (Kayani Letter, 2009) On August 5, Baitullah was killed in drone strike. (Fair, p. 95)

Pakistan was successful in disrupting TTP command, control in Mehsud areas of South Waziristan. Pakistan Forces transiently secured important Line Of Communications (LOCs) in South Waziristan, Sararogha, Makin and Ladda. There were involvement of 15 Brigades in Raah-e-Nijat operation because it was strategically pivotal to Pakistan therefore Pakistan shifted Brigades from Eastern border to the South Waziristan. Pakistan army objectives in Raah-e-Nijat (way of salvation) operation were to secure line of Communication (LOC), to overcome the menace of militancy by destroying their strongholds in South Waziristan. (Fair, p. 94)

In waziristan operation, air power was used to vanish the abode and sanctuaries of TTP in Waziristan’s mountains. (The Nation, July, 2009) According to analyst it was not appropriate approach for such tough militants who were veteran guerilla fighters. (Ibid) Pakistan government has contracted four peace agreements, three in South Waziristan (2004 and 2005) and one in north Waziristan (2006) but all were subsided by militants on one or other ground. (Monitor, 2006)

Pakistan military has vanquished militants and restored the state’s writ to greater extent. These operations have enabled tribesmen to come out of oblivion and worked for socio-economic provisions.

But Pakistan internal security is at dismay and militancy and extremism are giving a very tough time to the civil government. Due to war on terror Pakistan’s economy is in downward spiral as domestic and foreign industries are not investing here and it led to capital flee. Tourism has been stopped due to insecure and frighten situation in Swat, which has caused social and economic standstill. (Ilahi, p. 167) Former foreign minister Shah Mehmud Qureshi stated that Pakistan has faced financial brunt of US $34.5 billion since 9/11 there is $5 billion loss in foreign direct investment, export has been dwindled with loss of $5 billion and $5.5 billion is in privatization, there is no basic provision for jobs, IDPs rehabilitation have been strained Pakistan’s economy. (Ibid, p. 165) There are direct losses due to war on terror in the shape of loss of human lives and injuries, destruction of infrastructure, huge expenses on security maintenance. Indirect losses are in the shape of loss of employment due to dislocation, capital flee, tourism has been halted, there are mega assaults as in suicide blasts the assassination of Benazir Bhutto and Merriot hotel blast. (Ilahi, Aziz, p. 97) Total terrorism costs in Pakistan assessed is Rs. 430 billion at 2007-08. Pakistan minister of state and economic affairs Hina Rabbani Khar stated that Pakistan has lost $ 35 billion in war on terror since 2007.
In 2007-08 US inflow of economic assistance was $1.9 billion while the loss was $6 billion. (Ibid, p. 105)

The theory of national interests is of prime significance in aspect of foreign policy. “National interests is a concept which could be used to describe, explain and assess the foreign policies of nations.” (Rosenaus, 1964, p. 35) National interest is a basis for evaluating the appropriateness of foreign policy. “Each state plots the course it thinks will best serve its interests.” (Waltz, 1979, p. 113) There are two types of national interests, objective national interests are permanent and embodied factors as geography, ethnicity, history, neighbours, population size and resources. Subjective national interests are transient dealt with preferences of government and policy elites, comprised ideology, religion and class identity and get transform with change of government. (Frankel, 1970) Realists have attributed to the domain of national interests. For Morgenthau, national interests are legitimization of foreign policy while for Kenneth Waltz national interests are survival of state in anarchical world. Anarchy determined the national interests, if not power based but atleast to serve material ends. The states internal preferences run up against challenges of anarchy, which reshaped national interests. (Donnelly, 2000, p. 153) Under anarchy, the primary national interest is security, to defend territorial integrity, protect citizen militarily, either by having adequate means to launch war or by cooperative defence and security arrangements.

Pakistan’s foreign policy stands for cordial relations with immediate neighbours, especially Afghanistan on western border, a country religiously, culturally and strategically connected to Pakistan. Pakistan’s interests in Afghanistan have been stretched to political interests, where Pakistan not only to have favorable Afghan government but to have peaceful western border, to counter Indian enhanced influence, to relegate Pashtunistan issue to the background. Economically, Pakistan wants to have trade and commercial agreements with Afghanistan, where Afghanistan is also dependent on Pakistan for transit route to the outside world. Through Afghanistan as channel Pakistan’s can access the Central Asian Republics, which are rich in oil and gas. Afghanistan has strategic significance for Pakistan by providing defense industries and military training.

When Pakistan and Afghanistan relations are contemplated then both countries national interests are inter-connected because stability of one is leading to stability of other. Both are minor states, where their main national interests are security, survival and to defend territorial integrity. Their foreign policies are to serve the same ideology, religion and culture and to strive against foreign threat to their states. As the national interest theorized by neo-realist conceded that international order is anarchical and national interests should serve material ends. Considering Pakistan-Afghanistan terms then its apparent that despite the host of opportunities, these bilateral relations are acrimonious. The US engagement in Afghanistan has instigated a series of mistrust and accusations by both the states for the sake of national interests. In this background across the border infiltration has muddled security in Pakistan tribal areas and her interests have been transformed into strategic challenges. National interest demand that for defense of territory and population a state has to wage war in case of having adequate means, Pakistan was with no other option than to launch military operation in FATA as these were militants hubs and imminent threat to the state. The use of military force is still continued with ongoing suicide blasts and extremism. Moreover, the turmoil in Afghanistan has led to the radicalization of Baluchistan, where segregation ideology is flourishing with regional and international conspiracy.

Pakistan’s new government led by Nawaz Sharif has taken decisions in consensus during the recently held All Parties Conference (APC), due to which nowadays there is consideration on peace talks with Pakistani Taliban. Since last decade the Taliban have challenged the state writ. Be it Taliban, be it a state, be it Uzbek, be it a group of Turks, be it group of Taliban, none to be allowed for challenging the writ of state. For the very purpose the APC is stepping stone to held peace talks with Taliban. But the unresponsiveness of other side is dismay because Taliban leaders are continuously perpetrating against the state. (Khar, 2013) To my mind the biggest folly, the biggest challenge for the state is to allow non-state actors entry and their survival within the state. This has raised countless questions from our immediate neighbours, extended neighbors and from all over the world, besides it has deteriorated internal security, peace, law and order situation and above all Pakistan equanimity has been destroyed. Pakistan can no longer afford such horrendous challenge to persist any more so peace talks is the only viable policy option in this regard. It is a very good sign that all the political leadership has finally reached a consensus on initiating a dialogue with the Taliban. It has further been strengthened with
the support assured by the Army which is extremely important and vital in this whole process. It will now depend on the positions both sides adopt for commencing dialogue. Issues decided by APC dialogues should be undertaken within specified timeframe, then future strategy should be based on its outcome. (Noorani, 2013) A lot of patience, maturity and sincerity will be required on both sides. If hard positions are adopted on both sides then will be no chance of negotiations e.g., if TTP insists that they don’t recognize the Pakistani constitution or its laws, where do we go from there? As the TTP put forward its preconditions for talks in December 2012 which are as follows:

‘end of Islamabad’s alliance with Washington, the cessation of Pakistan’s participation in the war in Afghanistan, the rewriting of Pakistan’s constitution in accordance with Islamic law, and the refocusing of the country’s military efforts on India’. After couple of days Hakeemullah Mehsud stated that without disarming he is ready to talk and negotiated with government.

By considering these conditions there hardly seems any long lasting peace deal with Taliban. The only way can be when they come to the table, offer politically administred Maliks to be strengthened then the situation can be addressed. (Sherpao, 2013)

Unfortunately, simultaneous to these positive omen in the shape of all parties conference, there occurred some critical incidents which can be detrimental to peace process. The Dir incident was very provocative and dangerous. It understandably angered the Army. There could have been serious retaliation by the Army. However, its leadership showed great maturity and patience. Following this there have been terrorist attacks like the bombing of a Church in Peshawar killing 84 persons and injuring a large number. If such activities continue, it could derail the whole peace effort currently underway. (Khan, 2013) Negotiation can be operated if there exist some pressure on non-state actors. Recent proposals in this regard seems just a damp squib. (Pervez, 2013) There seems muddled scenario for APC because the ongoing is basically religious war between the salafist and others. (Aziz, 2013) Furthermore, Dir incident with General Naizi may adversely affect the ongoing peace talks. However, in every case Pakistan should keep both options open for dialogue as well as military operations. Pakistan peace process will be limited to local Taliban and none to Al-Qaeda, Haqqani Network, Central Asian non-state actors. Moreover, in case of peace agreements there will be guarantee on behalf of local Taliban either to oust these foreign militans from Pakistan territory, or to abide them by law because onwards there can be no illegal residence of non-state actors. (Yusafzai, 2013) But it is a wild goose chase.

3. Recommendations: In context of Pak-Afghan; a peaceful and stable Afghanistan is the only interest of Pakistan. More than a Decade US occupation has troubled not only Afghanistan but Pakistan is also the ultimate victim of Afghan fall out. There is escalating militancy in Pakistan due to non-state actors in the shape of Al-Qaeda and Taliban myriad groups.

Pakistan should firstly undermine militancy and insurgency, through reconciliation process. On Afghan side Pakistan can use her leverage by bringing Taliban, Hekmatyar group to the negotiation table with Afghan government and the US. On Pakistan side, according to time, situation the dialogues should be carried out with all militants who are willing for talks. Albeit the interests of the three countries are not aligned but the best possible compromise can bring peace and harmony in the region.

Secondly, good governance and the writ of state is indispensable for settlement of militancy in FATA. Like the British model the writ of state should be strengthened despite the ongoing insurgencies because it is the best way possible to counter terrorism.

Thirdly, to evolve structure according to local people value system, because abrupt turn of situation cannot end in positive goals.

4. Conclusion: Pakistan being the immediate bordering country and its KPK Province and Tribal Areas get immediate fall out of any turmoil within Afghanistan. The three decades long war in Afghanistan have changed entirely the internal and external security parameters and paradigm in Pakistan. Since 9/11 Pakistan has been experiencing acrimonious situation while her role in the war on terror has been unflinching, nonetheless, the losses in terms of human lives and material suffered by her during this long period have exceeded the gains. Pakistan has been caught in a state of quagmire. The survival and security of FATA is thus at exigency. There is an ongoing imbroglio in FATA where Pakistan armed forces are engaged in a head
on operation to clamp down local Taliban and other non-state actors/insurgents. Pakistan’s Federally Administered Tribal Areas (FATA) is on tenterhooks due to fall out from Afghanistan. The situation has been remained murky since one and half decade and still the peace seems far away. The recent government of Pakistan is head on to give peace a chance by making arrangements for peace talks with Taliban but day to day happening are manifestations of Taliban unwillingness for the same very purpose. On Afghanistan side new political dispensation is going to be emerged and Pakistan policy making bodies have no other option than to wholeheartedly support that new set up and successfully cope with regional dynamics. Pakistan can restore stability by ensuring to keep its own home in order and it is only possible through strong strategies for curbing non-state actors.

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أثر اللغة العربية

تأليف:

الدكتورة نسرين أختر

الدكتورة شجفته نسرين

و علم اللغة التقابلية

يتعلق التقابل بصفة خاصة بناحية أخرى بنسبة هذا الموضوع علم اللغة المقارن يهتم بالبحث عن الصلات الداخلية والخصائص المشتركة بين اللغتين أو اللغات من عائلات لغوية واحدة كأسرة اللغات الهندية الأوربية

لغات المنطقة المتدة من الهند إلى أوروبا. كبيرا من اللغات التي عرفتها وتعرفها الهند و ايران والقارة الأوربية. (1) وناحية أخرى منهج اللغة التقابل هو المقابلة بين اللغتين الإثنتين أو اللهجتين الإثنتين، هدفا إلى

بين مستوى يوضح تواجه ترجع في المقام الأول إلى اختلاف بلغته الأم وهي الأردية أو الفارسية عن اللغة التي يريد تعلمها وهي العربية.
هناك فروق فردية تجعل بعض الأفراد قادرين على أسرع تعلم اللغات الأجنبية نسبة إلى آخرين وعلم اللغة النسيب لا
يهم بهذه الفروق الفردية بل يهم بالفروق الموضوعية وتحديد الصعوبات الموضوعية تتم عن طريق المقابلة بين اللغتين
م اللغة الأجنبية للعرب تختلف عن الصعوبات التي تواجه أبناء اللغة اليابانية في تعلمهم
العربية، وسبب كله هو يرجع إلى اثمانها بعائدة واحدة كما ذكرت الأستاذ والدكتور "همبورج" في كتابها "الكلام واللغات"
أن الباحثين الأوروبيين قد اختاروا طريقة ربط العائلات اللغوية وترتيب اللغات في داخل كل عائلة باعتبارات عنصرية. وهذه
الطريقة الأثنولوجية العنصرية هي المتبقعة لدى اللغوي "فريدريك مولر" و"انطوان مييه" و"مارسيل كوهين". (1)
- همبرجر بتقسيم جديد وطبقا بتقسيمها الجديد ادخلت اللغات البشرية في عائلة اللغات السامية
والحمية والأردنية والجامع اللغات الأخرى التي لا تحتاج إلى التفسير بها لأن اللغتين الأردنية والفارسية تنتميان إلى
اللغات السامية والحمية والأردنية. (2) وتعد اللغة العربية فرعا من فروع اللغات السامية وكذلك الأردنية والفارسية من
مجموعة عائلة اللغات الحمية والآية.

بل استعراض اثر اللغة العربية على اللغة الأردنية يجب على أن القي
لى نشأة اللغة الأردنية في شبه القارة
الهندية، والعلاقات التاريخية بين العرب وشبه القارة الهندية. لنتعلم كيف دخلت الكلمات العربية في الأردنية وحصلت وضعا
مستقلًا في هذه اللغة أي اللغة الأردنية قد ثبت من التاريخ أن الصلة بين الهند والعرب قديمة. ترجع إلى زمن أقدم منذ
صلى الله عليه وسلم (13) وذلك لأن العرب كانوا يأتون إلى الهند وسرايديب قصدًا إلى التبادل التجاري وهناك عدد من الكتب
تذكر اسماء تلك الأشياء التي كانوا يشتريونها من الهند مثل الفلفل وزنجبيل والعود الهندي والتمر الهندي أما أهل الهند
يمرون عليهم عندما كانوا يسافرون إلى الغرب لأن الطرق التي كانت توصلهم تم عبر بلاد العرب. وكانت هذه العلاقات
هور الإسلام تجارية فقط. ثم توسع نطاق العلاقات بين العرب وشبه القارة الهندية بعد ظهور الإسلام فوجدت العلاقات
السياسية والذهبية والعلمية إلى جانب العلاقات التجارية ديمة.
أما العلاقات السياسية بين العرب وشبه القارة الهندية فقد بدأت في عهد سيدنا عمر رضي الله عنه (5)
93 هجري. على يد محمد بن القاسم الثقفي وبقي الحكم العربي الإسلامي
مكران، دبيل وملتان إلى مدة مديدة. كما يراه الدكتور عبد الله مبشر الطرازي يستمر إلى بداية الحكم الغزنوي على ندي
المسلمين أصحاب اللغة الفارسية حوالي سنة 155 هـ. (6) كانت قد نثرت في ارض شبه القارة الهندية بنزول العرب على هذه
الأرض إلا أنها بدأت بالظهور في عهد الحكم الإسلامي الغزنوي وحدث الا
التقاليد خاصة بين السنسكرتية والفارسية مع لغة الدين والمسلمين ما قبل الغزويين (أي العربية) فكان الناس يستخدمون لغة
خليطية وغير مهندية الكلمات والأساليب لتكون وسيلة جديدة لتفهمها بما الناس الجنود والناس من الجنسيات المختلفة (أي من
أهل الهند وأفغان والأتراك والفرس والعرب وغيرهم وتسمر شجرة الأردية الضعيفة آنذاك تنمو وتزدهر بم
باختلاط مزيد بين اللغة العربية المزجية باللغة الفارسية من ناحية، أخرى، فمن الممكن أن نقول أن اللغة الأردية أقترضت
اللغة العربية المزجية بأنوهات.
ألفاظها من العربية الفارسية والهندية والسنسكريتية والتركية واللغات الأخرى المحلية كثيرة. (7) التي تثبت بطرق الرسم

الرسم عن تأثر الأردية بالعربية

أثر اللغة العربية

اللغات الفارسية

اللغة العربية:

اللغات المحلية، العلوم الدينية والعربية

للغة الأردية
إن الأردية تأثرت من العربية تأثيراً عميقاً، ولكن تأثرها من العربية مباشرة بقدر قليل بل هي تأثرت غير مباشرة من العربية أي بواسطة الدين. لأن العربية هي لغة الدين (القرآن) و أيضاً بالفارسية (فاتها تأثرت من العربية مباشرة) أيضاً من اللغات المحلية كانت تتنقل في مناطق "ملتان" والسند "وميلبار" لأن هذه اللغات أخذت حظاً كبيراً من العربية، ويمكن توسيع تأثير العربية في الأردية عن طريق الرسم.

همنا المهم أن تحديد أثر العربية على الأردية مباشرة أو غير مباشرة فالاحتكاك المباشر بين اللغة العربية والأردية يوجد في التاريخ. لأن العرب ظلت تحكم بلاد الهند من 924ه (في الهند والشمالية) وأقدم النصوص الأردية الموثوقة بها ترجع إلى القرن الثاني عشر الهجري أي أن اللغة الأردية ظهرت بعد سبعة قرون تقريبًا ونجد فيها حكومات المسلمين من غير العرب ذي ينطقون باللغة الفارسية وكذلك يجتهدون في نشرها وجعلها لغة رسمية في شبه القارة الهندية.

فيقدر علماء اللغة المحدثون أن الاحتكاك يؤدى إلى تأثير اللغات بعضها في بعض. فلا نكاد نجد أي تأثير أردوى في اللغة العربية، والسبب في ذلك عدم حدوث الاحتكاك المباشر بين اللغتين والملاحظة الأخرى مهمة هي أن اللغة العربية لم تكن لغة رسمية في شبه القارة الهندية إلا لوقت قصير وفي منطقة محدودة هي "المنصورة"،"و الملتان" كما أنها لم تحظ

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تتألف الأبجدية العربية الحديثة من 28 حرفًا وكتابة غير منقوطة وغير مشكلة.
ولكنها أعجمت وشكلت في الأيام الأولى من الإسلام ليتسهل تبليغ رسالة الدين الحنيف إلى الأقوام غير العربية وهذا الترتيب لئة الترتيب القديم.

لي يد نصر بن عاصم و يحيى بن

ر بن عاصم وصاحب الترتيب

الهجازي الحديث على متشابه الحروف في الصورة فابتدى، والباء لأنهما أول الحروف في ترتيب الحروف، والثاني بالباء لتقسيمه بالباء ثم ذكر الجيم من الحروف الأبجدية، مشابهة الصورة، وأخير الهاء لكونها مشابهة بالحروف المذكورة في الأخير، ثم عقب بال칭 للمتشابهة ثم ذكر الصاد عقب الأحرف المتشابهة وذكر العين وعقب بالعين ثم ذكر العين وعقب بالقاف ثم ذكر أحرف كل من الهاء وأحرف العلة.

الدول التي تستخدم الحروف الأبجدية العربية في لغاتها مع إضافة حروف وصلت إلى أكثر من خمسين دولة أبرز منها لأن أثرت اللغة العربية على ثقافتها الإقليمية أيضاً، حيث اللغة الأردية من فصيلة اللغات الأرية الهندية ارتفت.
بامتزاج اللغات الهندية والعربية والفارسية والتركية وأخذت حروفها الأبجدية من اللغات الثلاثة العربية والسنسكريتية والفارسية ويل عدد حروفها الكتابية إلى أحد وخمسين حرفًا لأصواتها المفردة الأردية.(13)

ويهي:
- تنطق مثل الألف في اللغة العربية وهناك ألف أخرى عليها علامة المد "آ" وتنطق مثل ألف المد في العربية.
- تنطق مثل العربية.
- هذه الباء ذات النقط الثلاث تنطق مثل حرف "p" الإنجليزية.
- تنطق مثل العربية.
- (T) في الإنجليزية.
- تنطق مثل حرف (س) في العربية.
- تنطق مثل العربية.
- (ch) في الإنجليزية.
· تنطق مثل العبرية.
· تنطق مثل العبرية.
· تنطق مثل العبرية.
· تنطق مثل (ز) في العربية.
· مثل العربية.
· تنطق مثل العربية.
· تنطق مثل (ي) في العربية.
· تنطق مثل العربية.
· تنطق مثل العربية.
· تنطق مثل (س) في العربية.
· تنطق مثل (ز) في العربية.
- تتنطق مثل (ت) في العربية.
- تتنطق مثل (ز) في العربية.
- تتنطق مثل (ء) في العربية.
- تتنطق مثل (ء) في العربية.
- تتنطق مثل (ء) في العربية.
- تتنطق مثل (ء) في العربية.
- تتنطق مثل (ء) في العربية.
- تتنطق مثل (ء) في العربية.
- تتنطق مثل (ء) في العربية.
- تتنطق مثل (ء) في العربية.
- تتنطق مثل (ء) في العربية.
- تتنطق مثل (ء) في العربية.
- (g) في الإنجليزية.
- تتنطق مثل (ء) في العربية.
- تتنطق مثل (ء) في العربية.
- تتنطق مثل (ء) في العربية.
- تتنطق مثل (ء) في العربية.
- تنطق مثل العربية.
- تنطق مثل العربية.
- تنطق مثل العربية.
- تنطق مثل العربية.

الحروف المركبة الأردية وهي:

(14)

ملاحظة دقيقة عن تأثير الرموز الأبجدية العربية على اللغة الأردية:

- دخلت في اللغة الأردية كل "الثمانية والعشرين" حرف الهجائية العربية كما كانت، والتي زادت عليها هي بعض العلامات أو الرموز منها. مثل أخذت الاء من ال حروف الهجائية العربية وضعت فوق بعض الحروف بشكل صغير ت فوق التاء "ث" والدال "ذ" والراء (ز) فتصيرها إلى حروف سنسكريتية. وأن التي زيدت على كل من حرف ب -

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بعض الحروف تؤدي صوتاً متماثلاً في اللغة الأردية رغم اختلافها في الإملاء والمعاني وحيثما علماء اللغة الأردية غير راضين على بقاء هذه الحروف في اللغة الأردية ويعتبرون بأنها أصوات واحدة عند النطق ولا تهتم بنطقها الصحيح إلا حفاظ القرآن الكريم والقراء الذين يمارسون ممارسة متميزة بالمخارج الصحيحة عند تعلمهم من الصواب (صحيح) ثواب (أجر) من الصواب (صحيح) ثواب (أجر)

صارت (الوجه) سورت (جزء من الآيات القرآنية) هل (المحراه) حل (انتهاء المشكلة) نظر (البصر) نذر (أوجب على نفسه ما ليس بواجب) باعتبار النحوي اشتققت اللغة الأردية من اللغة العربية الأسماء الجامدة والمشتقات الأخرى المستعمرة في الثقافة الأدبية الباكستانية.

ومن المشتقات بعض المصادر التي تستخدم ك العربية
معيار اللغة الأردية باعتبار الصوتي:

- شفوي انفجاري مهمش نظيره المجهور (الباء) العربية.
- وسط حنكي انفجاري مهمش نظيره المتوسط الجيم العربية.
- أقصى حنكي انفجاري مجهور ونظيره المهمس الكاف العربية.
- وسط حنكي احتكاكي مجهور، اقرب حرف عربي له هو الزاي بانتقال المخرج لثوي احتكاكي مجهور.

اللغة الأردية خالية من ظاهرة الإعراب إلا أن توجد فوعدها ضئيلة.

الصوائط "الحركات القصيرة" في الأردية هي نفس الحركات المستخدمة في العربية. الفتحة (زبر) مثل جب، كم، موت.

"  "

"  "

"  "

"  "

ومن جنسها الحركة الطويلة الألف/آلف المد ( ) ( ) ( )
والكسرة (زير)
- جس (من) بـ (بيع)
ومن جنسها كسرة طويلة الياء المد
مثل قريب - مريض -
(بيش) ثك ثك ()
( )
الأصوات في اللغة الأردية مكونة من طائفة من الأصوات الشبيهة بالفارسية والعربية.
• وطائفة أخرى من الأصوات المستعملة في اللغة السنسكريتية وهى التي تشمل على صوت "الهاء" الذي يسبق صوت من أصوات الحروف الصامتة والتي تلفظ كصوت مفرد غير مزدوج مثل حرف الدال الذي يسبق الهاء في غدها.
• الهمزة المفردة تنطق مثل العربية مثل خداei "الألوهية" وفي العربية من الماء "الماني" و انتهائي.
• استعارات اللغة الأردية التشديد والجزم والتنوين من العربية وغير العربية مثل ـ.
• والجزم والكلمات العربية المستعارة مثل أكرم، أعظم
والكلمات الأردية مثل ـ ـ ـ
إن معظم الكلمات العربية التي تنتهي بتاء مربوطة تكتب التاء في آخرها مبسوتة. مثل أخوت، نبوت،

بعض التنوينات مختصة للكلمات العربي فقط مثل قصداً - تفصيلاً. احتياطاً

لا يوجد التأنيث كثير لغات المجموعة الهندو أوروبية سوى بعض ألفاظ التي انتقلت من العربية إلى الأردية مثل ولدين وقطبين.

اللغة الأردية من حيث طبيعتها لغة اشتقاقية وتركيبية كما تشتق كلمة من كلمة أخرى أو تضاف بعض الكلمات والحروف بعض الكلمات والحروف لأخذ المعاني قوية ومختلفة يطلق مثل هذه الملاحظات السووق واللواحق ووصلت هذه المركبات في اللغة الأردية من الفارسية والعربية مثل:

"أن" سابقة تعني بدون أو فاقد الشيء، "ان پرها"أمي "انجان" أجنبي "ان كنت" لا تعدد

"اهل" سابقة بمعنى ذوي أو صاحب مثل: أهل قلم "الصحفي" اهل علم "صاحب العلم" اهل دانش "صاحب الدهاء"

"غير" سابقة مثل غير آباد "فقر" غير معقول "لا يناسب" غير محرم

"باز" لاحقة ومنه جان باز "مغامر" خلاباز "محلق في الفضاء".

" سابقة بمعنى ضيق: تنگ دست "افقر" تنگ دل "بخيل"
" لاحقة تعني جديد، مثل نوجوان "شاب" نوروز "عيد" 

مواطن التشابه الأردية والعربية:

• اللغة الأردية تنفرد اتفاقاً تاماً بالعربية. كما توجد المطابقة في الجملة الإسمية بين المبتدأ والخبر نحو: آم ميثها بـ.

• تطابق اللفة بالوصوف من حيث الجنس نحو: اجها لزكآ ( الولد الجيد) اجهى لزكي ( البنت الجيدة)

• كذلك المطابقة بين العدد والعدد من حيث الجنس والعدد، نحو: جهثا استاد (الأستاذ السادس) جهثي استاني (الأستاذة السادسة)

• كذلك توجد المطابقة بين الفعل والفاعل في اللغة الأردية في الجنس والعدد مريض آيا. ( جاء المريض) مريضه آتي ( جايت المريضة)

ختلاف الأردية والعربية:

• رتبة اللفة تختلف في الأردية تختلف عن الوصوف نحو
كعولا درازة (باب مفتوح)

يقدم الموصوف في العربية خلاف الأردية.

- في اللغة الأردية تقدم المضاف إليه على المضاف. نحو:

إسكا بهائي (أُخوه) تمهاري (مضاف مقدم في العربية على المضاف إليه.

الحروف الجارة كلها في اللغة الأردية مقدمة خلاف العربية. نحو:

- گهر مین (في البيت)  (مضاف مقدم في العربية على المضاف إليه.

حاولت أن أجرى دراسة تقابلية بين العربية والأردية على المستويات الثلاثة الصوتي واللفظي وال نحوي مبنية على تأثير العربية في الأردية. وما قامت بالمقارنة لأن المقارنة تكون بين اللغات تنتمي إلى أسرة لغوية واحدة وقربية بعضها ببعض مثل العربية والسريانية. ليست العربية والأردية لأن لا يوجد بينهما أي شيء من قبيل ذلك على الإطلاق ومقارنة بينهما مثل مقارنة البرتقال بالتفاح. فممكن أن نقارن بين النصين الأدبيين أو ثقافتهما ولكن ليس بينهما لأن العربية لغة جزيرة سامية من اللغات الجزيرية فقط بينما الأردية لغة هندية أوروبية.
1. Introduction to contemporary linguistics semantics. G.L Dillon USA, 1977, p 136

2. الكلام واللغات، أ.د. همبورجر، باريس، فرنسا، 1951، ص23

3. اردو ادب کی مختصر تاريخ. د. آنور سدید، ص14

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GREEN SYNTHESIS, CHARACTERIZATION AND BIOLOGICAL EVALUATION OF SILVER NANO PARTICLES USING AGAVE AMERICANA, MENTHA SPICATA AND MANGIFERA INDICA LEAVES EXTRACT

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ABSTRACT: Green synthesized silver nanoparticles of Agave americana, Mentha spicata and Mangifera indica leaves were characterized employing high resolution UV-VIS, XRD, SEM, EDX and TG-DTA operations. From the analysis it was proved that silver nanoparticles were pre-eminently forged. The biosynthesized silver nanoparticles were then subjected to antimicrobial trails against pathogenic bacterial and fungal species and thus signifying excellent activity of Agave americana silver nanoparticles against Methicillin resistant Staphylococcus aureus (96%), E.coli (95%) and Fusarium oxysporum (89%). Good to moderate antimicrobial activity was signified by Mentha spicata and Mangifera indica silver nanoparticles. Excellent antioxidant activity was signified by Mentha spicata silver nanoparticles as highest dilution of 300µl (79%) while Mangifera indica silver nanoparticles signified excellent phytotoxic activity at highest dilution of 1000 µl (88%). No hemagglutination reaction was observed by the silver nanoparticles.

Keywords: Agave americana, Mentha spicata, Mangifera indica, Silver nanoparticles

Introduction: Green synthesis of silver nano-particles is transpiring domain of nanotechnology as the techniques exploited are reckoned to be environment-friendly and impregnable than other alternative conventional strategies [1]. Manipulations of silver nanoparticles specifically from plant extracts are entailed by the global commerce due to their substantial pertinence in health and industrial sphere [2]. Silver nanoparticles play a prime part in fields of clinical therapeutics predominantly antimicrobial and anti-inflammatory prospective are highly reputed. They are also accounted to be utilized in medical contrivances along bare quandary of nanotoxicity [3].

Agave americana, a monocarpic succulent ornamental plant customarily familiarized as American aloe and Century plant belongs to family Agavaceae having 2m lingering grayish-green leaves and huge yellow flowers [4]. It is native drought tolerant Mexican plant but is dispersedly cultivated across Pakistan, India and other Mediterranean countries [5]. The long fibers that exist in the leaves are availed to produce rope, mats and sturdy clothing. These fibers are adequately vigorous to be embroidered on leathers wears. Agave saccharine nectar is commercialized as natural sugar comprehending less glycemic index due to exorbitant fructose contents. The sap are cumulated and brewed from flowering stems to produce alcoholic drinks such as tequila and pulque [6].

Mentha spicata habitually entitled as Spear mint is herbaceous perennial small plant that belongs to family Lamiaceae [7]. It is native Europe and South Asian herb but widely distributed across the planet [8]. It is used to manufacture spearmint oil which own carminative and aromatic properties. It is also used in manufacturing of soaps, shampooos, toothpaste and confectioneries due to its strong essence [9]. It also possesses tremendous antioxidant, antimicrobial properties and is widely used as seasoning by the Indians [10, 11]. Mangifera indica conventionally known as Mango plant belongs to family Anacardiaceae. It is cultivated extensively across temperate regions of the world, but wild variety native to India. It has been exploited to be used in traditional folk medicine as it possesses
anti-emetic and anti-diuretic properties and aptness to treat diarrhea, acidity, kidney and heart maladies [12]. From the eminent prosecution of green synthesis of silver nanoparticles, the research study was plotted out via maneuvering aqueous leaves extracts of *Agave americana, Mentha spicata* and *Mangifera indica plant* for facile and expeditious mass production of affordable large scale silver nanoparticles under commending conditions.

**Materials And Methodology**

**Plant Material:** Leaves of *Agave americana* plant were amassed from District Peshawar, Khyber Pakhtoonkhuwa (KPK), Pakistan and were prior to identification by Ghulam Jelani, Department of Botany, University of Peshawar (UOP), Pakistan.

**Extraction:** Leaves of *Agave americana* were washed several times with water to unfasten the dirt. Then the cleaned plant materials were shade dried to omit the residual moisture. The plants were then pulverized into fine powder using electrical grinder. Further aqueous plant extract were prepared by boiling 25g of pulverized leaves in 500mL of sterile distilled water for half an hour minutes. Then the aqueous extract was cooled and filtered at room temperature aiding filter paper Whatman No. 1. Collected filtrate was reserved at room temperature for further proceedings.

**Synthesis Of Silver Nanoparticles:** From prepared aqueous leaves extract 10ml was added to 90ml AgNO$_3$ (1mM) solution at room temperature. The concoction was subjected to shaking water bath at 75°C for 1 hour with constant shaking. After 1 hour the color of the concoction changes from yellow to dark brownish black indicating reduction of Ag$^+$ ions to Ag$^0$ nanoparticles. Finally prepared nanoparticles solution was concentrated under 50°C C aiding rotary shaker. Concentrated green synthesized silver nanoparticles were dried at room temperature in sterile petri-plates.

**Characterization Of Silver Nanoparticles**

**Uv-Vis Spectroscopy:** The optical properties of green synthesized silver nanoparticles were measured at room temperature by UV-VIS spectrophotometer (Shimadzu UV-1601) which was operated at a resolution of 10 nm between range of 350nm and 500 nm.

**X-Ray Diffraction Measurements (Xrd):** Crystalline metallic properties silver nanoparticles were examined by X-ray diffractometer system (JDX-3532) equipped with Cu Ê (â) radiation of 1.54187nm wavelength, using Ni as filter and at a setting of 30 kV/30 mA.

**Scanning Electron Microscopy (Sem):** Evaluation of silver nanoparticles was done using SEM (JEOL-JSM-5910) model. Thin films of prepared silver nanoparticles were subjected on carbon coated copper grid. Extra solution was wiped out aiding blotting paper. The thin film was then allowed to dry by placing it under mercury lamp for 5 minutes and subjected to electron microscope for evaluation at 150X, 500X and 1000X magnification.

**Energy-Dispersive X-Ray Spectroscopy (Edx):** Elemental composition of silver nanoparticles was determined by Energy-Dispersive X-Ray Spectroscopy (INCA-200) model. The evaluation was used to assure that the nanoparticles suspension contains nothing but silver.

**Simultaneous Thermogravimetric And Differential Thermal Analysis (Tg-Dta):** Evaluation of physical and chemical properties of silver nanoparticles was determined by Simultaneous Thermo-gravimetric and Differential Thermal Analysis (Shimadzu DTG-60/DTG-60A) model. Mass gain and loss of nanoparticles are determined at variable increasing temperatures.

**Biological Studies Of Silver Nanoparticles**

**Antibacterial Studies:** Antibacterial studies of biosynthesized silver nanoparticles against *Pseudomonas aeruginosa, Methicillin resistant Staphylococcus aureus (MRSA), Vancomycin resistant Staphylococcus aureus (VRSA), Proteus mirabilis, Escherichia coli, Streptomycies griseus and Bacillus subtilus* was determined using the agar diffusion assay [13].

Autoclaved nutrient agar medium (Sigma-Aldrich, Germany) was prepared and poured into autoclaved petri-plates. Further 24 hours old test bacterial species was uniformly streaked on the medium. Then with aid of flame sterile borer, 6 mm size wells were made in the poured medium. 100 µl of green synthesized silver nanoparticles in DMSO (3 mg/ml) was added into the appointed wells. Amoxicillin dissolved in DMSO (0.5 mg/ml) was used as positive control while sterile DMSO was used as negative control. For better diffusion of test sample, the petri-plates were...
held untouched for two to three hours in the sterile environment of laminar flow hood. After 24 hours of incubation at 37°C, bacterial growth was observed by measuring zones of inhibitions.

**Antifungal Studies:** Antifungal studies of the biosynthesized silver nanoparticles against *Verticillium, Aspergillus niger, Aspergillus parasitica, Fusarium oxysporum,* and *Penicillium* was determined using agar tube dilution assay [13]. Stock solution at concentration of 24 mg/ml of green synthesized silver nanoparticles was prepared in DMSO. 5 ml autoclaved Sabouraud dextrose agar (Sigma-Aldrich Germany) was prepared in autoclaved test tubes for the growth of fungal species. To the sterile medium, 67.6 µl stock solutions were added in laminar flow hood. The test tubes were cooled in slanting position to congeal. Further with aid of flame sterilized inoculating loop, fresh culture of every fungal strain was inoculated to slants. DMSO and Miconazole were used as negative and positive control specifically. All the test tubes were incubated in an incubator for 3-7 days at 28°C. On final day of incubation, the visible linear non-mycelia growth inhibitions of fungal strains were computed in comparison to controls.

**Antioxidant Studies:** Antioxidant studies of green synthesized silver nanoparticles were evaluated by their ability to eliminate the free radicals. The antioxidant studies using the 1, 1-diphenyl-2- 8 picrylhydrazyl assay was determined as per reported procedure [13]. The reaction concoction held 1000ml DPPH in methanol and different concentrations (100, 200, 300 µg/ml) of compounds. Absorbance at 517 nm was determined after half an hour at room temperature and finally antioxidant activity were computed as a percentage of the radical reduction. Experiment was run in triplicate. DPPH was used as a reference compound.

**Phytotoxic Studies:** Green synthesized silver nanoparticles were evaluated for phytotoxic studies against *Lemna minor* as per determined procedure [13]. 30 mg/ml stock solutions of nanoparticles were prepared in commercial grade methanol. E-medium was prepared for the growth of *Lemna minor*. Then test sample at concentration of 10, 100 and 1000 µg/ml were poured to autoclaved petri-plates that left at room temperature to vaporize the methanolic content. After vaporization of methanol, 20 ml of the E-medium was poured to all test petri-plates. Finally healthy sixteen *Lemna minor* were picked and appointed to test petri-plates. The petri-plates were then incubated at 28°C for 7 days aiding incubator. The results were computed at the end of incubation.

**Hemagglutination Studies:** Hemagglutination studies of silver nanoparticles were evaluated as per determined procedure [13]. Stock solution (1 mg/ml) was prepared at the variable dilutions i.e. of 1:2, 1:4, 1:8 and 1:16 in DMSO. Fresh blood samples from healthy subjects were collected and centrifuged on the same day of the evaluation. Using phosphate buffer, 2% RBC’s suspension was prepared from the centrifuged pellet RBC’s. Then from each dilution, 1ml sample was held in autoclaved test tube and to it 1ml of the RBC’s suspension was added. Reaction mixture was incubated at 37°C for half an hour aiding incubator. Finally agglutination reactions in form of smooth button formation were evaluated, indicating positive results.

**Results And Discussions**

**Characterization Of Silver Nanoparticles**

**Uv-Vis Spectroscopy:** From UV-VIS spectroscopic analysis, it is validated that the max for the silver nanoparticles lies in range of 350-500nm wavelength. For *Agave americana* and *Mangifera indica* silver nanoparticles, max was observed at 430nm owing highest absorbance of (0.72) and (0.81). While *Mentha spicata* silver nanoparticles, max was observed at 410nm owing highest absorbance of (0.68). Spectroscopic results are summarized in (Figure 1), thus manifesting it as green synthesized silver nanoparticles.
X-Ray Diffraction Measurements (Xrd) : From crystallographic evaluation of the biosynthesized silver nanoparticles sample, it was validated that all of the three the fabricated silver nanoparticles possessed polycrystalline structure as notified as intense graphical peaks in complete spectrum of 2theta values ranging from 10°-80°. Results are displayed in (Figure 2a,b,c).

Figure 2a,b,c: Graphical representation of XRD assessment of green synthesized silver nanoparticles from Agave Americana, Mentha Spicata And Mangifera Indica

Scanning Electron Microscopy (Sem) :From SEM evaluation at 500X and 1000X magnification, the structure and shape of synthesized silver nanoparticles were validated thus revealing polycrystalline structure. Results are displayed in Figure (3a,b,c).
Energy-Dispersive X-Ray Spectroscopy (Edx): From elemental evaluation of synthesized silver nanoparticles, it is validated that composition of silver nanoparticles is precise and consists of (34.91%) weight of silver for Agave americana silver nanoparticles, (9.96%) weight of silver for Mentha spicata silver nanoparticles and (9.93%) weight of silver for Mangifera indica silver nanoparticles along with other elements such as organic carbon, oxygen, magnesium, silicon, sulphur, chlorine, potassium and calcium.

Results are displayed in (Figure 4a,b,c).
Simultaneous Thermogravimetric And Differential Thermal Analysis (Tg-Dta): Mass loss at variable temperatures for silver nanoparticles were evaluated and from the results it was validated that from reduction in mass and activity of compound was notified by temperature increase in range of 200°C – 800°C, thus concluding it as thermally sensitive compounds. TG-DTA results are displayed in (Figure 5a,b,c).

![Graphical representation of TG-DTA assessment of green synthesized silver nanoparticles from Agave americana, Mentha spicata and Mangifera indica](image)

**Figure 5a,b,c:** Graphical representation of TG-DTA assessment of green synthesized silver nanoparticles from Agave americana, Mentha spicata and Mangifera indica

Biological Studies Of Silver Nanoparticles

**Antibacterial Studies:** From the antibacterial studies of silver nanoparticles it was validated that silver nanoparticles of *Agave americana* plant owned excellent antibacterial properties against *Methicillin resistant Staphylococcus aureus* (96%) and *E.coli* (95%). Good activity was observed against *Vancomycin resistant Staphylococcus aureus* (76%), *Proteus mirabilis* (72%) and *Bacillus subtilus* (64%). Moderate activity was observed against *Pseudomonas aeruginosa* (48%) and *Streptomyces griseus* (45%). While silver nanoparticles from *Mentha spicata* owned excellent activity against *E.coli* (83%) only rest of bacterial species were moderately restrained. In case of *Mangifera indica* silver nanoparticles, good to moderate antibacterial activity was observed against all the test organisms. Results are summarized in (Figure 6). From antibacterial studies of biosynthesized silver nanoparticles, it has been manifested that silver nanoparticles possessed pre-eminent antibacterial prospective and can assist in industrial, agricultural and medical sphere to cease and terminate pandemics of both gram positive and gram negative bacterial diseases particularly launched by *Klebsiella, E.coli, Proteus, Pseudomonas* and *Staphylococcus* species [14,15,17].

![Graphical representation of antibacterial assessment of green synthesized silver nanoparticles from Agave americana, Mentha spicata and Mangifera indica](image)

**Figure 6:** Graphical representation of antibacterial assessment of green synthesized silver nanoparticles from *Agave americana, Mentha spicata* and *Mangifera indica*
Antifungal Studies: From antifungal studies of biosynthesized silver nanoparticles it was validated that silver nanoparticles from *Agave americana* leaves extracts possessed excellent antifungal activity against *Verticillium* (82%) and *Fusarium oxysporum* (89%), good activity was observed against *Aspergillus niger* (70%) and moderate activity against *Penicillium* (55%). While *Mangifera indica* silver nanoparticles also possessed excellent activity against *Aspergillus niger* (80%) only, Rest of the fungal species growth were less to moderately restrained same as *Mentha spicata* silver nanoparticles activity against *Penicillium* (39%) and *Verticillium* (12%). *Aspergillus parasitica* was resistant to all three test sample. Results are summarized in (Figure 7). From the antifungal studies of silver nanoparticles conducted earlier, it has been manifested that green synthesized silver nanoparticles have the capacity to hinder the growth of fungal strains particularly *Alternaria brassicicola*, *Trichoderma harzianum* and *Fusarium oxysporum*, and thus can be used in treatment of fabrics mainly silk and cotton [16].

![Graphical representation of antifungal assessment of green synthesized silver nanoparticles from Agave americana, Mentha spicata and Mangifera indica](image)

**Figure 7:** Graphical representation of antifungal assessment of green synthesized silver nanoparticles from *Agave americana, Mentha spicata* and *Mangifera indica*

Antioxidant Studies: Antioxidant studies of fabricated silver nanoparticles validated good antioxidant potential and variable dilutions of 100µl, 200µl and 300µl. In comparison to *Agave americana* and *Mangifera indica* silver nanoparticles, *Mentha spicata* possessed better antioxidant properties i.e. (40%), (73%) and (79%) respectively. Results are summarized in (Figure 8). Early studies displays that biosynthesized silver nanoparticles of miscellaneous plants possess higher antioxidant activity in comparison to the plant extract alone and thus are helpful to treat many oxidative stress related diseases [17,18].

![Graphical representation of antioxidant assessment of green synthesized silver nanoparticles from Agave americana, Mentha spicata and Mangifera indica](image)

**Figure 8:** Graphical representation of antioxidant assessment of green synthesized silver nanoparticles from *Agave americana, Mentha spicata* and *Mangifera indica*

Phytotoxic Studies: Phytotoxic studies of biosynthesized silver nanoparticles validated that *Mangifera indica* owned excellent phytotoxic potential at concentration of 1000µl (88%). Less to moderate phytotoxic activity of
silver nanoparticles from *Agave americana* and *Mentha spicata* was observed at variable sample dilutions. Results are summarized in (Figure 9).

![Graphical representation of phytotoxic assessment of green synthesized silver nanoparticles from *Agave americana*, *Mentha spicata* and *Mangifera indica*](image)

**Figure 9:** Graphical representation of phytotoxic assessment of green synthesized silver nanoparticles from *Agave americana*, *Mentha spicata* and *Mangifera indica*

**Hemagglutination Studies:** Hemagglutination studies of green synthesized silver nanoparticles at variable dilutions of 1:2, 1:4, 1:8 and 1:16 showed negative results due to inability to form smooth buttons by agglutination reaction of RBC’s suspension and test samples, hence displaying absence of phytoglutinins.

**Conclusion:** From the above research study we concluded that silver nanoparticles of *Agave americana*, *Mentha spicata* and *Mangifera indica* leaves extract possessed remarkable antimicrobial activity against bacterial and fungal species and thus can be exploited in pharmaceutical industry to formulate topical creams and ointments. It can also be used in food and dairy industry to prevent food borne infections and spoilage. At variable dilutions, excellent to good antioxidant activity was observed by the biosynthesized silver nanoparticles which can be utilized by industrial and agricultural sectors to manufacture non-toxic herbicides and chemicals. Finally no hemagglutination activity was observed due to absence of plant glutinins.

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SECTOR WISE PERCEIVED LEVEL OF EMOTIONAL INTELLIGENCE SKILLS OF SECONDARY SCHOOL STUDENTS

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⁴Assistant Professor, University of Haripur

ABSTRACT: The study attempted to assess the sector wise perceived level of emotional intelligence skills of the secondary school students in district Haripur. Sample was comprised of 600 students studying in secondary schools. The data were collected by using stratified random sampling technique. The emotional intelligence skills of the secondary school students were assessed by six second’s EC-i youth version. This was developed for measuring the emotional intelligence skills of students between ages 7/8-18 years. The test was internationally certified and administered according to the instructions. The raw scores on each competency were summarized by using the descriptive statistics. To measure the perception level of students: mean, standard deviation and standard error of mean were calculated. The scoring range of most of the students was from average to above average level. The spread of scores around mean score was quite low in all the eight competencies of emotional intelligence skills. The study revealed that there was significant difference among students of private and public sector schools in perceiving emotional intelligence skills.

Key Words: Emotional intelligence skills, enhance emotional literacy, recognize pattern, apply consequential thinking, navigate emotions, enhance intrinsic motivation, exercise optimism, increase empathy and pursue noble goals.

Introduction: Emotional intelligence skills play a vital role in an individual’s performance both in a workplace as well as in teaching learning process. The idea of emotional intelligence was first introduced in an organization. The concept of emotional intelligence has become inevitably thoughtful in education sector too. Farooq (2003) stated that learning activities of emotional intelligence in the institutions are very important as they affect the academic achievement during the learning session and in the future. Schools promoting the cause of learning in terms of social, emotional and academic development are more successful presently and are likely to remain successful in the future (Elias, et.al, 1997). They further highlight the common consensus among educators that school must foster the social-emotional development of students. Most of them think partially about the matter as a contributor to children’s health or citizenship. The role of emotional intelligence learning is to improve the academic performance and lifelong learning of students. Society transfers the social values to the next generation through the teaching learning process. Learning is asocial process and schools are the places where these activities are performed. Students learn with the guidance of teachers, company of peers and support of families. They do not learn alone. Emotions are either the facilitators or the hampers in the learning process at schools. Salovey & Mayer, (1990) stated that skills of emotional intelligence can be learnt and improved. Emotional intelligence is the ability of recognizing one’s own as well as others’ feelings for motivating oneself and developing the relations with others. Parker, et al. (2004) stated that positive thinking in students can be developed by attaining the emotional intelligence skills and improving the ability of concentrating on the self-efficacy. This improves the judgment of a person for organizing and executing the course of action and attaining specific type of performance. It also contributes a lot to a person’s
academic achievement. Goleman, (1998) stated that the students who possessing high emotional intelligence skills are always successful in their specialized field of knowledge. The students can be prepared as excellent learners by making them familiar with their needs and socio-emotional intelligence skills.

**Emotional Intelligence:** The capability of emphasizing, persevering, controlling impulses, communicating clearly, making thoughtful decisions, solving problems and working with a view to make friends and success is called emotional intelligence (Stone McCown, Jensen, Freedman, & Rideout, 1998). These abilities enable a person for recognizing and regulating emotions, developing self-control, setting goals, developing empathy, resolving conflicts and improving the competencies which are necessary for leadership as well as powerful involvement of groups (Elias, et al., 1997).

Salvoy & Mayer (1990) explained that emotional intelligence is the branch of social intelligence that possesses the capability of monitoring feelings of one-self and others. It identifies the feelings of others and employs this information for guiding, thinking and acting of a person. It is the ability of emotional reasoning and enhancing thinking. Emotional intelligence is the ability of recognizing emotional responses and relationships, offering reasons and solving problems on this basis. The ability of perceiving emotions, assimilating feelings, understanding and managing information about such feelings is said to be emotional intelligence.

Greenberg et al. (2008) stated the importance of increase in emotional knowledge and emotional abilities. According to their report, the promoting Alternate Thinking Strategies Program is effective in increasing emotion-centered intelligence abilities and reducing behavior problems in elementary school children. They indicate that intervention is very good for the children facing ordinary and serious problems. It is essential for improving the range of fluency and knowledge of words, explaining the emotional go-through and apprehending the different aspects of emotions. The teachers can exercise more power to streamline the emotions of children in classroom. Greenberg et al. (2008) also state that the academic achievement of elementary school children can be improved by allowing them to express emotions more appropriately. Their academic achievement can also be improved by reducing the behavior problems in the classroom (Goleman, 1998).

**Sample:** The study sample was selected in two steps. Firstly, 24 schools were selected by using stratified random sample technique from whole the district with respect to their sector wise settings. Secondly, 25 students were randomly selected from each school. Thus the study sample comprised of 600 students.

**Research Instrument:** The Six Second's SEI-YV, created for the age group of 7/8 to 18 years, was used to measure the emotional intelligence skills of the targeted sample. The SEI-YV comprises of 74 items assessing the Six Seconds model. The model includes three macro areas or pursuits with eight competencies.

**Data Collection:** The schools were personally visited for collecting the data from the students. The data was collected from students in the classrooms with the permission of authorities concerned. Before administering the questionnaire, all the students were briefed thoroughly about the purpose of the study and procedure for completing the instrument.

**Result:** The statistical analysis of the research data comprises the mean, standard deviation, standard error of mean, standard error of standard deviation and their ranges. The conclusions drawn from these tables were at the basis of 95% confidence interval. All the results were computed on the SPSS 16.0 version.

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<td>24.59</td>
<td>4.31</td>
<td>0.25</td>
<td>-0.705</td>
<td>0.481</td>
</tr>
</tbody>
</table>

The table shows that for Public Sector Students the mean score was 38.15, standard deviation 5.01 and standard error of mean 0.29, while for Private Sector Students the mean score was 38.74, standard deviation 6.08 and standard error of mean 0.35. The comparison indicated that the scores for Private sector Students was little consistent than the scores of Public sector Students but the difference was not statistically significant at 0.05 levels. The mean score for Public Sector Students was 33.38, standard deviation 4.43 and standard error of mean 0.26, while for Private Sector Students the mean score was 34.46, standard deviation 4.27 and standard error of mean 0.25. The comparison indicated that the score for Private sector Students was more consistent than the scores of Public sector Students but the difference was not statistically significant at 0.05 levels.

The mean score for Public Sector Students was 30.53, standard deviation 3.88 and standard error of mean 0.22, while for Private Sector Students the mean score was 29.83, standard deviation 4.42 and standard error of mean 0.26. The comparison indicated that the score for Public sector Students was more consistent than the scores of Private sector Students and the difference was statistically significant at 0.05 levels. The mean score for Public Sector Students was 28.43, standard deviation 3.43 and standard error of mean 0.26, while for Private Sector Students the mean score was 29.31, standard deviation 4.24 and standard error of mean 0.24. The comparison indicated that the score for Private sector Students was more consistent than the scores of Public sector Students and the difference was statistically significant at 0.05 levels. The mean score for Public Sector Students was 35.32, standard deviation 4.59 and standard error of mean 0.26, while for Private Sector Students the mean score was 34.61, standard deviation 5.03 and standard error of mean 0.29. The comparison indicated that the score for Public sector Students was more consistent than the scores of Private sector Students but the difference was statistically significant at 0.05 levels.

The mean score for Public Sector Students was 29.05, standard deviation 4.31 and standard error of mean 0.25, while for Private Sector Students the mean score was 29.13, standard deviation 4.54 and standard error of mean 0.26. The comparison indicated that the scores for Private sector Students was little consistent than the scores of Public sector Students but the difference was not statistically significant at 0.05 levels.

The mean score for Public Sector Students was 33.69, standard deviation 4.13 and standard error of mean 0.24, while for Private Sector Students the mean score was 33.62, standard deviation 5.04 and standard error of mean 0.29. The comparison indicated that the scores for Private sector Students was little consistent than the scores of Public sector Students but the difference was not statistically significant at 0.05 levels.
Conclusions: The study has revealed the following key points:
1. The study has concluded that the students perceive positive emotional intelligence skills. They possess enough EI skills for adjustment in school and society. The students with sufficient EI skills may be able to change their classrooms, schools and communities. These emotional intelligence skills are learned, not innate.
2. The skills like enhance emotional literacy, recognize patterns, engage intrinsic motivation, increase empathy and pursue noble goals enable the students to make their place in schools, communities and grow into more caring and responsible human beings. The students in the study have perceived positively in these skills.
3. The study concluded that there was no significant difference in the perception of emotional intelligence skills of students studying in public schools or private schools. However, the students of private schools were more consistent than public schools students.

Recommendations: The aim of all the educational systems at all levels and, indeed, all the teachers are to seek improvement in academic success of the students. The recommendations below hint at seeking to achieve this apparently impossible goal. All that is known about positive emotional intelligence skills relates to academic performance and leads to some interesting suggestions.
1. Emotional intelligence skills program should be started at secondary schools level. SEL programming can help schools to become more effective at guiding students towards becoming literate, responsible, non-violent, drug-free and caring adults. If the secondary schools start teaching emotional intelligence skills and give students a chance to learn, to know themselves and others, to make responsible decisions, to take care of others and understand how to act. This practice will integrate all these principles in their everyday lives.
2. Emotional intelligence skills should be built gradually and systematically. Enough time is required for development of these skills. Research studies show that it will take two to three years for staff and faculty to become competent with a new emotional intelligence-SEI program.
3. Enough time should be spared for these activities.

REFERENCES
THE HOLY PROPHET (PEACE BE UPON HIM) AS A TEACHER AND GUARDIAN

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ABSTRACT: The sacred Prophet (peace be upon Him) has an ideal character for the guidance of the whole humankind until the day of judgement. The Holy Prophet (peace be upon Him) was an outstanding, efficient and effective instructor and a sincere protector which is recognized from the lifestyle of His companions (Sahaba). He provided many techniques of educating that confirm a for instructors. In this article these techniques have been introduced for the advantage of researchers.

Keywords: Muhammad, Education, Guardian, Sahaba,
مُعلَمٌ كَامِدٌ (عَلَیْمُ ﴿۱﴾) مَیۡنَ مِّن جَهَلٍ کا مَتَضَادٌ (عَلَمُ بِعَلَمٍ عَلَمًا، نَقِيضَ جَهَلٍ) مَا عَلَمَتْ بِخَرِکَ کی مَعْنَی بِهِ مَا شُرِّعتُ بِهِ مَعْنَی بِجَهَلِ اَپِی خَرِم مُعَلَمُ نَهُ بُوَّنَیٓ (۱) اِورِحِدَیثٌ اِبْن مُسُؤْدٗ(۲) مِیِنَ: اِلَّکَ غَلِیمٌ مُعَلَمٌ "یَعْنَی آپٗ کو دِرْسَتگی اَوَرُ بِهَلائی کا الابام کُیا گِیاَے جِسَا کِ اللَّهُ تَعَالَی کا قَوْلُ بِی: مَعَلَمُ مَجْنُونٗ "یَعْنَی اسَی کو کُوئی سَکِھاوِیا بِهٔ"(۳)۔

"مَعَلَمٌ بَابِ تَفْعِیلِ سِے اِسَمُ فَاعِل كَاصِبِغَہِ بِی جَسَ کی مَعْنَی بِی تَعْلِیمِ دَنِیَے۔

(رَبِآ رَبِیْتَیَة) مَعَنِی پَالِنَا اَوَر پُروُرُش کَرِئَنَا مَرْبِی اِسَم فَاعِل کَاصِبِغَہ بِی جَسَ کی مَعْنَی بِی تَریبیت كَرِئَنَا وَلَا یَایَلَنَا وَلَا رَبِآ کی مَعْنَی کِسیّ چِیْزَ کا مَلِک کَوَنَا اَوَرُ بِهِ اللَّهُ تَعَالَی کی قَوْلُ یَعْنَی: جَبِک کِ غِیرُ اللَّہ تَعَالَی لِی بَطُور اَضُافَتَ اسْتَعَمَال بُوَّنَی بِی) رَبِیْتَیَة (۴) مَعَنِی بِیِ: "(۴) رَبِآ رَبِیْتَیَة بِیِ: (۴) جَبِک کِ غِیرُ اللَّہ تَعَالَی لِی بَطُور اَضُافَتَ اسْتَعَمَال بُوَّنَی بِی) رَبِیْتَیَة (۴) مَعَنِی بِیِ: (۴) جَبِک کِ غِیرُ اللَّہ تَعَالَی لِی بَطُور اَضُافَتَ اسْتَعَمَال بُوَّنَی بِی) رَبِیْتَیَة (۴) مَعَنِی بِیِ: (۴) جَبِک کِ غِیرُ اللَّہ تَعَالَی لِی بَطُور اَضُافَتَ اسْتَعَمَال بُوَّنَی بِی) رَبِیْتَیَة (۴) مَعَنِی بِیِ: (۴) جَبِک کِ غِیرُ اللَّہ تَعَالَی لِی بَطُور اَضُافَتَ اسْتَعَمَال بُوَّنَی بِی) رَبِیْتَیَة (۴) مَعَنِی بِیِ: (۴) جَبِک کِ غِیرُ اللَّہ تَعَالَی لِی بَطُور اَضُافَتَ اسْتَعَمَال بُوَّنَی بِی) رَبِیْتَیَة (۴) مَعَنِی بِیِ: (۴) جَبِک کِ غِیرُ اللَّہ تَعَالَی لِی بَطُور اَضُافَتَ اسْتَعَمَال بُوَّنَی بِی) رَبِیْتَیَة (۴) مَعَنِی بِیِ: (۴) جَبِک کِ غِیرُ اللَّہ تَعَالَی لِی بَطُور اَضُافَتَ اسْتَعَمَال بُوَّنَی بِی) رَبِیْتَیَة (۴) مَعَنِی بِیِ: (۴) جَبِک کِ غِیرُ اللَّہ تَعَالَی لِی بَطُور اَضُافَتَ اسْتَعَمَال بُوَّنَی بِی) رَبِیْتَیَة (۴) مَعَنِی بِیِ: (۴) جَبِک کِ غِیرُ اللَّہ تَعَالَی L
جو ان کو تیاری آئینی پڑھے کر سنئاں کرے اور کتاب اور دانائی سکھاہیا کرے اور ان (کو پاک صاف کیا کرے۔ بے شک تو غالب اورصاحب حکمت بے۔(7)

دوسری جگہ، اللہ تعالیٰ نے رسول الله ﷺ کی بعثت کو بطور احسان وامتنان کے ذکر فراماکرسانہ بی رسول الله ﷺ کی فرائض منصبی کو تعلیم وترپیت متعین فرمایا جس ساکہ ارشادیاں: "خدا نے مومنون پر بڑا احسان کیا ہے کے مین انبین مین سے ایک پیغمبر بہتے۔ جو ان کو خدا کی آئینی پڑھے پڑھے کر سنئاتے اور ان کو پاک کرتے اور) خدا کی (کتاب اور دانائی سکھاتے بین اور اسے بہت تو ہی لوگ صریح گمراہی مین تھے۔(8) اور

"وہب تو بے جس نے ان پڑھے مین ان پہ مین سے محمد (ﷺ کو پہمبر) بنا کر (بھیجہا جو ان کے سامنے اس کی آئینی پڑھے اور ان کو پاک کرتے اور) خدا کی (کتاب اور دانائی سکھاتے بین اور اسے بہت تو ہی لوگ صریح گمراہی مین تھے۔(9)۔

کلام نبوت کی روشنی مین:

ایک مرقوم حدیث مین آیاںہی:

"عبداللہ بن عمرو سے روائت ہے کہ ایک دن نبی کرم ہے حجرہ سے نکلے اور مسجد وکو داخل ہوئے تودولحقہ پہنچے بیٹھے بونے تھے دونوں مین سے ایک حلقہ قرآن پڑھے اور اللہ تعالیٰ کا ذکر کرتے تھے اور دوراصلہ درس وتدريس مید مشغول تھاتو رسول اللہ ﷺ نے فرمایا جس کہ اوراگر چاہئے تو منع کریں گے ہو جودرس وتدريس مید مشغول ہے توبقی امین میں معلم بهیجاگیاپن پس ان کے ساتھ بیٹھے گئے۔(10۔) ایک دوسری حدیث مین رسول اللہ ﷺ نے خوداپن اپ کواسانی فراہم کرنا والامعل بتایا ہے: جبسا کہ سیدنا جابر بن عبد اللہ رضی اللہ عنہ کی طویل روائت کے آخر مین بہے:

بے شخص اللہ تعالیٰ نے مجهہ جہذکیہ والابنیہ بهیجاپن بلکہ مجهہ تواسان کرنے والامعل بنانک بهیجاگیاہے(11)۔ کی تعلیم ترپیت کو نظریہ

پوراکنا:

رسول اللہ ﷺ نے بعثت بی سے اسی ذمہ داری کوپوری طرح سے
نبھاوا ورخت بونے سے چندن پہلے صحابہ سے اس ذمہ داری کے
پوری بونے پرشادت حاصل کی روایت ذیل اس بات پر شافی دلیل ہے:
"سیدناعبا سے روایت کہ کہ ہے شک نبی کریم نے کوم اول ہی ہم محرکہ دن
خطرہ دیا بہت فرمایا! لگوہا کون سادن ہے؟ صحابہ کرام نے فرمایا ہے
حرام بہ (یعنی اس ہیں ہونے رکھنا راجگنئں وغیرہ کرنا حرام ہے) فرمایا ہے
کون سادبہ صاحبہ کرام نے کبھی کبھی شہریہ (یعنی ہے شہر مکہ ہے اس مین
جنگ اور پہاں کام کرنا حرام ہے) اپنے نے فرمایا ہے فرمایا ہے صحابہ
کرام نے فرمایا ہی مہینہ حرام بہ ہے آپ نے فرمایا ہے شک تہماراخون
اورتمارا مال اورعزتیں تم پرحرام ہے جس طرح ہے دن تم پرورشترم
اورہ مہینہ تم پرحرام ہے آپ نے اس بات کوکنی باردبریا
پہراپنا مبارک اتھا نبی کریم نے فرمایا! ایہ مین نے پنچدیالا ہے
کیامین نے پنچدیابہ سیدناعبا سے فرمایاپس نے فرمایاپس یہ دین ہے
رسالے نے اس ذات کے جس کے قلبے مین میری گاہ ہے ہے شک مین وصیت کوپنچدیالی امت کی طرف
پس پنچدی حاضر غائب کو ہورکھری طرف نہ لوٹوں تم مین سے
بعض بعض کی گردن مانے لگو (یعنی ایک دوسے کی گردن ازاں)
لگو) (۱۲).

صحابہ کو تعلیم دینے کی غرض سے حدیث جبرانی کلیدکی حیثیت رکھتی
ہے کہ جنرینہ یا صورت طالب سکالے جنگ کی اوریہ حجابات
کی تصمیق بہی کرکے لگے تورسول اللہ یا فرمایا یہ جبرانی تھا جو
آپ کو دین کی تعلیم دینے ایک: سیدناعبر سے روایت کہ کہ پر ایک دن رسول اللہ کے ہے بہتہ ہے تھے کہ
اچانک ایک ادیم آئے انتہائی سفیدکر ایک بونے تھے اس کے انتہائی
کالے بال تھے اس پرفسکر ایک اسرا اور نظر نہیں اورے تھے بہم مین سے کوئی اسے
نہ پنچدیانہ تو رسول اللہ کے سامنے بہتہا پہلے دونوں گھنہ رسول اللہ
کے دونوں زندگی سے لگانے ایک دونوں باتوں ایک دونوں زانوں پر کھی
دنی اورکہا! محمد! مجھے اسلام کی خبردینے رسول اللہ نے
فرمایا بک اسلام کہ بہ کہ تواس باتی کے گو فیہہ کہ اللہ تعالیٰ کے سوا کوئی
معبدہ ہویں اور نے مرندوں وزارت کرے زکوة
ادکر اورمہ رمضان کے روزے رکھے اورہی اوریہ اللہ کا حکم کہرے اگری کریکے
اخرات دیاشت کرکے اس نے کہالاپ نے سمج فرمایا اس نے نعمت کیا کہاک
خود آپ ﻦے پوچھتائے اور تعلم کرتے ہیں پھر پوچھتے ہیں جو مجنہے ایمہ کے متعلق بتادین آپ ﻦے فرمایا کہ توادھ تعالیٰ پر، اس کے فرشتہ پر، اس کے کتابوں پر، اس کے وارونوں پر اور اخیراً پر اورتقدير لاتے، اورتقدير پر济南 اوریہرائیہ پریتتاریہ پسی ایمان پورہ آپ ﻦے کہ جے سمجھے ہوئے پہلے کہ ک씩تواسے دیکھ رہے اگر تونبنی دیکھ سکتا ہو۔ تھی جیہ دیکھ رہے (یہ احساس رکھے) پھر پوچھتے ہیں کہ فرماتے ہیں اور مدائی اور تقدیر وارنیہ سے دیکھ رہے اور مدائی اور تقدیر پر اس کے بھلی اور بہتی اور مدائی سے دیکھ رہے۔ آپ ﻦے فرماتے ہیں کہ تھلی تعالیٰ کے اس طرح برنگی کرے کہ گویندیاں رہے اگر تونبنی دیکھ سکتا ہو۔

سے جاتلی پھر پوچھتے ہیں کہ اجماع کے متعلق بتادین آپ ﻦے فرماتے ہیں کہ توادھ تعالیٰ اور اس کی سیرائیئی اور احکامات خود کے پہنچے اور پریمار صحابہ کوہی آپ ﻦے فرض سونب کر اگے تعیین پہنچے کالبمام فرمایا اس حال کہ اورے پورہ کر اور مقدار کے ہو ہو جو مسابے تھے سے سرچسماانی کی عالم میں بھی وقت حصول تعلیمات نبیو مین مصروف رہے۔

سیئندلیوبیریہ سے روایت پر آ پ فرمائے بین کہ مین نے اصحاب صرف مین سے سترائیئی اشخاص کوده‌پاچین پروکار پچادن ہوئے بیانو پیازار (پیازار) پنیاکوئی چیز جس کوہو اپنے دونوں کندھوں کے دومن کانہہ لیے نتوان مین سے بعض کے نصف پنیاکوئی کی بڑا جاتی او برخی کی تبہیوں کے تک توادل کوہی اور ابوب سے اپنے عورت کو ہاتفین کے لیے سیمیت لیتے۔

گھرگھر تعیین کالنظام

اسلام کے بالکل ابتدہ مین رسول اللہ ﷺ کی تعیین پرآموزکر کے دوسروںک قران کی علوم پہنچیئے کالنظام فرمایاتیہوراس مقصود کے لیے باقاعدہ اساتذہ اور معلموں
کومقرفرمایتیاں۔

لیڈا بالکل ابتدائی اسلام میں سیدنامیر(15) کے واقعے اسلام سے خباب(16) کاس کی بن اور اپنے کوفران کی سورتیں پڑھانے سے امرصاد واضح بھی بنا کے رسول اللہ ﷺ نے گھر گھر تعلیم پہنچانے کا انتظام فرمایا تھا۔ اسی طرح رسول اللہ ﷺ نے دوسرے علاقاؤں کی طرف بھی صحابہ کوتعلیم دئے کربهیجاسیدمتعصب بن عریر(17) اورسپندالین ام مکتوم(18) ویگھر ان معلمین میں سے تھے۔

"ابواسحاق سے روایت ہے فرماتے بہ ہم کہ میں نے بڑے بنا عابذ سے سنائے۔

سب سے پہلے بمارے پاس میں کومصب بن عمیر اورابن مکتوم بھرت کرکے آئے اور ہم لوگوں کو قرار دئے سکھائے تھے ان کے بعد باس اور اورسعداور عمر بن اس پہراس کے بعد عمر بن خطاب بہ سے صحابہ کے ساتھ میں۔ منورہ آئے ان کے بعد رسول اللہ ﷺ تشريف لے آئے اب کے ابتدائی رنہ سے میں کی امید پہچانے خوش تھے ان کے کسی اورچیپرخوش دکھائی نہیں دین جب آپ ﷺ تشريف لے اس تہم نے (سیف اسم ربك الاعلی) مفصل سورات) میں یادکیتی(19)

کوتعلیمات آریست کرکے

کے علمی سیرابی

ویبنی عبدالقیس کواحکامات دئے کرائے علاقے کے لوگوں کی تعلیم کے لیے بھیجا۔

"ابوجمرہ سے روایت ہے کہ بھی بن کہ میں ابن عباس کے پاس بیہتہو مجزے اپنے پاس ابنی چارپانی پر بھی میں پس فرمایا:میرے پاس گھرے ربو بہار تک کہ میں نہرے لیے اپنے ملال میں حصہ بناؤں تونمین ان کے پاس دومہینے تک ثُہرا رہا پہرتا فرمایا کہ قبیلہ عبدالقیس کاوفد رسول اللہ ﷺ کی خدمت میں حاضر بھی۔

آپ ﷺ نے دریافت کہ کونسا وفد کی؟ نہ کو ن لوگ بھی؟ انہوں نے کہا کہ رہبے خاندان (لوگ بھی) آپ ﷺ نے فرمایا کہ مبارک بوقوم کو(انا) اس وفد کو (جو کہی ایہ) نہ رسول بن مرندھا بو(اس کے بعد) انہوں نے کہا کہ ہم اپک دو دراز کونے سے آپ ﷺ کے پاس آئے بہ اور بہ اور بہ اوراب اپکے کے درمیان کفار مضركة قبیلہ (پرندہ) بہ(اس کے خوف کی وجہ سے) میں حرمت والے مہیبون کے علاوہ اوراپا میں نہیں اسکے۔ اس لیے میں کوئی اپسی قطعی
بات بتلادیجنی جس کی بہ اپنے پچھے پہ جانے والے لوگون
کوخبردیاں اور اس کی وجوہ سے بھی جنہوں نے بیان مین داخل بوسکے نوائے نے اپنے چاربہوں کا حکم دیا یا پریام کی صحیح
اور اپنے پچھے پہ جانے والے لوگوں کے نے فرمایاک کہ ہمارے جنہوں نے کوی اپنے پچھے پہ جانے والے لوگوں کو
اور مکمل مقصد کے تحت یمن کی ہوگئے تھے کہ دوسرے لوگوں کو جانے والے لوگوں کا کردار کا کسی کمانده کے
تعلیمات ہر کرنے کے لیے یہ سیزین کے یہ کوپینگ کوکسی صاحبی کامانند کے

"سیدنابن عباس سے روایت ہے کہ رسول اللہ ﷺ نے معاذکوئبہم بهمیانہ سے
فرماکہ کہ ان کو واس بات کی گواپی کی طرف بلاک کہ اللہ تعالیٰ کے سوا کوئی
معبدنی اوریہ کہ محمد ﷺ اللہ تعالیٰ کے رسول بہم اگر انہوں نے اس کومن
لیا توہوہ اور پہلا جنگ لے جانے گی کہ اس کی دن رات میں
فرض کی بہم اگر کوامن لی توہوہ کی دن رات میں
فرض کی بہم اگر کوامن لی توہوہ کی دن رات میں
فرض کی بہم اگر کوامن لی توہوہ کی دن رات میں

کسی پیش آنے Issue
جب کوئی ضروری امر پیش آتا تو رسول اللہ ﷺ لوگون کو جمع کرکے وعظ
فرماتے اوریہ لوگوں کے سوات اوریہکات کے شافی جوابات
بھی فرمای کرتے لیکن بھی کتاب علم مین اس بات کے شواب
موجودہ

"سیدنابہریہ فرماتے بہم کوئی کریم ﷺ ایک مرتبہ مسجد میں لوگوں سے

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باتین کرکے تھے کہ آپُ ﷲ کے پاس ایک اعرابی ایا۔ اور کہ اک قیامت کہ بیگی رسول ﷲ نے اپنابان جاری رکھا (تردد) میں بعض لوگوں نے کہا کہ آپُ ﷲ نے اس کی بات کون بس سنی جب آپُ ﷲ نے اپنی بات پوری کی توفرمایا کہ اگر قیامت کے وقت کے پہچانے والے راوی کا شک بھی میں سمجھتاہوں آپ نے اسی بی افرمایا اعرابی نے عرض کیا یارسول ﷲ میں حاضرہوں آپ نے ایک افرمایا کہ عید مین خیانت عالم بوجانے تو قیامت کا انتظار کرنا اعلیٰ اعرابی نے کہا۔ امانت میں ضیاع کا کیا مطلوب ہے؟ افرمایا کہ (دینی) امور(متلاخافت، قضاً، افتاء اور اور مانند) وغیرہ نابل کے حوالے کردنے جانین کے تو قیامت کا انتظار کرنا)23)۔

تعلیم وترپیت کا نوکھا۔

آپ نے نہ نہایت حکیمانہ اسلوب سے تعلیم وترپیت کرتے جس سے کسی کادلہ پہلی نئی ثبوت، اور عمل کرنابھی آسان بوجانامسجدمن پیشبہا کرنے والے شخص کے بارے میں صحابہ کوہہ کرکے سے منع فرمایا اورپھر خودبلاکرنی میں سمجھا۔

"سیدنالو بسرہ فرماتے بین کہ ایک اعرابی مسجدمن داخل بواس وقت آپ بیہٹھے تھے اعرابی نے یسیا۔ اورمحمد ﷺ کوہرخشن دین اورتمہارے ساتھ بیہٹھے بین ان کوہن بخشن اپ نے فرمایات نے اللہ تعالی کی وسیع رحمت کوہنگ کریبہ بورو اعرابی ایک طرف کوہل گیا اورمسجدمن پیشبہا کرنابھی کریبہ بورو اعرابی کہتے کہ اس کے بعڑ کی حقیقت معلوم بیکہ بھی شک آپ نے فرمایا۔ آپ نے مسجد بھی پہ اللہ تعالی کی ذکر اورنمازکے لیے بین اس میں پیشبہا نے کرنابہ صحابہ کوپریا اورس جگہ کی پانی کے ذریعہ صاف کیا)24)۔

کا طالبین کو پیشانی فراخدی کے ساتھ آمید کہ کہ پمارکا۔

وفد بنی عبد قبیس کو خوش آیند الفاظ سے استقبال کر کے وصول کیا۔

"بم سے محمدبن بشار کے بیان کیا، انس سے غنردنے ان سے شعبہ نے ایویمرہ کے واسطہ بیان کیا، من اہب عباس اورلوگوں کے دمیان ترجمانی کے فیاض انجام دیتاتا(ایک مرتبہ) ایک عباس نے کہا کہ تلہ عبدالقیس کاوفدرسول ﷲ کی خدمت مین ایابیاپ نے دریافت فرمایاکہ کون ساوفدی؟ یا بیاکہ کون لوگ بیں؟ انہوں نے کہا رہا رہی ریا اخوان(کے لگے

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ہم(اب) نے فرمایا کہ، مبارک بوقوم کو(ان)یامبارک بواس وفدکو(جے)کے نے رسول(ونہ رہ)مہرمہ بواس(سے)پاس آئے بین اوربماتے اوراپ کے دمیان کافر ماضکرہاہم فیلی(پڑتا)پہ(اس کی خوف کی وہ سے)پس حرمت والے مہینوں کے علاوہ اورایام میں نہیں اسکے اس لیے بہم کونی ایپسی(قطعی)بئٹلادینجےکہ جس کی بے انہے پچھے رہ جانے والی لوگوں کو خبر دے دین(اور)اس کی وحدت سے بس جینے میں داخل بوسکری توائے اگئے انھوں چاربانوں کا حکم دیاوارچارسے روک دیاول انہوں حکم دیاگیا ایک اللہ تعالیٰ برایمان لنائن(پہ)فرمایا کیہ بھیک برایمان لنائن کاکیمطلب بے قانون نے عرض کیا اللہ اوراس کارسول زیدہ جانے بین اپ(ہ) نے فرمایا(ایک اللہ برایمان لنائن کا مطلب بے قانون)بے کی(اس)بات کئے۔ برکراتا نکلا اللہ کے سواوئی معاونین اوریہ کہ محمد(س) اللہ کے سجے رسول بین اورنمازات کرنے، زکوة اداکنالورماہ رمضان کے روزے رکھناورہی کے تم مال غنیمت سے پانچوں حضر اداکرواورچیپزون سے منع فرمایا، دباء، حرض اورمزفت کے استعمال سے اور(جوتھی چیز کے بارے مین)شہبہ کہیں بین کہ ایبوجرہ بسالوقات نقبرختی تھی اوربسالوقات مقیر(اس کے بعد)رسول(س) نے فرمایاکہ ان(بناوں کو) بادرکھوارانپنے بچھے(رہ جانے)والون کویہی ان کی خبرکردو(25)۔

کسی کی کی لیے کر :

ایک شخص گزرگیتی یورسول اللہ نے فرمایا کہ شخص کسی کے؟صحابہ کے جوابات کو سن کر خود وضاحت فرمایا:

"سب سے روابط بے (قال) کہاں کہ ایک شخص نبی کریم(س) کے پاس سے گزرگیتی نے فرمایا!اس شخص کے متعلق یکاپتی بوانتوں نے جواب دیا(جوواب دینے والے ابودرته)پہ شخص اس لائچ پس کہ اگر نے کسی عورت کے پاس نکاح کا اپنیماہ بھیج دیوتا کانکھ بھونے جاگ کے مختلف کے تویقل کرلی جائے اوراگرکوئی بات کے نواس کی سیل جائے اور سب نے سب بے نبیہارم(س) خاموش بوگے۔اس کے بعدیک اورشخص (جومسلمان فرمائیں سے تھا)گزراپ(س) نے فرمایا تم اس کے متعلق یکاپتی بوساحاب کر آم نے جواباعرض کیاچہ شخص اس لائچ پس بے۔"
کہ اگر کسی عورت سے منگنی کی ہے اس کانگھ نہ کیاں اور اگر سفرش کرتے توقیف نہ کی جانی اور یہ کہ توہ اس لائق بے کہ وہ نے سنی جانی رسول اللہ ﷺ نے فرمایا یہ قیراس جیسے عقیدے سے زمین پر جانے سے بہتر ہے(26)。

تعلیم کی اوراسانی کو مدینظرکہ: 

" انس بن مالک سے روایت ہے کہ اپنے نے فرمایاں سپادکرو سختی نہ کرو خوش خبر ایہ نہ نفرت کو عام نہ کرو ایہ نفرت کرنے والے کاموں سے بچو(27)۔"

" عانشہ سے روایت ہے فرماتیں سے میرے پاس بیني اسد کی ایک عورت بہتی تھی توہ اندر اپنے اورکہاہیں کوئی سے مینے سے کہاہیں فلائیں سے کوئی تھا کہ کہ رضا ہو کے لیے کہ مینے کے تھے ان کی نمازون کوڑ نے فرمایا(28)۔"

کسی کام مین منہما کے کوئی کرتا کرتا کہ،

مین کو ثؤمہ نگر کریاں

" بے سے اسماعیل نے بیان کیاہ کہ کم کو مالک نے کہا کہ زیدین اسلم سے عطابین پسارے ابی سعیدیہ فرماتے بیں کہ رسول اللہ ﷺ نے فرمایا کہ مین تمبارے متعلق سب سے زیادہ اس سے خوف کہتاسبون کہ جب اللہ تعالیّ زمین کی برکتی تمبارے لیے نکال دے گااہوچھاگیا زمین کی برکتی کیاہے؟ فرمایا کہ زمین کی چمخ دمکاد سے برائک صاحبی نے نہی کریم سے پوجهاکبہلیانی سے بیانی پیداوسکتی ہے؟ نبی کرم ﷺ اس پر خوش بگئے اورنے خیال کیاہ شایداب پرپویہ نازل بوری بھیاس کے بعد پھیلی پیشانی کوئاک فرمایا ایہ کی اور دریافت فرمایا: بچھئے وہے کہاں پھچئے والے نہ کیاہ حضرت بابو منعیدخدری نے فرمایا کہ اب سے سوال کاہل بہار سے اس کہاہ بھی کاگیاتہ نے اس صاحب کی تعريف کی نہی کریم ﷺ نے فرمایاکہ بھلائی سے توصیر بهلائی بی پیداواتی ہے لیکن یہ مال سرسبز اور خوشگوار (گھاس کی طرح) بے اورچوجیس بھی رطبع کے موسم میں اگنی بینہو حرص کہ ساتھ کہاہ والہ کوہلاک کرہتی بیں بیلاک ایہ قربی پچاندیتی بین ساؤتن اس جانورے جوہبھ جہرکہاہیں کہ جب اس نے کہاہیورا س کے دونوں کوہاہ بھرگئین تواس نے سورج کی طرف منہ کرکے جگالی کرلی اوریہپاہانہ،پیشکہ
کرکھاولاس کے بعد پرلوئٹ کرکھاولاسیا مال بهی بہت شرین ہے جس نے اس حق کے ساتھ لیا وتحق میں خرچ کیا کہوہ بہترین ذریعہ ہے اورجوں نے اس کے ناجائز طریق سے حاصل کیا کہوہ اس شخص کی طرح ہے جوکھاتاجا لیے لیکن اسودہ نہ ہوئی بونتا (29)۔

کے کومتعلمان بنايا: ایک دفعہ سفر میں ہم کو گسل کی ضرورت پہچا آئی توسرخس کی حالت میں ساتھی ہے عسل لکھم میں سے برکت پر پوشموں سے ہے اس کی حالت کے ساتھی کو ہمارے تاریکے نے روح باہمی نے بھی واقع عرض کی تورسول اللہ نے فرماؤں کا آپ نے اپنے ساتھی کو ہمارے تاریکے آپ نے بھی جو چہتے ہیں نے؟ اس کے دویں صرف تیمہ بی کافی تھا۔

"جاہز سے رواجہ ہے آپ نے فرماؤں کہ ایک سفر نکلے توہیں مین سے ایک ادمی کوہپہوں پچاوس نے اس کے سرکوزخمی کریتیوں کو واحتلام بوتواس بابت اپنے ساتھیوں سے پوجاکوئے فرماؤں جو کی کیم ڈی میرہ لیے تیمہ کی اجازت کو جنگ سمجھتے ہیں توہیں نے فرماؤں آپ کے لینے اس کی رخصت کو جنگ نین سمجھتے حالانکہ ہم پانی کے استعمال پر قادیر بوتواس نے غسل کیاجس سے وقت بوتا جب نے رسول اللہ کے پاس وایس لوت کرائے توانہ ہیں بات کی خبردی تورسول اللہ نے فرماؤں کا انہوں نے اسی قتل کردیا اللہ تعالیّ ان کو قتل کردنے کیوں نہ ہو جو چہتے ہے جب ہو نے سمجھتے ہیں کہ بھی ہم بات کے شفتاورجرہنیاہے بہ شک اس کے لیے صرف تیمہ بی کافی تنها اوراپنے زخم پرکپڑی ابادنتے اپنے اجہاد زموسی کواس بات میں شک بہ پہرو اس پرمحسن کرتے اورتمام جسم کودھوئیدیے کرکے کی تصویب کے بنانی:

رسول اللہ نے ایک میم پرصحابہ کرام کوہپچاواترئیا وصر عصر کانبوقیظہ مین اداکرے کی تاکید فرماؤں،وبل پہچائے سے پہلے نمای عصر سکوافت بوجکتا تصویب کرام کی نمایکی ادائیگی کے بارے میں دورانے ظابرون کی یعنی اسی جوگی نمایز هنالاپنوقیظہ، بی مین قضائیہ پرہناب گروہ نے اپنے اجہاد وی میں اعمال مین کسی ایک کی درستگی بونے پریقین ذبہنی تب بونی جب رسول اللہ نے اس کے بارے میں پوجاکوئے دونوں گروہوں کی تصویب بی 2717
"عبدالله بن عمر سے روايت بے آپ نے فرمایاکہ جب بم جنگ احزاب سے وابس لوتے تورسول اﷲ نے بہمن فرمایاکہ تم مبن سے کوئی عصرکی نمازبولقظا سے پہلے نہ پڑھے توان مبن سے بعض نہ عصر کی نمازکاوقت راستے بے مبن پالیان مبن سے بعض نہ کبھاکہ بم تورسول پنچ کر نمازپڑھے گی بعض نہ کبابکہ پنچ پڑھےگی بم سے اس بات کارادہ نہیں تھا پی بات نہیں کرمکی کے سامنے ذکرکی گئی تو قبظ ان مبن سے کسی کوبھی نہوں جھڑکا।(31)۔

بکری کاحصل کرنا:

اسی طرح صحابہ کارئین القوم کے علاج کوعوض سے مشروط کرکے جب بکری حاصل کیا تواس کے جائز اورنوجاز بونی کالن کوشیہ باموارس وقت تک اس بکری کواستعمال نہ کیاجب تک کہ زبان نبوت سے ان کے مال حصن بونے کاداحاصل نہ ہويا۔

"البسوید سے روايت بے کر رسول اﷲ کے صحابہ مبن سے چندلوگوں ایک سفربرواین بونی ہیل تک کہ یصرف کے فیلین مبن سے ایک قبلے پرنازل بونی اوران سے مبن نوازی کرنے کامطالبہ کیانتوہون نے ان کی مبن نوازی سے انکار کیا تواس قبیلہ کے سردار کوکسی چیز نے دھساانوھن نے اس کے لیے برمنک کوشش کی جوکارگزابریت نہ بونی بعض نہ کبھاکہ اگر آپ اس انہے والے قوم کے پاس جانے بوسکتی ہے۔کہ ان کے پاس کوئی چیز بنتونہو ان کے پاس انہ الارکی نے لگے اہ قوم!اپ نے شک بمار آدرہدساگیاں اوریم نے برمنک کوشش کی بہ جس نے اس کو نفع نہیں پنچایاتکیاپہ مبن سے کسی کے پاس کچھ نہیں بعض نہ کبھاکہ تعالیٰ کی قسم بم نعود کرتے بہلیکہ اللہ کی قسم ابند نے آپ کو مبن نوازی کے لیے کبھاکہ نے بمارز مبن نوازی نہیں کی نموہمیں کہ کسی کے پاس وقت نک نہیں کریں کہ لیے کبھا جب تک کہ آپ بمارز لیے کچھ معاوضہ نہ لگائی توانہ نے ان کے ساتھ بکری کے ایک ریورملصلحت کی پنچ اور اس پرلکا لگائے لگاورسورة الفاتحة پہنے لگانگہویلےپاساکہ اس کو اسے پس وہ ایسا بنایا لگایے کے اس کوکوئی تکلف نہ ہو راوي فرماتے بین انہوں نے وہ اپنامعاوضہ پوراوصول کیاجس پران کے ساتھ مصلحت کی نہیں بعض نہ فرمایاکہ اس کو اپس مین تقسیم
کردواس شخص نے کہا جس نے دم کیاتی، اس طرح مت کروہاں تک کہ میں رسول اللہ ﷺ کے پاس جاکر واقع، ذکر کریں۔ اوراس کے حکم کانتظار کریں جب وہ رسول اللہ ﷺ کے پاس آئی اوری، واقع، ذکر کرگیے تورسول اللہ ﷺ نے فرمایا تمین کیامعلوم یہ (سورة الفتحه) علیاً یہ پہلی فرمائیں نے تھیک کیاس کوہاپس مین بانث لواورمیرہ لیے بہی اپنے ساتھ ایک حمص بنالروسل اللہ ﷺ مسکرائے。”

دنیا میں کامائیتین اوراعلی:  
رسول اللہ ﷺ جیسے معلم نے گزرے ہیں اورنہ اپنے گے۔ آپ مشفق ترین اعترافات: 
"معاویہ بن حکم سلمی فرماتے بین کہ جب میں رسول اللہ ﷺ کے پاس ایمانتویں اسلام کے کچھ اورسیکھے لگان کجوداٹیہ مین سیکھ چھکان مین سے ایک ہتھی کہ رسول اللہ ﷺ نے مجھے فرمایاکہ جب آپ چھینکے ہو نے کی حمدبان کریں۔ اورجب کونی چھینکے والاخنگے اوروھو اللہ کا حمدویں کریں توپا اس سے یہ زمرکی الله کہ ہم رواہ فرماتے بین کہ میں رسول اللہ ﷺ کی ساتھ نمازہ تکبہاک ایک شخص چھینگاتاں نے اللہ کی حمدبان کی نویں نے یہ زمرکی اللہ پڑھا اوراوارونچاکرپاکے تولوگون نے مجھے اپنے تیز نظر ان سے دیکھیاں تک کہ میں ان سے اثرلینے لگائیں ہیں کہ کی پمہ مجید نظر ان سے دیکھیاں رواہ فرماتے بین کہ ان سے سبھان اللہ پڑھاپیں جب رسول اللہ ﷺ نے نمازہ پڑھا لیگو چوپن نے مجھے والائک تھاکس نے کہا کہ یہ اعرابی تھیرسول اللہ ﷺ نے مجھے بلاک فرماکیں۔ بے شک نماز قران کی قرآت اوراللہ تعالیٰ کی ذکرے واسطے بے پس جب آپ نماز مین بوتوپاپ بھی ہو کریں پس مین نے رسول اللہ ﷺ زیادہ نرم ترین اعترافات نہ ہیں دیکھا۔”

کا پوجنہا:  
"سیدنےعابد اللہ بن عباس سے روایت ہے کہ ایک عورت نبی کریم ﷺ کے پاس اورکہا: میری مائں نے نذر مانتی تھی کہ مین حج اداکر کر گی پس وہ حج کرنے سے بھی وفات پاگئی۔ توکھیاں این ہی طرف سے حج اداکراکر کی بیوت پڑھاپیں نے فرضمایہ بان! این ہی طرف سے حج اداکراکر کی مان پر قرض سے توپا اس کو اداکرسکتی ہیں؟ جس نے کہا جب بان بان یعنی مین اداکرسکتی بیو توپا ہے فرماؤچا ہے فرماہاپس تم اللہ تعالیٰ کا (حق) اداکراکر کیونکے اللہ
تعالی وفاکرنے کابہت زيادہ لائق بے (34).

"سيدنا ابوسعید الخدیری نے کہاکہ رسول اللہ ﷺ عید الفطر معايدہ الاضحی کے دن عیدگاه کی طرف تشريف لے گئے، پھر لوگوں کو نصیحت کی اوران کوصدقة، حاکم دیتاویہ نے فرمایا: ای ི لوگو صدقة کروپہ گئے، کہ پہنچے اور فرمایا، عورتوں کی جماعت تم خیرات کرواس لیے کہ مجهز ہوئے دوزخیوں مین اکثر عورتوں کی مطلقہ گئین۔

عورتوں نے عرض کیالباسیاکیں پارساون اللہ ﷺ نے فرمایا مے لعن طمن زيادہ کرتی بود، بھیپوری کی نافرماتی کرتی بودیہ عورتوں میں نے تم سے زيادہ دین اور عقل مین ناقص کسی کونکی، دیکھاہ بزہ بزرے بھیشیاری کی عقل گ م کر دے، پھر پھرے، گھوڑے لیا بھی جب گھڑ تینے توابن مسعود کی بیوی زینب، انی اوراندرانی نے، اجارت مانگی۔ آپ سے کھیاپارسول اللہ ﷺ ایہ زینب کی بیوی اپنے فرمایاکونسی زینب کہ کیا کہ اس مسعود کی بیوی اپنے فرمایاقت دو، احیای اجارت دلی گئی توانہ رھے اکر عرض کیا کیئی اللہ اج آپ نے صدقة، کا حاکم دیتاویہ پاس ایک زبیرتہمین نے ارداد کیا، آسی خیرات کر دو، ایک مسعود نے دعوی کیاکہ وہ اوران کا بیتاس خیرات کے زيادہ مستحق بین ان لوگوں سے جن کومین خیرات دیناجاتی بون رسول اللہ ﷺ نے فرمایاتہر اور مسعود نے سمج کہا، اورتمبار، شوبرامرتمبار اوران لوگوں سے زيادہ مستحق بے جن کتھی خیرات دیناجاتی بی۔ فرعم ابن مسعود ایہ ولاد ایہ، "یعنی ایہ ایہ نے کہاکہ میرے شوبرع دیپا وہ بن مسعود نے فرمایا کہ زيادہ حقدار مین اورمیرے ولادکہ متمی پرصدقه، کروتیں وہ فرمایاکہ صحیح کہاہ

 زیادہ حقدارہ(35)۔".

کی تعالی وترپہیت کی لیے الگ

"ابوسعید سے روایت بے کہ، عورتوں نے رسول اللہ ﷺ سے مطالبہ کیا کہ بمارے لیے ایک الگ دن مقررکریں، رسول اللہ ﷺ سے میں ان کو وعظ فرمائی، رسول اللہ ﷺ سے ان کو وعظ فرمایاکہ جس عورت کے پڑ جیا فوت بوجائیں توی، بچے اس کے لیے جن بے ایک جنیان گی ایک عورت نے بچھا اورگردودچی فوت بوجائیں، رسول اللہ ﷺ نے فرمایاکہ فوت بوجائیں، رسول اللہ ﷺ نے فرمایاکہ (36)۔"

کرنا:
تعلیم بیت کے لیے

"بیرون ممالک کے امراء کی رسول Allah ﷺ کے بذریعہ خطوط تعلیم کالنتظام کیا اور اپنے سفیر ان کے بنا پہیچ کر آئے اور سکھیاں اور انسیکار کے رسول ﷺ کے نمونے کی نموذج محفوظ ہے۔ اس میں بیان کیا ہے کہ ان بیان کے سب برابریوں سے اس کے صلاح کے واسطے سے روایت کی۔ انہوں نے ان شہاب سے انہوں نے عبیداللہ بن عثمان بن مسعود سے نقل کیا، ان سے عبیداللہ بن عمرو نے بیان کیا کہ رسول Allah ﷺ نے اپنے شخص کو اپنے ناطق کے حکم دیا، اسے حاکم بہرحال کے پاس لے جانے بہرحال کے حاکم نے وہ خط کسری (شام ایران) کے پاس بہیچ دیا جس وقت اس نے وہ خط پرہیزجاگا کردا ہے، وہ دیکھتا ہے (ردوی کہتے ہیں) اور میرای خطیب ہے کہ آبین مسیب نے (اس کے بعد) متحفہ سے کبھی (اس واقعہ کو) رسول Allah ﷺ نے اب ایران کے لیے بدعوا کی ہو (ہیں چاک شده خط کی طرح) نئے نئے بوجائے۔" (37)

"حضرت انس نے فرمایا کہ حضرت عثمان نے مصاحف (بیعنی قرآن) لکھویں اور انہوں نے پرفرحت بہیچ دیا، رسول عبیداللہ بن عمر، بہیج بن سعید، اور امام مالک کے نزدیک پہ (کتاب) جائز ہے اور بعض ابِ حجازی نے معاون، پررسول ﷺ کی اس حديث سے استدلال کیا ہے جس میں آپ نے امبراشیک کے لیے خط لکھتے ہیں (فاضل تقدم) فرمایش کے بھی جب تک کہ فلال جگہ نہ پہنچ چاہے خط کومت پڑھنے پرہیزجبہ ہو اس جگہ پہنچ گئے تواس نے خط کولوگاں کے سامنا پڑھاہورجوہاں کا حکم تھاہو انہوں بدلائے۔" (38)

کونی کام کروانے:

"بیم نے محمود بتشیسے بیان کیا چاک کہ ہم نے بہیج بن سعیدقطان نے عبیداللہ عمری سے بیان کیا چاک کہ مہم سے سعیدعبن بیایسدعیقری نے اپنے پاپا ا بوسعیدقری سے بیان کیاہون نے ابوہریرہ سے کہ رسول ﷺ سے مسجدشتیفی لانے سے کہ بعدیک اور شخص آباد نے نامزہ اپنے پرہیزجہ کرسکلم کیاہون نے سلام کاجوہاں دے کرتفرماں پہنچا ہو جاں۔ واس جاوہر نامزہ اپنے کیونک توہ نامزہ اینہی ہو شخص

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واپس گیلاوریہ کی طرح نمازیہ اوریہ۔ کیونکہ، کیوں کہ اس مرتبہ یہی فرمائیا کہ واپس جالوردوبارہ نمازیہ کیوں کون بیٹھے۔ اپنے نے اس طرح تین مرتبہ فرمائیا اخراز شخص نے کبکہ اس ذات کی قسم جس نے اپنے کوحق کے ساتھ مبعوث کیاچی مین اس کے علاوة کونی اوراچہ طاقتیہ کہ فرمائیاکہ جب نمازکہ نے کہ کہ اب توہیئے بتوہیئے نکبرکہ پہراسانی کے ساتھ جتناقرن تجہ کویڈیبواس کی تلاوت کراس کے بعددرکوع کریں اچھی طرح سے رکوع بولے توبہسراتہاکورپوری کھڑی بوجاس کے بعد سجدہ کریں، اطمنان کے ساتھ پہرسراتہاواچقی طرح بینہ ماؤس طرح اپنی نمازیہ کریں۔(39)

كرنا کی شکنی:

"ابوموسی سے روایت ہے آپ نے فرمائیاکہ رسول اللہ ﷺ اسے اپنے باتوں کے بارے میں پوجہاگیمس کوئی نہیں برسا مجاہدے جب یہ سوالات زیادہ بونے توہیں غصہ بونے پہرلوگون سے فرمائے لگے مجزہ سے جو چاپو پوجہا لواکی شخص نے کبیمیرابلپ کون بے رسول اللہ ﷺ نے فرمائیاپ کاباب خذافہ یہ دوسرا شخص کہی ئے بکر پوجہا لگائے للہ ﷺ کا رسول ﷺ میراباب کون بے ئں ئے جواب دیا کہ کاباب سالم شہبہ، کالا زادکرہ غلام بے توجب عمر نے آپ ﷺ کے جبر ئے کی غصہ کودیکہ توفر ملیاہ اللہ ﷺ کے رسول ﷺ بہ معہ تعالی کوتوہہ کرتے بیئے۔(40)

بغيرکسی دلیل کے بھینی

"مغیرہ سے روایت ہے آپ نے فرمائیاکہ مین نے رسول اللہ ﷺ کوئی ہم کہے بونے سناکہ مجزہ پرجوش بولناکسی عام ادیم پرجوش بولنے کی طرح نہیں بے جومہ پرجوہ بولنے کہندے وہ اپنہ کہان جہند مین بنالوہ(41)۔

"عائشہ سے روایت ہے آپ فرمائیاکہ کہ رسول اللہ ﷺ فرمایاجس نے بمار ئے دین مین کوعی اپس کے نئی بات پیداکی جو اس مین سے نہ بوتوہ مردودہ(42)۔

مقدم بن معدی کرب رسول اللہ ﷺ نے روایت کرتے ہیں کہ آپ ﷺ نے فرمائیاکہ مجزہ قرآن اوراس کی طرح اوریعی احادیث دی گئی بین خبردارے قربی بے کہ ایک پنتہ بھر ادامی اپنے تکی پرتكے لکھے بونے
نبی کریم بہینہت مربی

رسول اللہ ﷺ نے لوگوں کی تربیت کچھ ایسے اندازے کیا کہ جب کہ
بدیعت کے کام اور اوربت پرستون سے خاصان خدا بنانے کی کھدے
اوروزوال کوبمیشان اشکارا کرکے آرے کی مقصودیت اور اعمال کی
tرغیب کو مد نظرکہا جن میں کوئی عیب خوابی نہیں کا رغبت
dیکھے، روشنی توجہ اور تاثیر قلب سے ان کالیساکثیر علاج کرداکہ
پہر عصر بہراءسی اس عادت کی طرف رجوع نہ ہوئی۔

عمرین ابی سلمہ کہ بہت میں (ابی سلمہ کے مرجینے کے بعد)چہ
 tehانحضرت ﷺ کی پرورش میں کھانے کے وقت میری اپنی رکابی کے چارون
طرف گھومتا (کہی ادہر کے چھانہ پریسیء ادہرے) ﷺ نے فرمایا: ای کہ
بسم اللہ کہ اورداپنہ باتھ سے اپنے نزدیک سے کھااس کے بعدمین
پہرمیشہ اس طرح کھاتی اور(44)

نبی ابی عظمت تربیت:

(Training Institute) تھی جہان
پرچندلے گرزنے سے لوگوں کی حالت یکسرتبدیل بھوجاتی اسی بات ایک
مربع فہدیت سے استدلال کیا جاتاہے:

ابویہرے سے سناء،ابو جہان بیان کیاکہ،نبی کریم ﷺ نے نجدی کے طرف کچھ
سوار بهجے وہ قیبلہ بن حیف کے (سردار میں سے) ایک شخص تمام بن
اثال نامی کوہرلانے اورمسجدیوں کے ایک ستون سے بانده یہانے
کریم ﷺ بابرتشراف لوئے اوربھوچا تمام توسیعمجھیمیا (میں تیرہ) ساتھ
کیامان گا ابیہرے نے کہا محمد ﷺ میرے پاس خیرہے (سے کے باوجود)
اگراچو مجهت قتل کردن تواب ﷺ ایک شخص کو قتل کرین گے چوخنوی
بے اس نے جنگ میں مسلمانوں کو همراهی اور اگراچو مجهت پر احسن کرین
گے توایک ایسے شخص پر احسان کرین گے گے (احسان کرئے وہے کا) شکردادارتبابے یعنی اگرآپ کمال مطلوب ہے توجتچاقے مجه ہے مال طلب کرسکے بین نبی کریم ﷺ ہوں سے چلے آئے دوسرے ہوئے آپ نے پہرپوچھا تمام اب تک پیام ہوئے آپ نے کہاوی جواب بہ کہ چکانون کے اگرآپ نے احسان کیتیاں ایسے شخص پر احسان کرئے جو شکردادارتبابے یعنی کریم ﷺ پھرچے گے نہ تینس نے پہرپوچھا پیام ہوئے آپ نے کہا نے چکانون کے اگرآپ نے احسان کیتے جواب بہ کہ چکانون نبی کریم ﷺ نے صحابہ کرام سے فرمایاکہ تماحم کوچھوئے(رسی کھول دی گئی) توہ مسجدندیسی سے قربی ایک باگ میں گے اور غسل کرکے مسجد نبیو مین حاضرونی اورزیما کہ "اشہدان لالہ اللہ جو اشہدان محمد رسول اللہ ﷺ اورشیائے محمد ﷺ! اللہ تعالی کی قسم رونے زمین پرکونی چہرہ آپ ﷺ کے چہرے سے زیادہ میرے لیے برابرین تناہیکن آج آپ ﷺ کے چہرے سے زیادہ مجه ہوئے کہ یہ محبوب نبیو اللہ کی قسم کونی دین آپ ﷺ کے دین سے زیادہ مجه ہوئے برابرین لگئان لیکن آپ ﷺ کادین مجه سب سے زیادہ پسندیدہ اور عزیزی پی ایل اللہ تعالی کی قسم! کونی شربیا پی کے شربیا زیادہ مجه ہوئے برابرین لگتا تناہیکن آج آپ ﷺ کاشارمراسب سے زیادہ محبوب شربیا آپ ﷺ کے سواعون نے مجه ہوئے پکژاتومین عمرہ کاراہد کرچہتالاب آپ ﷺ کاکیاحکم ہے رسول اللہ ﷺ نے انبی بشارت دی اور عمرہ ہوئے کاکی دیاخب وهو مکہ پہنچے توکسی نے کہاکہ وہہ دن بوگئے انبی نے جواب دیاکہ نہیں بلکہ مین محمد ﷺکے ساتھ ایمان لئے آیوب آورلحدی قسم! آب تمام سے گیبون کلایک دانہ بھی اس وقت تک نبی آپ کے جواب تک نبی کریم ﷺ اجازت نہ دی دین (45) سیدہ فاطمہ اورسیدنعلی نے گھرلوئی نے گھرہلئی اورسیدنعلی کی حالت مین خادم کامتالہ کیلئی رسول اللہ ﷺ نے خوداکران کی اس حالت پر پرضاوری گرپرتصورت [آختر کالر] پنیا کی تاکیدفرمایی۔ حضرت سیف ﷺ بیان کیا کہ حضرت فاطمہ ﷺ کوچی پسندے کی وجہ سے بہت تکیف بھی پھر انبی معلوم با ہو کے رسول اللہ ﷺ کے پا س کچھ قیدی آئے نے انبی سے ہو بہی(ان میں سے ایک لونڈی یاغلام کی درخواست لے کرحضر) بھی پھر انبی میں ایک موجودہ تھا وہ سیدہ عائشہ سے اس کے بارے متعلق کہ ہرکلی(وابس)گئی،پھرچے آپ ﷺ نے تشریف لئے توسیع عائشہ
اے آپ کے سامنے اس کی درخواست پیش کر دی سیدنا علی کہے ہیں کہ اس سے کریم نے تشریف لانے جب بہت بستروں پر لیکہ چھیک تھی(جب بہت نے آپ کودکھا) توہم لوگ کہر بونے لگے تو آپ نے فرمایا کہ حس طرح بوہویے بی لیئے روپہراب میرے اورفاتمہ کے بچے میں بیٹھے ہے اوراتنے قرب بوقت کہ میں نے آپ کے قدم من کی تہنڈک اپنے سنہے پریانی اس کے بعد اپنے فرمایا جوکہ تم لوگوں نے(لوئدی باعلام)میں بین مرتبات کیوں نہ بتاوں، جب تم دونوں اپنے استرپلیت جاو،(سونے سے پہلے)اللہ اکثر 3 مرتبہ اور سب سے لیاکرو، بہ عمل بہترین اس سے جوٹم دونوں نے مانگا ہے(46)۔

صاحبی کی کے ساتھ کا اصلاح کرنَا:
ایک صاحبی نے کئی دفعہ مال کامیاب ہوا کررسول اللہ نے اس کے سامنے مال کی بی شتابی کچھ اس انداز میں سے فرمایا کہ مرتے د تک انہوں نے مال لئے سے گریز فرماتی۔

"سیدنا علی نے جماعت کہتے بیچ کہ مین نے ایک مرتہ نبی کریم نے کچھ مانگنا ہوا پھر عناوت فرمادے نے پہر ہوبارہ مانگنے ہوئے اس وقت بھی عطا کیا ہویا۔ اور پھر سے فرمایا کہ حکیم یہ مال سب کو بھی کیا جو شخص اس مال کو پروانی سے حاصل کرتبے نواس میں برکت عطا کر دی جاتی ہے اورجو شخص اسے نفس کے طبع وحرص کے ساتھ حاصل کرتا ہے توس میں برکت نہیں بونی۔ اوراس کی حالت اس شخص کی مانند بھرتی نہیں برکت نہیں بونی بہت اوریا برکت کدو کہ اور کاباتے بھی دوسروں کے دینے والی اوریے نچھے کے باتی یعنی دوسروں سے مانگنے والے سے بہتر پاکہ بھی کہ بدھے ہیں کہ یہ سو کریم نے عرض گیر ہے اور اس ذات کی جس نے آپ کو وہ نا کہ ساتھ بھیجہا مین اب کسی کے مال سے کچھ بهی کہ نہیں کرہ کریں گاندھ بان تک کہ مین اس دنیا کے جدابوں(47)۔"
الأميري، أبو عمرو بن العين، كتاب العين، باب العين، واللام والميم معهما: 21، دارومكتبة البلاط، بدون سن طباع.

1) سيدنائي مسعود: عبدالفيض، مسعود بن غافر بن حبيب جليل القدر، كان سبى بكم مين، مسلمان، بني حبشة، كي كان في بني جمعة كي. أو، أي ميديه، فلور كي طرف، بني بجرت كي. أبو

2) ك下げ، تاما غزوات مع شريك بونى، انت سبى، 848 روايات، مروي بين رسول الله كي خادم


4) ابن الأثير الجوزري، الفضل على ابن أبي الكرم محمود بن عبدالكريم بن عبد الواحد الشهابي.

5) لغة من الله من المؤمنين، لفي ضلال مبين، سورة البقرة: 2.

6) جلال الدين، رابعة، محمد، ترجمة القرآن، فاران، لاور: 2015.

7) ربي، وابعث فيهم، إثر بنات العزيز، الحكم، سورة البقرة: 129.

8) أقرأ باسم عمم الإنسان ما لم يعلم، سورة العلق: 1.

9) أرسل سبى بكم، مختار الصحابة، باب الراء: 116، المكتبة العصرية، بيروت: 1420 هـ.

10) خرج رسول الله صلى الله عليه وسلم ذات، وبغنا بني، فجلس معهم، ابن ماجه، أبو عبد الله محمد بن يزيد الفقيه، سنين ابن ماجه، فضل العلماء، واحب على طلب العلم، دار أحياء الكتب العربي، بدون سن طباع.
لا يوجد نص يمكن قراءته بشكل طبيعي من الصورة المقدمة.
الاستعاب : 437،ترجمة،نمبر (151)–العلام: 5: (83)

(18) سيدناءعبد الله بن مكتوم: عمرو بن قيس بن زانده بن اصم، شجاع صاحبي تهی مکه. مکرم من اسلام قبول كياقدام اسلام بين مدين منوره من رسول الله ﷺ كمؤذن ربي ببابه كغير موجودگي مم كي دعه مدين منوره من خليفه. مقررونه أوروجون كونماره زهاتي رته جنگ قادسيه، مين شرکت كي مدين منوره مين 13 هـ 464 ه كوففات پاني.

(الاستعاب : 437،ترجمة،نمبر (151)–العلام: 5: (83)

(19) عمر بن الخطاب في عشرين من أصحاب النبي صلى الله عليه وسلم: فما قدم حتى قرأت: سلّم

(20) عن أبي عمرو: قال: كنت أتعد من ابن عباس بن جعفر بن سيرين فقال: أقم و دعوني حتى أجعل لك سهنا

(21) سيدناءالع: معاذ بن عمرو بن عمرو، انصاري، خزرجي أبو عبد الرحمن 130 هـ. كي ودباونه: جلال واجام كي بين برئ عالم اورعبنیو كي جه حفوقي كرم 10 سه، غزو خوب كي بعد رسول الله صلى الله عليه وسلم كي حديثت سه يم بهيجمرويات كي تعداد "154"، به 18 هـ 469 م كوففات پاگئ (صفة، النو: 389، العلام: 4: (258).

(22) [22] عن النبي صلى الله عليه وسلم: بعث معاذ رضي الله عنه إلى اليمن، فوالله:... سئل عن فراقه: صحيح البخاري، كتاب الزكوة، باب وجود الزكوة، حديث نمبر (128)

(23) صحيح البخاري، كتاب العلم، باب من سبط علمًا وهو مشتغل في خدیج، فأثنا الحديث فاجاب السائل، حديث نمبر (59)

(24) [24] عن أي هريرة قال: دخل أعرابي المسجد ورسول الله صلى الله عليه وسلم جالس فسأله:... إن هذا المسجد إنا هو لذكر الله والصلاة، ولا يبال فيه، ثم دعا بسجد من ماء فأفرغه عليه] إمام أحمد، أحمد بن حنبل، مسند أحمد، مسند المكثري من الصحابة، مسند أبي، حديث نمبر (154)

(25) [25] إن وفد عمرو الحماس ثانًا أن أرى النبي صلى الله عليه وسلم قال: مسحوا بالطين، أو بالطين، غير حرام ولا نذامي: صحيح البخاري، كتاب العلم، باب تحرير النبي صلى الله عليه وسلم، وفد عمرو الحماس على أن يحفظوا الإيمان والعلم، ويحرصوا من وراءهم، حديث نمبر (87)
(26) [تمّ رجُلٌ على رسول الله صلى الله عليه وسلم، فقال: «فَإِنَّ الْرَّجُلَ الْعَادِي مِنْ مَلِئٍ الْأَرْضِ مِنْ وَسْلَةً وَصِفِّهِ»] صحيح البخاري، كتاب النكاح، الإجابة في الدين، حديث نمبر (91) (27) [عن النبي صلى الله عليه وسلم، ﴿بَلْ أَنْ تَنْفِرُوا»] صحيح البخاري، كتاب العلم، ﴿لَا كَانَ النَّبِيُّ مِنْ بَلْدَةٍ﴾ حديث نمبر (69) (28) [قد خُلِّق على رسول الله صلى الله عليه وسلم، فقال: «فَإِنَّ الْرَّجُلَ الْعَادِي مِنْ وَسْلَةً وَصِفِّهِ»] صحيح البخاري، كتاب الجمعية، حديث نمبر (11) (29) [قال رسول الله صلى الله عليه وسلم: ﴿مَا يُرْتَبُ مِنْ زَهْرَ الْأَنْبَاءِ وَالْمَانِشِيَّةِ﴾] صحيح البخاري، كتاب الواقعة، ﴿فَإِنَّ الْرَّجُلَ الْعَادِي مِنْ وَسْلَةً وَصِفِّهِ» حديث نمبر (72) (30) [عن جابر قال: خرجنا في سفر فصِبَاء رجلاً منا حجر فشخجه في رأسه - ثم يمسح عليها ويغسل] صحيح البخاري، كتاب الطهارة، ﴿بِمَعَالِمٍ وَأُخْدَاءٍ﴾ حديث نمبر (34) (31) [عن ابن عمر، قال: «فَإِنَّ النَّبِي ﻋَلَيْهِ ﻭَسُلْطَانُ نَّظِرًا لَّمَّا نَزَحَ مِنْ الأَجْرَاحِ»، ﴿وَإِمْرُهَا إِلَى ﺗَنْفِرُهَا﴾] صحيح البخاري، كتاب الجمعية، ﴿تَمْسِكَ وَهَارِبًا﴾ حديث نمبر (74) (32) [فَإِنَّ الْرَّجُلَ الْعَادِي مِنْ وَسْلَةً وَصِفِّهِ] صحيح البخاري، كتاب الواقعة، ﴿فَإِنَّ الْرَّجُلَ الْعَادِي مِنْ وَسْلَةً وَصِفِّهِ» حديث نمبر (76) (33) [عن معاوية بن الحكم السلمي، قال: «فَإِنَّ الْرَّجُلَ الْعَادِي مِنْ وَسْلَةً وَصِفِّهِ»، ﴿وَسَلَّمَ، فَقَالَتْ ﴿فَإِنَّ الْرَّجُلَ الْعَادِي مِنْ وَسْلَةً وَصِفِّهِ﴾] صحيح البخاري، كتاب الأجراء، ﴿بِمَعَالِمٍ وَأُخْدَاءٍ﴾ حديث نمبر (74) (34) [عن ابن عباس، أنَّهُما أَصَلَّاهُما إِلَى ﺗَنْفِرَهُما] صحيح البخاري، كتاب الأجراء، ﴿بِمَعَالِمٍ وَأُخْدَاءٍ﴾ حديث نمبر (76) 2729
(35) [عن أبي سعيد الخدري رضي الله عنه، قال:] رجع رسول الله صلى الله عليه وسلم - صلى الله عليه وسلم - فقال النبي صلى الله عليه وسلم: «صدق ابن مسعود، وجلجل وجدوك أحشى من تصدقت به عليهم.» صحيح البخاري، كتاب الزكوة، باب الزكوة على الأقرباب، حديث نمبر (1362)

(36) [عن أبي سعيد رضي الله عنه، قال:] وأنّا قرروا ذلك أمرًا واتثنان؟ واتثنان؟ قال: {وَبِيْنَ الْصَّافِئِينَ}.

(البقرة: 155)، حديث نمبر (1369)

(37) [عن عبد الله بن عمّام أخبره أن رسول الله صلى الله عليه وسلم دعا عليهم رسول الله صلى الله عليه وسلم: «أنت وسأَلِمَ» أن يَعْرَفَا كِتَابَ مَرَجًعٍ] صحيح البخاري، كتاب العلم، ياب ما يذكر في المناولة، وكتب أهل العلم بالعلم إلى البلدان، حديث نمبر (64).

(38) [وقال أنس بن مالك: نسيت عثمان بن عفان المصاحب فيبعث إلى الأفق - فلم يبلغ ذلك المكان قراءة إلى النام، وأخبرهم بأمر النبي صلى الله عليه وسلم] صحيح البخاري، كتاب العلم، ياب ما يذكر في المناولة، وكتب أهل العلم بالعلم إلى البلدان.

(39) [عن أبي هريرة: أن رسول الله صلى الله عليه وسلم دخل المسجد - صلى الله عليه وسلم - ثم رفع حتى تطمَمْ جالساً، وفعل ذلك في صلاة كلها] صحيح البخاري، كتاب الأذان، ياب وجوب القراءة للإمام وسليمون في الصلاة كلهما في الحضرة والسهر، وما يُبِحَ فيهما وما يُخَافِ، حديث نمبر (757).

(40) [عن أبي موسى: قال: سأل النبي صلى الله عليه وسلم عن أشياء كرهها] صحيح البخاري، سأول الله، إذا تبُعَ إلى الله عزوجل] صحيح البخاري، كتاب العلم، ياب الغضب في الموضع والتعليم (ص:30). إذا رأى ما يكره، حديث نمبر (92).

(41) [عن المغيرة رضي الله عنه، قال: سمعت النبي صلى الله عليه وسلم يقول] صحيح البخاري، كتاب العلم، ياب إم من كتب على النبي صلى الله عليه وسلم، حديث نمبر (110).

(42) [عن عائشة رضي الله عنها، قالت: قال: {والصُّحِيَّةُ مِرْدَودٌ} حديث نمبر (497).

(43) [عن المقداد بن معدي كرب عن رسول الله صلى الله عليه وسلم أنه قال: أن يُضِربُ أن يَقُوَّمُ فإن لم يقُوَّم فلله أَن يَقُوَّمُ] صحيح البخاري، كتاب السنة، حديث نمبر (64).

(44) [حدثنا علي بن عمّ عبد الله: أخبرنا سفيان، قال: {وَكَلِّمَهُمُ الْبِنَيَّانَ}، وَكَلِّمَهُمُ الْبِنَيَّانَ] صحيح البخاري، كتاب الأطهامة، ياب النساءية على الطعام والسلاح، حديث نمبر (574).

(45) [بعث النبي صلى الله عليه وسلم خيأ وَقَالَ: "أَنْ يَقُوَّمُوا يَا بُنَيَّانَ وَأَنْ يَقُوَّمُوا يَا بُنَيَّانَ]، لا يُبِينُونَ من البدامَة حَبَّة حَبَّة، حَتَّى
تَأَذَّنَ فيَّ الرَّبُّ صلى الله عليه وسلم حديث النيازك، كتاب المغازي، بِابٌ وفِقِيَّةٌ حَيِّيَّةٌ، وَحَدِيثٌ ثَمَانِيَّةٌ بِنَّ}

[ص: 170] [أثاث حديث نمبر (۴۷۷۲)]

(۴۶) [حَدِيثًا عَلَيْهِ، أَنَّ قَافِتَةً عَلَيْهَا السَّلَامُ اشْتَكَتْ ما تَلَقَّى ردًّا ذَلِكَ خَيرٍ لَكُمْ مَا سَأَلْتُمُوهُ،] صحيح البخاري، كتاب فرض الخمس، بِابُ الْبَلَيْلِ عَلَى أنَّ الخَمسَ لِلْوَامِيِّ رَسُولُ الله صلى الله عليه وسلم وَالْمُسَابِكِنَّ وَإِيْتَارِ النَّبِيِّ صلى الله عليه وسلم وَالْمُسَلِّمِينَ، حَينَ سَأَلَهُمُ قَافِتَةً، وَسَمَّى إِلَيْهِ الرَّحْمَةَ، وَحَدَّثَهُ عَنْهُ: كَانَ لَبَسْتُهَا مِنَ السَّبِّي، فَوَكَلَّهَا إِلَى الله، حديث نمبر (۱۳۱۱۳)]

(۴۷) [أَنَّ حَكِيمًا بِنَ حَزَامٍ رَضِيَ الله عَنْهُ، قَالَ: سَأَلَتِ رَسُولُ الله صلى الله عليه وسلم مَنْ سَأَلْتَهُ، وَسَمَّى إِلَيْهِ الرَّحْمَةَ، وَحَدَّثَهُ عَنْهُ: كَانَ لَبَسْتُهَا مِنَ السَّبِّي، فَوَكَلَّهَا إِلَى الله، حديث نمبر (۱۴۷۲)]
Socio-Political Obstacles to Women’s Political Empowerment: Perspectives of Women Members of Political Parties in Azad Jammu and Kashmir

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Abstract: Based on the qualitative research approach, this study primarily analyzed the nature of obstacles for women’s political empowerment in Azad Jammu and Kashmir. This study measured the nature of socio-political obstacles for women members of political parties from three different stand points i) patriarchy and gender role ideologies ii) caste system iii) and economic system. To meet the objectives of the research, in-depth interviews have been taken from thirty women members of three different political parties in Azad Jammu and Kashmir. Results showed that ideologies regarding women’s status and role fairly influence their access to political leadership. The mechanisms and practices of political parties as well as the political culture is dominantly patriarchal which is reflected in terms of party norms, rules, elections, selection of candidates and access to opportunities where women face discrimination at all levels. This study is a significant contribution both from theoretical and practical point of view. From theoretical perspective, it has provided a deep insight by adopting multi level analysis of the issue. From practical point of view this study has provided a context specific understanding regarding women’s participation in the political processes. This study may provide a baseline for future researchers to analyze women’s political participation from multiple angles in the context of Azad Jammu and Kashmir.

Keywords: Socio-Political Factors, Political Empowerment, Women Members, Azad Jammu and Kashmir

Introduction: Women were principally defined in relations to the family and considered innately inferior to man. Political philosopher and thinkers have observed politics as totally man’s world. Political system is built on the public-private dichotomy and most thinkers and philosophers considered and justified women’s role as naturally suitable for domestic and private sphere.. According to Aristotle, “With regard to the differences between the sexes, man is by nature superior and leading, women inferior and led” (Jonasdottir, 1998; Rai, 2000). Ronal Inglehart and Pippa Norris (2003) argue that broader patterns of societal values and priorities (public and private dichotomy) had direct influence on people’s perceptions regarding appropriate roles for women and men in the society. This public and private dichotomy was justified through the use of patriarchal religious interpretation. Cultural traditions stemming from religious discourses influenced women’s participation in public life. Religion, culture, gender roles ideologies were used as most dominant explanations to place women within the private sphere. Kunovich and Paxton (2005) pointed out that ideas about women’s status and role in society can enhance or constrain women’s participation in public life even in the presence of favorable political system. Ideologies about women’s culturally expected roles hinder their career progress in public life and their decision to take part in politics. Within the South Asian region, women’s status is primarily linked within the private sphere of home that places restrictions on their
mobility outside four walls of the home. Ideologies about women’s social position and status affect their representation throughout the political processes.

Within the context of Pakistan, women’s participation in public sphere is restricted due to multiple cultural factors. These factors have strong influence on the professional choices for women in the public life. Shaheed (2010) argue that women’s mobility, career and life choices are controlled by family, tribe, baradari and local customs in Pakistan and even voting is not done as an individual but as a member of the clan or tribe. Women’s marginal representation in politics is associated with invisible ideological structural barriers which stop women to gain access to political decision making.

Along with these socio-cultural barriers, political factors also have been recognized as crucial factors for women’s exclusion from political processes. Women’s political role has been analyzed under multiple electoral systems and results showed that political factors have significant impact on women’s access to political empowerment. Mumtaz (2005) argue that political context reflects the social framework of a particular region. Every political system has its own political culture (set of beliefs, attitudes and sentiments which underpin the operation of a political system). Ahmad and Naseem (2011) highlighted that political parties are greatly influenced by the political and socio-economic context of the state in which they operate. Women’s subservience in politics in South Asia is due to the patriarchal control where politics is defined as totally a male dominated activity. Prevalence of masculine model of politics, and the competitive and confrontational environment discourages women’s participation in politics (Samarasinghe, 2000) and women face discrimination due to the pervasive male dominated political structure in these political institutions at all levels (Bari, 2005).

There is another scholarly debate on the question ‘when’ women political presence makes a difference in the legislature. Critical Mass Theory (Kanter, 1977) is used to support a link between women’s certain amount of numerical representation and its effects on the policies for women. Kanter, (1977) theory purports that a certain amount of women (15% to 40%) would have an effect on women’s effective political representation. There are some supportive studies reflecting importance of critical mass theory for women’s effective participation. However, according to Dahlerup (2006) and Mullen (2006) despite having a good number in the parliament, there are many other factors that may pose limitations on the effective participation of women in the legislatures that includes party ideology, region, culture and electoral system.

Women political participation has been analyzed under multiple representation systems and multiple discourses/theories are available regarding nature of women’s political participation in western countries. Scholarly debate is available on the role of political parties for enhancing women’s political representation. Some have focused exclusively on the role of political institutions especially the role of the electoral system for women’s access to political empowerment. Some studies have examined women’s political participation using structural level indicators (ideologies regarding women’s status and position in society) in different countries. There is a separate debate on the question of gender quotas and their effectiveness. However, most of these studies have used single level analysis to study women’s political participation in a particular social context. This research is unique in a sense that it will try to analyze women’s role in politics in Azad Jammu and Kashmir by using multiple indicators categorized into different themes. The study will examine multiple indicators/factors to get more in-depth and holistic understanding of the issues related to women’s political participation in Azad Jammu and Kashmir. For this study, the researcher has categorized these multiple variables highlighted by the above mentioned researches under three major themes. Researcher has analyzed women’s political participation from three different strand points to measure the women’s political participation and to get deep in-sight about the issue. Three major themes include: i) patriarchy and gender role ideologies ii) caste system iii) and economic system.

In line with these themes, this study will explore what kind of structural and political obstacles women members of political parties face in presenting their own agenda and interests at party level. The relevant literature on the nature of obstacles for women in politics is discussed according to developed themes in the literature review section. Next section presents the research methodology for this study. The last section presents the results, discussions, findings and future implications of the study.
Conceptual Framework of the Study

Literature Review

Social Context and Challenges for Women’s Political Empowerment: Social structure and culture are considered as the main determinants of and women’s participation in public life. Women’s subordination in politics is acknowledged to be more structural within the South Asian region. South Asia is the southern region of the Asian continent, which comprises sub-Himalayan countries. South Asia typically consists of Bangladesh, Bhutan, the Republic of India, Maldives, Nepal, Pakistan and Sri Lanka. South Asian (most densely populated geographic region in the world) constitute over one fifth of the world's population (Abidi, 2013).

South Asian region has impressive records of women as head of the states and governments. Women’s participation at different levels of government is not unusual in South Asia region. However, the number of women in national parliaments in South Asia is below the average of 20% globally (True et al, 2012). Having good record of political representation as leaders from South Asian region does not reflect that common women enjoy a better political status in these countries. Women in these countries face serious challenges regarding their political participation from casting votes to contest election. These obstructions for women’s participation reside not only in contesting election but women also face challenges to participate as an independent voter. Most of the women are not free to cast their vote as independent individual voters (Shaheed, 2010). Women numbers as constituents are fragile and less tangible despite some improvements. In most cases, women are not registered as voters in most rural parts of South Asian countries. A great disparity is found between male and female registered voters in Pakistan. In some parts of the NWFP and Baluchistan, women are not free to exercise their right to vote.

Patriarchy and Gender Role Ideologies: Patriarchy and gender inequality are deciding and strong factors of South Asian region. Women’s under representation in political processes can be better analyzed in the context of gender and patriarchy. Gender is defined as social, cultural, and psychological traits associated with maleness and femaleness (Van Zoneen, 1999). Gender defines social statuses and relations for individuals in society and it involves behavioral consequences. This phenomenon is reflected in cultural patterns where individuals are expected to act according to their defined social statuses/positions (Robinson, 2005). Gender works as an essential force to determine individual’s professional orientations (Hanitzsch & Hanusch, 2012). Traditions, customs and religious beliefs have significant influence on the professional choices for women participation in different professions (Sharma & Sharma, 2006). The social structure of many South Asian societies is patriarchal in nature and we find specific and clear gender social role differentiation for women and men. The patriarchal social structure constructs the hierarchy of gender relations and place women within the private arena of home as mothers and wives (Eisenstein 1984; Bari, 2005).

Gender as discussed earlier is defined as the social construction of relations between women and men or “socio-cultural manifestation” of being a man or woman. Patriarchy is the structuring of society on the basis of family units where fathers have primary responsibility for the welfare of, hence authority over, their families. Society assigns different roles and responsibilities to man and woman and manifestations of these responsibilities are seen through their gender. Unequal distribution of roles and responsibilities/relationship under patriarchal structure dominate women’s lives and systematically subjugate them in all areas of life. These relations are rooted in the ideology of asymmetrical relationship, domination and subordination between men and women whereby women are seen as subordinate to men (Shaheed, 2010; Mumtaz, 2005).
The normative parameters of Pakistani society place restrictions on the interacting patterns, and mobility of women and segregate, exclude women from professions purely meant for male counterpart (Saheer, 2010). Collective self-identity, asymmetrical relationship and gender consideration are the basic values of Pakistani culture (Lyon, 2002). Gender relations are strongly sexualized and regulated through the institution of Purdah’ in Pakistan (Besio, 2006). Traditional ethical codes of the society expect women to remain in Hijab and a strong notion of respect, modesty and honor is associated with the actions and mobility of women outside home (Majid, Kabir & Kabir, 2008). Women spaces are defined and are given specific space protocol and often segregated (secluded from “male space”). According to Syed (2005) women’s mobility outside home is restricted due to the socio-cultural values of female modesty, family honor and rivaj (tribal traditions). Women’s direct interaction with males and their movement (free travelling) is avoided as much as possible (Saheer et al, 2012). These social-cultural standards and customs produce and reinforce gender differences in values and interests between males and females. These multiple ideological factors and the tradition of sex- and segregated professions create additional constrains for women in politics where they have to interact with male constituents.

Ali and Akhtar (2012) highlighted a few overlapping factors that continue to contribute to women’s subordination in political processes of Pakistan. It includes: the cultural legacy; the-class based socio-economic and political structure; the urban/rural divide; the patriarchal practices; and the role of religion in the polity. Women are excluded from decision making because most personality traits associated with the political leadership (dominance, authority, assertiveness, rationality, emotional stability, ambition, confidence and self-sufficiency) are considered as masculine in nature. It is common perception that women are communal, and possess traits such as kindness, helpfulness, concern for others, warmth and gentleness, so in politics it is very difficult for women to fully participate in this profession at all levels. Socialization, particularly stereotyping regarding women roles reinforces the notion about political decision making as men’s domain. According to Corner (2005) women are marginalized by a variety of processes that begin in early life. In most societies, girls, in contrast to boys, are kept largely within the household and family where they are protected and taught to accept the decisions that others, parents, teachers, brothers make on their behalf. Kellerman and Rhode (2007) and Corner (2007) highlighted the major factors for women’s less effective participation in politics that includes:

a) Lack of acquisition of the necessary experience for taking part in public decision-making.

b) Perpetuation of the negative attitudes regarding women’s ability to lead and govern,

c) Lack of role models of women leaders for young women and girls

d) Important decisions reached without women’s viewpoint

Gender role ideology, cultural patterns, pre-determined social roles, and stereotyping regarding women’s ability to lead and govern, constitute a system of barriers for women and they do not consider themselves capable for politics. Many women psychologically internalize that perhaps politics is not for them. A plethora of cultural norms, often justified through the use of religion, hampers women’s entry to the political arena (Shaheed, 2010).

Caste System: Culture in simple words is a way of life that includes customs and beliefs of a particular group of people in a defined territory. According to Ahmad (2006) political culture constitutes both the political ideals and operational norms of a polity. This process is found in every political system according to the behavior and political education of its culture. Women’s participation is severely affected by the culture of formal political structure which is pervasively male dominated almost in all parts of the world. Politics all over the world is defined as man’s game and government as men’s club (Sackchet, 2005).

Mumtaz argues that political context reflects the social framework of a particular region. Every political system has its own political culture (set of beliefs, attitudes and sentiments which underpin the operation of a political system). Ahmad and Naseem (2011) argue that there is a strong influence of social system on the political culture system of a country. Every political system works according to the political culture of its region. Bari (2005) highlighted that obstacles to women’s political empowerment resides in the prevailing social and economic regimes as well as in existing political structure. There is an influence of many blended cultures on the social system of subcontinent and one of the most important elements of this social system is caste system. Social system of Casteism or Biradarism has deep impact on the political alignments of people of the subcontinent. There is strong influence of this powerful cultural element on the political system of Pakistan. The caste system (known as zat/biradari in Pakistan) can be defined as a social system of caste hierarchies which allows little mobility out of the positions to which a person is
This dominating factor (biradarism) is strong determinant of voting behavior at national as well as at local levels. But its impact is stronger at rural and local level elections where caste is taken as the primary determinant for voting. At local level, these election campaigns are organized on the basis of biradri (tribes and clans) (Wilder, 1999).

In Pakistani political culture, there is strong influence of biradari unity and it is considered more durable than any ideological unity of political party. Biradari plays an essential role not only at local level elections, but even a good deal of ticket balancing is done among the candidates for a National Assembly seat on the basis of biradari. Mughhees Ahmed (2004) has identified the effects of elections where candidates are selected by their association to a particular caste. He argued that under this political culture, family, faction and caste (biradari) ties are strong determinant of political loyalties of people, and most importantly amount of patronage determines one’s political power in his/her respective area. In this political culture (based on the caste system of machine politics) government does not focus to formulate and implement public policies at large, but to adjust their own constituents into jobs and in other words, doing out patronage in the form of government jobs. It is necessary to promote oneself as a strong candidate for party ticket and to have strong support of major biradari for success in political culture of Pakistan. The voters cast their votes voluntarily to their own biradari for their success.

Stephen Lyon, in his PhD dissertation ‘power and patronage’ also highlighted the influence of this cultural pattern on the political processes in the context of Pakistan. He critically examined the role of patronage in the relationships between politicians, civil servants and ordinary citizens. He argued that State political process is the reflection of its culture where human resources networks are important to enter in the political game. The main aim of individuals involved in state mechanism is to protect the priorities of their networks by sharing resource capitalization within that specific human resource networks. According to Lyon (2002) State politics is an extension of basic principle of cultural relationship which is found at all levels of society; patron/client. In the formal political structure of the State, personal relationships are more important than logistic rules. The alliances are created on patron based distribution of resources and contacts. Khilji (2003) also has highlighted this perspective and states that social connections and interaction generally take precedence over rules in contemporary organizations of Pakistan. Khilji (2004) further highlights that family centered mores of local culture are explicitly reflected in organizations working in Pakistan. Saher and Mayhofer (2014) also highlighted the significance of Institution of “Biradari” and Vartan Bhanji (social allegiance) in the selection and promotion of a candidate in a formal setting in Pakistani organizations. Bano (2009) highlighted that lack of social capital (support of networks) is one of the most significant factor for women’s disadvantageous position in politics. Women are often not head of tribes, communities, or kinship group that results in the absence of constituent for them which is a leading factor for political survival in Pakistan.

Economic Factors: Access to material resources and finances are considered as crucial factors for having power and influence in many social contexts. The status of women in Pakistani society is secondary to men where power and economic resources are mainly owned and controlled by men. A clear gender gap is found in education, economic activity and employment for women (NCSW, 2010; Bano, 2009). This gap reflects women’s lower status as compared to men in Pakistani society. Women’s limited access to financial resources affects their decision making power both in family and public sphere. Women’s less access to ownership of productive resources limit their scope of political activities as politics has increasingly become commercialized (Ballington & Matland, 2004). According to Ali and Akhtar (2012) obstacles to women’s equal political participation are deeply embedded in the cultural patterns of South Asian region. Patriarchal nature of these societies restricts women’s entry into the bureaucratic and political institutions. Women participation is also affected by the competitive nature of politics itself where it is taken as lucrative source of income and power which men attempts to control. Gender socialization remains a barrier for women, particularly in traditional, patriarchal societies where men have traditionally been positioned as “breadwinners” and accustomed to raising money for their own use. Where women are traditionally relegated to the private sphere, they are not typically accustomed to raising funds on their own behalf.

Profile of Azad Jammu and Kashmir: Azad Kashmir is a self-governing state, having its own elected president, prime minister, high court, and official flag. It is the Southern political entity under Pakistan’s control. The state is administratively divided into three divisions (Muzaffarabad, Mirpur and Poonch). These divisions are further subdivided into ten districts. Legislative Assembly comprises of 49 members with only 10% representation for women. Women don’t have a defined quota/proportion at party level.
Materials And Methods

Universe and the Target Population of the Study: The universe of the study was comprised of women politicians from different political parties in Azad Jammu and Kashmir. Currently there are seven political parties active in Azad Jammu and Kashmir. The researcher has purposively selected women members from three political parties. These parties include; i) Pakistan People’s Party (AJK), ii) Pakistan Muslim League (N), AJK and iii) Muslim Conference (AJK). The reason behind selection of these parties was their strong hold in the political history of Azad Jammu and Kashmir as compare to other parties.

Sample Size and Sampling Technique: The target population of the study was women members from three different political parties. For qualitative part, the researcher has purposively selected 30 women members (10 from each party) for in-depth interviews. Ten (10) face to face and twenty (20) telephonic interviews were conducted from women politicians of Azad Jammu and Kashmir. These members occupy different positions within the parties. Profile of the respondents is attached in the appendix (c) and (d).

Thematic Analysis: Thematic analysis has been used in this study. For analyzing the existing data, deductive qualitative content analysis was conducted as proposed by Leedy and Ormrod (2001). The themes were generated and coded after thorough study of the literature. The data then received from the respondents was coded. The responses also helped to develop new themes and sequencing the initial themes. Selected quotes from these interviews are used to support both findings and discussion of the results. Some of the quotes are also included in the research for further clarity. The names the respondents are kept confidential as per their instructions.

Results And Discussions

Structural Obstacles for Women in Politics: Respondents shared that women’s participation in politics is affected by structural and situational factors. It’s not an easy task for women to be successful in politics and make the positions in party. In the initial stages to come forward in politics, good amount money is required from the candidate. This self-financing aspect creates a major hindrance for women to launch a campaign, establish/build name recognition and gain exposure. According to respondents, the way different political campaigns are organized and elections are held, give a message that politics is not for women in Pakistani society. Organizing a procession for party is un-imaginable task when one doesn’t have any kind of financial resources available. Men are in advantageous position in politics because they have more exposure of public life and it is easy for them to easily use other means (access to financial resources, personal terms, and most importantly use of “bradari” as a tool to come forward). It is something which is not easy for a woman in Pakistani society. Most of the time women are not able to come forward because of the nature of political activities which demand merely a show of power. Mostly associated this with women’s poor economic standing in society where strong financial and social position is crucial for survival in politics. Some shared that it’s a game of money and power and women are held back due to several reasons. According to most of the respondents participation and survival in politics for women are two different things.

According to some of our respondents.

“It is very important to have economic resources to survive in politics. Economic resources matter not only to arrange a public meeting but also to attend and have access to these public meetings”.

“I don’t appreciate the existing political structure. Politics is about serving your people. Here in our region politics is associated with the Wadeera (Landlords/elites). It has made politics and leadership something that is un-imaginable for women where strong political and economic background is compulsory requirements to be able to exercise your authority and position in the society”.

Responses revealed situational factors such as burden of family responsibilities also affect women’s priorities that place politics as second or third priority. Women find less time for effective political participation due to the double burden of productive and reproductive spheres. Respondents shared that it was quite challenging to carry a political life with very young children. Some shared that they joined politics when they were almost free from motherhood responsibility.
According to one member

“As a political worker, time for my family remain a biggest challenge for me. The nature of work involves continuous struggle ranges from daily meetings with public, travelling and accomplishment of office’s assignments and tasks. Sometimes it creates stress and tension but once you have devoted yourself for others, you have to sacrifice many things. As a mother it is big challenge to sacrifice my family time for my political commitment”.

Women’s participation is severely affected by the culture of formal political structure which is pervasively male dominated almost in all parts of the world.

Our findings show that women’s role in party organization is strongly influenced by the social and political context of this region. Parties are dominantly patriarchal in their party rules and regulations.

There is strong influence of “Bradari” (caste system) in political culture where strong references and caste affiliation/association play significant role for promotions in the party organization. Members shared that politics and power positions are mostly taken as inherited and seats are already specified for some specific members.

According to Matland women’s selection by party is most crucial stage for women access to political decision making. Mostly members highlighted that the recruitment process of party members for different positions is not transparent. It is the party leaders who have all the authority to decide positions for party members. Mostly members are given executive positions within the party who don’t have any kind of political experience but hold strong power in his respective area. Lovenduski pointed out that party ideology towards women’s political participation is reflected in terms of how many women are nominated, where they are placed on party lists and what proportion is given to them. Respondents showed their strong concerns for women’s proportion in party and legislative level. Many respondents associated women’s marginalized status in politics with their less proportion both at party and legislative level. For them it was the only way to promote women in political decision making. Representative at district level:

“Women’s proportion at party and legislative level is the most important issue for us. We have given several recommendations to the party for increasing women’s proportion up to 25% at legislative and 40 to 50% at party level. This increase will have very positive effect for women.

Some of them criticized the role of women present at legislative level for not asking a defined quota and more proportion for women at party level. There were other members who focused on the effectiveness of women’s positions rather than on more proportion both at party. For them having more proportion will not have sound effect for women unless their positions are truly recognized and appreciated by the party leaders. They criticized party’s less serious attitude for women political empowerment and associated this with overall societal attitude towards women’s role in public decision making.

“It is not about a certain proportion for women in politics at party and legislative level. I think it is more important for women to have a say/voice and to be heard at different levels. It’s my experience that even at legislative level, women face numerous challenges to present and share their issues and concerns. At party level their position becomes more vulnerable as they don’t have any say in the decision making processes.

Representatives at district level shared that they are trying their best at personal level to make system more effective within the existing resources available to them. But most important aspect is less recognition and acknowledgement of their activities from the party leaders.

Results show women’s subordinate position in politics is shaped by their social and political relations in a society. Women’s actions are defined under the cultural conception of gender roles for men and women as highlighted by Shaheed (2010). According to some of our respondents, it was very difficult for them to enter in the field of politics that directly challenge the cultural notion of women’s mobility and interaction. Politics is a profession where a political worker has a direct dealing with public and it also demands frequent travelling which is culturally not acceptable and appreciated for women.
As it was shared by one of our respondent

“In our society, it is not easy for women to make her space/place in politics. Socially it is less appreciated field. When I decided to join this profession firstly of all, I analyzed my position/status in family and society. Then realize that how can I work within the existing structure of our society. That’s why in the initial stage of my career I always took my brother with me for so many reasons/in many activities.”

According to responses, at social level, women’s career choices are strictly controlled by family. Woman is always taken as a symbol of respect and dignity for her family so they are not allowed by their families to join this profession where women’s mobility and respect can easily be questioned. Women have to be more conscious regarding their professional choices. Some shared that despite having a good number of women’s graduates in law and political science; women don’t choose this field for themselves. Some shared that politics as a profession is not based on ideology, merit, performance, and actual social work for people in our society. Men are more aware about the inside game rules of this profession so they don’t want their females to be indulged in this profession. According to one member:

“It’s not about that women can’t compete in politics, but most important thing is that our existing social structure is male dominated and society doesn’t prefer this field for women because they perceive politics as most insecure/disrespected profession for their girls and daughters”.

According to some respondents they were always encouraged to believe that politics is much complicated for them to understand so it’s better for them to leave everything on men. Respondents shared that they didn’t experience a healthy and supportive environment in their party organization. However, it was their own determination, commitment that helped them to succeed in this male dominated profession where politics is taken as male’s club.

One member shared that women is always taken as a weaker sex in our society and especially when she is alone or single. This is reflected in society’s attitude. Some shared that women’s active involvement is always a threat to male especially for those traditional leaders who don’t have strong educational background and less familiar with actual and formal political processes. Women members also shared that they don’t have any kind of issues regarding male’s attitude at visible level. But when they come in competitive environment, male colleagues create more invisible barriers for them.

“Males’ attitude is encouraging as far as we don’t challenge their positions”.

These respondents associated women’s less representation with more personal/psychological level factors linked with structural factors that affect their participation in politics. One shared that women have to face these social cultural barriers from society as it is reflected at all level. It needs time to change this attitude especially when you are not accepted to be suitable for a particular profession. Another member shared that unless, women don’t have political willingness to sacrifice themselves, they can’t come forward in politics.

According to one member

“I don’t think women face more problems to enter in politics due to their gender. There are many other professions where women are working and have direct dealing with males. But for politics women have to be more confident, bold and politically aware and trained to survive”.

“one needs to have a goal and a vision to participate in politics. Women can be very good leaders but it require continuous struggle self-determination, self-controlled behavior, political spirit and ideology”.

One respondent explained that before joining this profession, women have to keep in mind all the pros and cons associated with this field especially when they don’t have supportive environment. It is a challenge for us to survive in male dominated field and to maintain our prestige, dignity and self-respect.

Conclusions: The present was aimed to explore the nature of obstacles for empowerment of women members of political parties in Azad Jammu and Kashmir. The study analyzed the overall nature of socio-political obstacles for women’s members by adopting multi level explanations that includes i) patriarchy and gender role ideology ii) caste
system iii) and economic factor. The study highlighted that women’s political empowerment is tight with complex and intertwined factors. Women face serious challenges of financial resources, less exposure of public life and less political capital as compare to men. From political point of view, dominant masculine political system doesn’t appreciate women’s participation where men are considered as traditional custodians of this field. Furthermore, social cultural views about women’s roles create more obstructs for women to effectively participate in this field. The members emphasized on the political consciousness among women as an important element to achieve their right status in politics. Networking among women members and link with civil society was also highlighted by members that can help them to overcome all these obstacles.

The study has limitations regarding the sample size of respondents but keeping in view the proportion of women in political parties, selected sample justify our main objectives of the study. Despite limitations, this study is valuable contribution as there is no academic research available on the nature of political participation for women in Azad Jammu and Kashmir. To the best of our knowledge, this is first study that has explored the experiences of women members of political parties regarding the nature of hindrances for their effective participation in politics. The research is highly useful for academician, policy makers, women politician as well as for general masses to understand the social-political obstacles for women political participation in the context of Azad Jammu and Kashmir. Our study may provide a baseline for future researches for women’s political participation in Azad Jammu and Kashmir. Future researches may study and analyze the issues for women in politics by using quantitative research approach at large scale.

**Appendix (a)**

**Case Summaries of Women Member of Pakistan Peoples Party**

<table>
<thead>
<tr>
<th>Respondents</th>
<th>Qualification</th>
<th>Political Experience</th>
<th>Age</th>
<th>Marital Status</th>
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<td>8</td>
<td>42</td>
<td>Married</td>
</tr>
<tr>
<td>4</td>
<td>Graduation</td>
<td>12</td>
<td>42</td>
<td>Married</td>
</tr>
<tr>
<td>5</td>
<td>Master</td>
<td>2</td>
<td>38</td>
<td>Un-married</td>
</tr>
<tr>
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<td>26</td>
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<td>Master</td>
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<td>Un-married</td>
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<td>Master</td>
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<td>Married</td>
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<tr>
<td>10</td>
<td>Graduation</td>
<td>7</td>
<td>35</td>
<td>Married</td>
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**Case Summaries of Women Members of Muslim League (N)**

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<th>Respondents</th>
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## Case Summaries of Women Members of Muslim Conference

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THE EFFECTS OF WORKING WOMAN CONFLICT AND JOB SATISFACTION (AN EMPIRICAL STUDY OF NURSING INDUSTRY OF PAKISTAN)

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ABSTRACT: The research study was conducted to examine the consequences of working woman conflict and its impact on the employee’s job satisfaction. To carry out the study, data was collected from all the private hospitals in Islamabad and Rawalpindi. The targeted employees were nurses of these hospitals. The study revealed that the effects of working woman conflicts with the employers on employees’ job satisfaction are numerous. A survey through questionnaire was conducted with a sample size of 450 nurses. The Pearson correlation estimated among the Time Based Conflict (TBC), Strain Based Conflict, (SBC) Behavior Based Conflict (BBC), Job Satisfaction (JS), and the result was found comparatively highly insignificant. Nurses working in conflict reported that high level of time based conflict and strain based conflict adversely effects their job satisfaction and they were experiencing low level of behavior based conflict. The study was primarily confined to only two cities of Pakistan, and was also limited to nursing industry only. The theoretical and practical implication shows that working woman satisfaction with their jobs could be improved through their adequate facilitation and institutional performance level. If the three form of working woman conflicts were reduced, it would have positive influence on nurses’ job satisfaction. Flexible schedule in the nursing industry has vital role in the health care sectors as well. The favourable organizational culture has significant impacts in the nursing industries, because employees are favouring to choose their own hours of working due to their cultural flexibility. The results of the study reveals that job satisfaction of employees (nurses) at work could increase, if the adverse effects of working family conflicts in the form of time based conflict, strain based conflict, behavior based conflicts are minimized or eliminated. Elimination of such conflicts will strengthen their (nurses) satisfaction level and performance in the organization as well.

Keyword: Time Based Conflict, Strain Based Conflict, Behavior Based Conflict, Job satisfaction.

1. Introduction: Female employment and family life related issues have become very significant to be analyzed for the prosperity of the family life, especially in the Muslim culture. The problem of WFC(work family conflict) occurs because of the latest trends of higher living standards on account of economic growth, globalization and given equal right to male and female focus on the working life related issues. Most vital cause of employees life were work and family problems.
Two important factors of life were work and family domain of the employees. Family and work life conflict issues were mostly faced by the professional females, single working mother and married female. Actually working women’s are performing two types of duties; therefore, their responsibilities have been tremendously enhanced. Consequently, the performance of one domain will certainly be affected adversely due to stress on account of working schedules, work pressure and environment prevailing in the organization. (Mazerolle; etal.2008).

Nurses are called “the back-bone” of health care institutions because they come in closest contacts with the patients. Nurses provide care to the patient and are directly linked with the comfort and satisfaction of the patients. Fulfiling the expectations of the patients, their families, the physicians, technical and non technical staff, and also the organization could become a heavy burden over their shoulders in their duty places. Generally conflicts occurs among healthcare providers and the nursing community due to the unfavourable structural features, organizational unfavorable environment that characterize the healthcare professions difficult and unfriendly and that represent serious barriers in achieving working life and family ties in a balance position. Healthcare profession is quite a demanding job and has to ensure 24 hours availability in the hospital if the patient is in critical situation or if there is any emergency declared due to the various reasons. Therefore in this profession the nurses have to ensure delivery of quality care to the patients and satisfaction to the organization as well. Therefore, such overwork and 24 hours involvement of the employees in the job creates stress and strain (Simon et al., 2004), which sometimes leads to the breakdown of family bonds. The schedule of working nurses is always very tough, tied and hence their work pressure makes them unable either to perform their family roles adequately or sometimes adversely affect their professional work. Nurses are usually facing tension and stress on account of jobs pressures and further on account of their increased family tensions as well in the form of low income level, children educations, female children related issues, family bonds, and working as a house wife etc. Therefore, resultantly quality of family life is also remains under stress and strain. Hence such employee’s behaviors also adversely affect quality of family life. (Eby et al., 2005).

1.1 Working Family Conflict: Such conflicting inter-dependence of work and family life creates complications in different forms of conflict. Work life conflict occurs while the role demands stemming from one domain (work/family) was mismatched by role demand stemming from another domain (family or work). Time based work family conflict, strain based work family conflict, and Behavior based work family conflict were three sources of work life conflict in employee’s life. (Green house et al.,2006).

Work Family Conflict in the employee life had three forms i.e Time based conflict, Strain based conflict, and Behavior based conflict. (Carlson et al., 2000).

1.2 Time-based conflict: Individual perform multiple tasks at the same time and give more time to one domain as compared to another domain on account of multiple reasons. Time base conflict arises in the life of such employees. Time based conflict is due to too much work time and inflexible working hours (Pleck et al., 1980). Time management is an important factor of employee life. Flexible schedule can reduce conflict in the employee’s life and they can balance their responsibilities required in both domain. Schedule flexibility is very beneficial for the working females. Flexibility in working hours reduces conflict of working mother with primary childcare responsibility (Long, 1981).

1.3 Strain-Based Conflict: Strain in one role affects one’s performance in another role in such cases. Work or family responsibility trait produced strain produces those results in work-family conflict. Strain-based conflict is experienced when strain or fatigue in one role affects performance in the other. (Carlson, 2000).

1.4 Behaviour-Based Conflict: This type of conflict occurs when behaviors suitable in one role are not well-matched with expected behaviors in another role. (Greenhouse &beutell,1985). Behavior based conflict can take place in the employee life as well. The behavior and attitudes of employee’s at job are not comfortable with the behavior in performing family duties. (Lambert et al., 2006a). A person is expected to be affectionate with his family, but when he is unable to adjust his behavior according to different roles he is prone to experience behavior based conflict (Greenhaus., & Beutell, 1985). Role conflict is a relationship linking two vital area of worker’s life. Therefore three types of conflict are associated with family work conflict. (Carlson et al., 2000). Role behaviors of employees are detailed patterns of Behavior based conflict. Behavior based conflict is an experience, when behavior of individual in one role are miss-
matched with the behavioral expectation of another role and are therefore counterproductive for the other role performance. (Kinnunen et al., 1998). Employee’s job satisfaction increase when strain based conflict and behavior based conflict are reduced. Research revealed that relief in strain based conflict and behavior based conflict have important link with the job satisfaction. (Lambert et al., 2006b).

1.5 Job Satisfaction: Job Satisfaction is an attitude associated with the degree of at what level people like or dislike their job. In low level of job satisfaction there is a negative attitude and vice versa (Spector, 1997). Work family conflict was a basic reason in the employee’s life so it is very important element effecting employees work satisfaction and organizational loyalty. Locke (1976) identified that “job satisfaction is an employee’s positive behavior and attitude and their emotional condition. “Job satisfaction is resulting from assessment of one’s work or work know-how.” (p. 1300).

Problem Statement: Nursing is a major component of Pakistan health care system. Nurses aim to provide care to families and individuals. Since almost last 70 to 80 year, the number of women working outside their homes has been increased tremendously. Dual-career female, working as a mother and also as a divorced ladies faced work family conflict issues. Nursing is a stressful occupation. These negative consequences directly affect nurses’ job performance and the quality of patient care as well. (Pani & Chariker, 2004). The work-family conflict is indeed a hurdle for the nursing profession that may be the reason of the shortage of nurses in Pakistan in particular. (Grzywacz et al., 2006). Most of the females though like this profession but are not joining this sector due to work life problems. Work family conflicts are very important issue now a day. Every organizations success depends on the performance of the employee’s. If the employees are satisfied with their job the performance will also increase. Most of the research focusing on employee’s job satisfaction has been conducted in western countries therefore this study is an attempt to ascertain as to how work family conflict impact on job satisfaction . “The Study analyze to what extent Work family conflict corresponds to interrole Conflict that has influence on the Employee’s Job Satisfaction.

Significance Of The Study: Work family conflict was the source of interrole conflict. Interrole conflict occurred while responsibility demands stemming from one domain were mismatched with the responsibility demand stemming in another domain. Consequences of work family conflict are of three types. They are Time Based Conflict, Strain Based Conflict, Behaviour Based Conflict, Carlson et al (2000). Work family conflicts have direct and indirect effects on employees performance and job satisfaction level, Ahmina et al.,(2008). Work-family conflict is a hurdle for the nursing profession, Grzywacz et al., (2006). This study will show relative information about the different consequences of Work Family Conflict (WFC) and its impact on nurses’ performance working in different hospitals of Pakistan. Performance level measurement will help the organization to measure the different Job Satisfaction levels by relating it with different Work Conflict or Family conflict that has caused by employees low or high Job Satisfaction levels. This study will also help to identify what are the major WFC in Nursing Staff in various hospital that have Positive and Negative impacts on Employees performance.

Research Questions:
- To what extent work family conflict have negative impacts on job satisfaction?
- To what extent time based conflict have negative impact on job satisfaction?
- To what extent strain based conflict have negative impact on job satisfaction?
- To what extent behavior based conflict have negative impact on job satisfaction?

Objectives Of The Research Study
- To identify the work family conflict on employee job satisfaction
- To investigate the impact of work family Time based conflict on job satisfaction.
- To examined the work family strain based conflict impact on job satisfaction
- To evaluate the impact of behavior based conflict on job satisfaction.

Scope Of The Study: The aim of the study was to examine the link of work family conflict in working domain with three possible variables, which influence the employee’s performance. This study examined the work family conflict and job satisfaction. The study have be conducted in nursing industry in Islamabad
and the research has been confined to six private sector hospitals located in Islamabad and Rawalpindi, i.e Al shifa International Hospital, Kulsoom International Hospital, Bilal International Hospital, Al maroof International Hospital, Quaid-e-Azam International Hospital, Ali International Hospital.

2. Literature Review: The Relationship Between Work Family Conflict & Employees level of satisfaction: The association of family and work conflict had vital impact on technology based units and industries based units are co related. work issue associated with employees likeness and dis likeness of the job. Research revealed subordinate had more like their jobs when their management shows supporting behavior and given them relaxed and flexible time schedule so this supporting behavior created individual person life satisfaction. Employee work duties intensive responsibilities. Sometime these duties create difficulties in employees work family life. work and life both are negative to each other because management not show supportive behavior. The results further revealed that the hypothesis have close relationship in linking work-family conflict and life satisfaction with negative and highly insignificant, when organization is non supportive and hard (Naz et al.,2011).

Conflict in family associated with employees jobs and institutional organization environment and also on employee feel overload which made him dis- comfort with their life and work. professional mother performance reduce due to time strain and behavior (Grandey.A,2005).

The Study based on employee issued related to work and family. These issues create discomfort for their jobs. These issues seen in Pakistani culture. The study investigated work and family problems related to work overload, ambiguity in role finding show that researcher have further revealed that manager want relaxed and flexible work timing (Nadeem & Abbas, 2009).

The research study has closely examined links between work family conflict and job satisfaction under various terms. In this research study nine facet of job satisfaction were measured with six variables relevant to both work and non work sphere work life conflict. Three are relevant to work domain and 3 variables were relevant to family domain, hence the result shows that 7 facet of job satisfaction significantly related to time based conflict, 8 Facet of job satisfaction are negatively related to strain based conflict and one facet of job satisfaction is significantly related to behavioral based conflict (yan & Bin, 2010).

According to the research analysis, work family conflict is the inter role conflict significantly linked to two forms of job satisfaction that is composite job satisfaction, and global job satisfaction, Data was gathered from 160 hospital employees who were married worker, living with their partner’s, or had at least one child or dependent living at home and worked a minimum of 20 h/week. The study identified the work family conflict was having significantly stronger relation to composite job satisfaction than global job satisfaction. In this research three forms of role conflict are also considered and their results shows that only behavioral based conflict is significantly related to job satisfaction (Bruck.c,2002).

2.1 Work family job satisfaction and the three kinds of commitment: Stress theories and Loyalties of employee with their work unit shows consequence in work and family life. Loyalties with their working unit had less and very high due to time, strain and behavior. The research on nurses shows they were feel dis-comfort with their time and strain issues (Buonocore.F,2010).Changes in employee’s mental level and attitudes due to work and family overload responsibilities. These burden created problems in worker work and family life. person likeness and dislikeness regards their job was related to flexibility in working hours and performance was also dependent it (Engle&Dimitriadi,2006).

Culture difference in work was also related to work and family life problems. The study reveals that time, strain were causes for employees dislikeness of their jobs and turnover rate in the organization was also increase (Spector, 2007). The studies revealed working time, age, year of services and behavior had association with employees attitude toward favourable and un favourable situation at work. work-roles behavior had the largest affect on job satisfaction (Lambelt et al., 2002). Timing of work, fatigue in job and role behavior problems were seen on Mid western correction staff. worker timing related issues was vital factor related to employee likeness and dis likeness level of the job the finding show that time, strain and behavior related issues were associated negatively with employee’s performance and satisfaction at work (Lambert et al., 2003). The study was conducted at Midwestern prison correctness staff. strain and time had vital factors that create work and family related issues in employees life. (Lamblet et al.,2006).
North Italian nurses research was show work and family related issues. The study revealed if three form of conflict TBC (time based conflict), STB (strain based Conflict), BBC (Behavior based Conflict) less interfere will create nurses job favourable for nurses in the nursing industry (Cartese C et al, 2010).

Professional working female were faced time strain and behavior related issues. Time flexibility create likeness in the job for professional working woman. This show positive effect on female worker performance in the job (Risavy, 2011). Characteristic of Finland mother jobs created work and family related problem in life. Because both domain were class with each other. Same study was investigated on Finish mothers. They all are work at long time that will create difficulties in their professional life. Time demand at work were very high so they cannot give proper time to their family this create issues in their life. These working women were satisfied when their management control timing and strain related issues in life. (Patel, 2010).

2.2 Work family conflict, job satisfaction and job turnover among the female worker in the university: University Female staff also faced timing and strain related issues. If university facultiated flexible time schudule and reduce their work strain they will also statisfied with their job (Ahmad & Massod, 2011).

Hypothesis

H₁. Work Family Conflict has significant negative impact on job satisfaction.

H₂. Work Family Time based conflict has significant negative impact on job satisfaction.

H₃. Work Family Strain based conflict has influence on the job satisfaction significantly negative.

H₄. Work Family Behavioral based conflict has influences on job satisfaction significantly negatively.

Schematic Diagram Of Theoretical Framework:

IDV (Independent Variable)

Work family conflict

DV (Dependent Variable)

Job satisfaction

3 Methodology

3.1 Research Design: It was an explanatory or casual research study because it focuses on studying the impact of one variable (work family conflict) on the other variable (job satisfaction). It explains the relationship between variables, whether they were positively related or negatively related or even no relationship exists between variables. This research involves testing of the hypotheses.

3.2 Participants: Population : (N=12554) The Current study was conducted in health care sector and targeted Nursing Industry in Pakistan. The population of current study comprises of nurses working in the Pakistani private hospitals located in Islamabad and Rawalpindi.
3.3 Sample (N=450): This study focuses on the Work Family Conflict, job satisfaction and Employee performance. Six private hospitals were selected through non probability convenient random sampling. Target was private hospitals located in Islamabad and Rawalpindi namely Shifa International Hospital, Bilal International Hospital, Kulsoom International Hospital, Quaid.e.Azam International Hospital, Maroof International Hospital, Ali International Hospital.

3.4 Sampling Technique: The aim of this study to used connivance non probability sampling technique. Research on nursing industry of Islamabad and Rawalpindi.

3.5 Instrumentation: In this study, the researcher utilized three instruments. A valid questionnaire used to collect the data for recent study. The questionnaire was adopted to achieve the objectives of the study. There was one independent variable work family conflict was measure through three facets; time based conflict, strain based conflict, behavior based conflict. The first section of the questionnaire collects demographical information of the nurses’ staff.


3.6 Work Family Conflict: A valid work family conflict questionnaire Carlson (2000) was used to check the work family conflict. There were three facet of work family conflict. That was time based conflict, strain based conflict, and behavior based conflict. A total of 9 questions in the questionnaires contain 3 questions of measuring time based conflict, 3 questions of measuring strain based conflict, and 3 questions of measuring behavior based conflict. The work family conflict was also based on 5 points like scale ranging from strongly disagree (1) to strongly agree (5).

3.7 Job Satisfaction: A valid job satisfaction questionnaire war cooks and wall (1979) to measure the job satisfaction level of the employees. The job satisfaction was also based on 5 point like scale ranging from strongly disagree (1) to strongly agree (5).

3.8 Demographic variables: In the questionnaire was also contained demographic variables (Gender, status, age, level of education, work schedule, duty hours per day, year with this organization, children age). The 400 questionnaires placed in the offices of nursing superintendent of the hospital of Islamabad. Five points like scales was used, points 1 from strongly disagree and 5 strongly agree.

3.9 Unit Of Analysis: Our study related to behavioral sciences and in behavioral sciences the unit of analysis was individual i.e. Nurses working in different private hospitals of Pakistan.

3.10 Data Collection: The researcher herself visited to all the hospitals during the survey and administered the instrument containing work family conflict, employee’s performance and job satisfaction. Questionnaires were given to 400 nurses.

4. Results & Discussion: Reliability Analysis:

4.1 Table Reliability Analysis Of variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Items</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time Based Conflict</td>
<td>3</td>
<td>0.860</td>
</tr>
<tr>
<td>Strain Based Conflict</td>
<td>3</td>
<td>0.849</td>
</tr>
<tr>
<td>Behavior Based Conflict</td>
<td>3</td>
<td>0.776</td>
</tr>
<tr>
<td>Job Satisfaction</td>
<td>16</td>
<td>0.911</td>
</tr>
</tbody>
</table>
4.1 Reliability: The above table shows reliabilities of the five variables that is 3 item of TBC (Time based conflict), 3 item of SBC (Strain Based Conflict), 3 item of BBC (Behavior Based Conflict), 16 item of Job Satisfaction (JS), and their reliability was 3 item TBC value was 0.860. 3 item SBC value was 0.849. 3 item BBC value was 0.776. 6 item Job satisfaction value was 0.911. These values are in acceptable range, indicating that internal consistency reliability for the measure used are consider to be good. According to Uma Sekaran, reliability less than .60 are consider to be poor, those in .70 range acceptable, and those over .80 good.

4.2 Correlation:

Table 4.2.2. Means, Standard Deviations and Correlation among Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>wfc</th>
<th>TBC</th>
<th>SBC</th>
<th>BBC</th>
<th>JS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work family conflict</td>
<td>3.15</td>
<td>1.13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time Based Conflict</td>
<td>3.14</td>
<td>1.12</td>
<td>(.84)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strain Based Conflict</td>
<td>3.38</td>
<td>1.15</td>
<td></td>
<td>.89</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behavior Based Conflict</td>
<td>1.96</td>
<td>0.96</td>
<td>.79</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job satisfaction</td>
<td>2.61</td>
<td>0.4</td>
<td>.620</td>
<td>(.29**)</td>
<td>-.46**</td>
<td>-.05*</td>
<td>.84</td>
</tr>
</tbody>
</table>

Note: *p<.05; **p<.01; ***p<.001

Time Based Conflict and Job Satisfaction has significant level (r=-.29** at level of p<.01) statistically negatively significant. Strain Based Conflict and Job Satisfaction has negative significant at the level of (r=-.46**) i.e. (p<0.01). behavior based conflict and job satisfaction correlation at the level of (r=-0.05*) i.e. negative correlation at the level of (p<0.05*).

4.3 Regression Analyses

Regression has been used in order to measure that how much variation in dependent variable has been caused by independent variable. The result are as follow

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted Square</th>
<th>R</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.620*</td>
<td>.385</td>
<td>.367</td>
<td></td>
<td>.61611</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), WFC

ANOVA*

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>16.151</td>
<td>2</td>
<td>8.075</td>
<td>21.274</td>
<td>.000b</td>
</tr>
<tr>
<td>1</td>
<td>Residual</td>
<td>68</td>
<td>.380</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>41.962</td>
<td>70</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: JS
b. Predictors: (Constant), WFC
### Coefficient

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>3.325</td>
<td>.290</td>
<td>11.482</td>
<td>.0000</td>
</tr>
<tr>
<td>1</td>
<td>WFC</td>
<td>-.348</td>
<td>-.596</td>
<td>-5.810</td>
</tr>
</tbody>
</table>

1. Dependent Variable: JS

**Hypothesis**: is accepted “t” value is greater than 1.96 in absolute term and significant at acceptable level.

### Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBC</td>
<td>-.48.</td>
<td>.028</td>
<td>.021</td>
<td>.66733</td>
</tr>
<tr>
<td>SBc</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BBC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### ANOVA*

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>5.056</td>
<td>3</td>
<td>1.685</td>
<td>33.784</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>176.350</td>
<td>396</td>
<td>.445</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>181.406</td>
<td>399</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Coefficientsa

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>3.110</td>
<td>.171</td>
<td>18.148</td>
<td>.000</td>
</tr>
<tr>
<td>1</td>
<td>TBC</td>
<td>-.050</td>
<td>-.065</td>
<td>-1.029</td>
</tr>
<tr>
<td></td>
<td>SBC</td>
<td>-.040</td>
<td>-.064</td>
<td>-1.028</td>
</tr>
<tr>
<td></td>
<td>BBC</td>
<td>-.034</td>
<td>-.048</td>
<td>-.753</td>
</tr>
</tbody>
</table>

*a. Dependent Variable: JS

*b. Significant at the 0.01 level.
Hypothesis H2, H3, H4 are accepted “$t$” value is greater than 1.96 in absolute term and the significant at accepted level. As hypothesized, nurses on average reported high levels of time-based conflict and strain-based conflict, whereas low levels of behavior-based conflict were experienced. On average time based conflict and strain-based conflict were negatively associated with job satisfaction.

4.4 Discussion: Discussion On Outcomes Of The Research: The research model of the study have different finding. Each variable has itself findings. The finding of each variable is discussed separately as below at the end complete discussion on overall model. The result of the current study presented that Time based Conflict has negative influence on Employees’ job satisfaction. This influence was tested with the help of hypothesized. Furthermore, when Time Based Conflict was reduced and the making flexible working schedule in the organization. The employee job satisfactions are increased. The result of the study proved that time based conflict are not significant positive impact on employees’ job satisfaction. Hence the result of the present study justified with the previous literature review (Botha, H, 2007). The work family time based conflict on job satisfaction (yan, 2010) is clear. WFC had an impact on job satisfaction. Time based conflict had the significant impact on job satisfaction (Lambelt, 2002). The current Study established empirically not significant impact between work family Time based conflict and job satisfaction (Brucks, 2002). The current finding are in line with work on social worker (Lambelt, 2006). Work family conflict reduces, when employees receive high level of job satisfaction. The time based conflict and strain based conflicts are strongly associated with job satisfaction (knech, 2011).

The cross national Difference in relationship of work demands job satisfaction and turnover intention with work family conflict have close relationship. This study examined that time based conflict and strain based conflict has significant impact on job satisfaction and intention to quit (Spector, 2007). The result shows that work hours are positively relationship toward the work family conflict and influence on employees’ job satisfaction (Sabil, 2011). Time-based WIF, family overload was positively related to time-based FIW, time-based WIF was negatively related to family satisfaction time based FIW was marginally negatively related to job satisfaction (Risavy, 2011). The result of the current study presented that strain based Conflict has negatively influence on employees’ job satisfaction. This influence was tested with the help of hypothesized. Furthermore, when Strain Based Conflict are reduced, the employee job satisfaction are increased. The result of the study proved that Strain based conflict are significant negative impact on employee job satisfaction. Hence the result of the present study justified with the previous literature already conducted explained earlier.

The current Study established empirically significant impact between work family Time based conflict and job satisfaction on the Tele worker’s job satisfaction and performance. Results of previous literature shows that Tele worker’s are less strain based conflict as compare to non Tele workers, because they have less pressure of work and are more satisfied with their jobs (Madsen, R, 2005). Work family conflict reduces satisfaction when employees receive high level of job satisfaction. Therefore, this study is based on representative longitudinal data base of Swiss households. The result indicates that the time based conflict and strain based conflict strongly associated with job satisfaction (knech, 2011). Dual earning couples have also faced time based conflict, strain based conflict. The result shows the mostly female faced work family conflict due to culture and family responsibilities (Steiber, 2008). Work family strain based conflict on job satisfaction (Buonocore, F, 2010), and role ambiguity role overload create the strain that will effect the employees job performance and job satisfaction of the employees (Engle & Dimitriadi, 2006). Strain based conflict were significant impact on job satisfaction (Brucks, 2002). Strain based conflict influence job satisfaction (Yan & Bin, 2010). This study examined that time based conflict and strain based conflict have negative impact on job satisfaction and intention to quit (Spector, 2007).

The result of the current study presented that Behavior Based Conflict has significantly influence on Employee job satisfaction. This influence was tested with the help of hypothesized. Furthermore, Behavior Based Conflict influences the employee job satisfaction. The result of the study proved that Behavior based conflict are significant positive impact on employee job satisfaction. Hence the result of the present study justified with the previous literature (Brucks, 2002). The current Study established empirically significant
impact between work family behavior based conflict and job satisfaction on social worker. The finding of the study shows that behavior-based conflict had a significant impact on job satisfaction (Lamblet et al., 2006).

The work family conflict and job satisfaction: In this research six dimensional of work family conflict are tested with nine facet of job satisfaction, so the result show that behavioral based conflict are significant related to job satisfaction (Yan, 2010). Work family Behavior based conflict significant impact on job satisfaction. (Buonocore, 2010)

5. Conclusion, Implications, Limitations And Future Research

5.1 Conclusions: The fundamental point of this study is to create theoretical system that looks at the impacts of work family clash on workers' occupation fulfillment. This study gives the huge knowledge into the workers' occupation fulfillment of the nursing business in Pakistan. The model test shows that work family clash and occupation fulfillment make noteworthy commitment to nurture's execution in Pakistan. This study likewise indicates handy proof of the commitment of work family clash to the medical attendants' execution. The relationship among work family clash, work fulfillment and representative execution is reasonable idea for the Pakistani society. The reason is that ladies in the Pakistani society can't result in these present circumstances calling because of work family clash. The consequences of the study disected that employment fulfillment of representatives (medical attendants) by work will expanded when diminishment in results of work family clash (strain based clash, conduct based clash, time based clash,), will reinforce their (medical attendants) execution

5.2 Managerial Implications: This study has a significant implication for nursing industry of Pakistan. This study observed that work family conflict is an important factor influencing the nurse’s performance. Nurses’ are facing work family conflict due work schedule, work burden, family bonds, the prevailing cultural hindrances and stress of work. Better performance of the nurses’ are essentially required to have patient safety, care and satisfaction. Nurses’ satisfactions with their job could positively affect quality of care that affects patient satisfaction and loyalty to the hospitals. Job satisfaction is the feeling of pleasure and positive attitude of employees toward their job. The present study can be used for improvement of nurses’ performance in the health care sectors.

A practical and theoretical implication shows that employees’ satisfaction with their job will improve their performance level. Reduction in the three form of work family conflict may positively influence on nurses performance and job satisfaction. Flexible schedule has vital role in the health care sectors. Positive administrative attitude in hospital may make effective polices to increase nurses performance by increasing job satisfaction. The administration may plan for reducing the work burden and also make the effective flexible schedule. Flexible work schedule will reduce the work family time based conflict, strain based conflict, Behavior based conflict increase and the performance of nurses would adversely be affected. Work fulfillment inspected as a go between in work family clash and representative execution in the present study. Indeed, this study gives another thought regarding representative execution in the nursing business. Results of work family time based clash, strain based clash, and conduct based clash demonstrated that clash impact on the medical attendants’ execution. Since their work calendar is exceptionally extreme, work interest, work weight makes them unenergetic and they can't perform their family obligations. There is not many exact examination of medical caretakers’ execution in the human asset administration research. Furthermore, this study opens the huge understanding that decreases work family clash, and builds work fulfillment & performance of employee.

5.3 Limitations

- The data was collected from selected private hospitals in Rawalpindi and Islamabad and targeted only Nurses of these selected private hospitals. Therefore, the results may not be generalized to overall Nursing Industry in Pakistan.
- There were short term limitations for conducting this study; owing to short time span the researcher conducted the present study. The result of the present study will not match with actual phenomena from the real life.
• The sample size is not large enough to effect the factual situation of the nursing industry operating in Pakistan in context with measuring the relationship between work family conflict and job satisfaction
• The questionnaire method was used to collect the data for this study; other methods could have been used for this research study like interviews and group discussions.

REFERENCES


APPLICATIONS OF THE DOCTRINE OF ULTRA VIRES IN DEVELOPED COUNTRIES AND DEVELOPING COUNTRIES

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ABSTRACT. Ultra vires is the term used for the acts of a company beyond the powers prescribed by the object clause of the memorandum. Ultra vires acts of a company are void and cannot be ratified even if all the directors wish to ratify it. The development of the doctrine of ultra vires can be traced back to the establishment of limited liability principle in 1855. However, the doctrine became more stern and solid after the Ashbury railway carriage case of 1885. The doctrine of ultra vires was developed to protect the creditors and investors. The doctrine of ultra vires was applicable in all countries, however in modern days; it has been abolished in the developed countries. The doctrine is still observed by the developing countries.

Keywords: ultra vires; object clause; memorandum; application of ultra vires; effects of ultra vires.

1. Introduction. Company is A legal entity, allowed by legislation, which permits a group of people, as shareholders, to apply to the government for an independent organization to be created, which can then focus on pursuing set objectives, and empowered with legal rights which are usually only reserved for individuals, such as to sue and be sued, own property, hire employees or loan and borrow money. However, the powers exercised by the company being a legal entity are subject to certain restrictions. The memorandum of the company contains an object clause which states about the object for which the company is formed. The company must not go beyond the object clause. There acts must be limited to the object clause otherwise they will be termed as ultra vires (Rajak, 1995).

The term ultra vires is the combination of two words. ‘Ultra’ means beyond, and ‘vires’ means powers (ultra vires. n.d.). Thus ultra vires means an act beyond the powers. If an act is beyond the powers conferred to a company by the object clause of the memorandum will be termed as ultra vires. The ultra vires act cannot be ratified even if all the directors of the company wish to ratify it (Wedderburn, 1957). This is known as doctrine of ultra vires.

The ultra vires act, which is beyond the object clause of the memorandum, is void. An illegal act is also void. However, an ultra vires act is void even if the act in general is legal. Similarly, an illegal act is void even if it is provided by the object clause of the memorandum.

1.1. Exceptions to the doctrine of ultra vires. There are certain exceptions to the doctrine of ultra vires.

(ii) An act which within the object clause of the company but outside the authority of directors can be ratified by the share holders (French et al, 2013).
(iii) The share holders may validate an intra vires act performed in irregular manner.
(iv) If the company acquired any property through an ultra vires investment, even then the company right over that property shall be secured.
(iv) An incidental or consequential effect of an act shall not be considered as ultra vires, unless it is expressly prohibited by the statute.
1. **Origin of the doctrine of ultra vires.** The ultra vires doctrine of the company was first introduced in relation to statutory companies. The importance of the doctrine was increased after 1855 with the establishment of principle of limited liability. Before 1855 the companies were governed by the rules of partnership. Such rules usually protect the investors. However, after the development of principle limited liability, the creditors and investors found themselves less protected. In order to ensure the investors and creditors to be protected, a path way towards the development of doctrine of ultra vires was made. The companies were required to have two important documents, the memorandum of association and article of association (Gonga, 2002). The memorandum should state about the object of the company and the company should not go beyond its object. Thus doctrine of ultra vires was evolved.

The doctrine of ultra vires was firmly established after the decision of House of Lords in the case of Ashbury Railway Carriage and Iron Company v. Hector Riche. The facts of the case were as such that The Ashbury Railway Carriage and Iron Company was incorporated under companies’ act 1862. The objects of the company were to make and sell, or lend on hire, railway carriages and wagons and all kinds of material for the construction of railway. The directors of the company purchased concession for making railway in a foreign country. However, the company enter into contract with another corporation in that country to provide material for the construction of railway and receive periodical payments from the English company. The contract was against the object of the company which stated that the company should sell the materials for the construction of railway and the contract here was to construct a railway. The House of Lords declared the contract as void as it was a clear violation of the object of the company (Rajak, 1995).

2. **Effects of ultra vires contracts.** The doctrine of ultra vires has been developed to protect the interests of the creditors and investors in cases if the company acts beyond its object. However, if the company enter into an ultra vires contract with a person, how can the interests of that person are protected? The principle governing such kind of contracts is that “buyer should be vigilant”. Cases regarding the doctrine of ultra vires clause of the company’s memorandum have developed certain effects of the ultra vires contracts. Give below are some of the effects of ultra vires contracts made by the company.

1. The contracts which are beyond the object of the company as specified in the object clause of the memorandum of the company are ultra vires and cannot be enforced either by the company or against the company. This effect was established by the decision of the court in Re, Jon Beau fore (London) Ltd (1953).

2. The borrowing of the company beyond the powers granted to it by the object clause of memorandum is ultra vires borrowing. They cannot be enforced against the company. However, the courts of law have developed certain principles for protecting the interests of bonafied lenders. The following reliefs may be granted, by the court, to the lenders even if the borrowing is ultra vires:

   (i) Injunction-- the lender can get the injunction to prevent the company from parting the money lent by it in case if the lent money has not been spent.

   (ii) Tracing-- another relief for the lender is that he may recover his money if found that the money lent by the company is not spent and is in its original form.

   (iii) Similarly, another relief for the lender is the subrogation. It means that if the money borrowed by the company is for the payment of the lawful debts of the creditors, the lender can step into the shoes of the creditors and claim his money. However, such kind of subrogation does not give the lender priority over the other creditors.

3. **Application of the doctrine of ultra vires.** The main theme of the doctrine of ultra vires is to protect the interests of investors and creditors. It prevents a company from investing its capital other than the purpose prescribed in the object clause of the memorandum of the company. The doctrine of ultra vires assures the creditors and investors that their money cannot be used for a purpose other than the agreed object at the time of investing their money in the company. Thus, this doctrine also enables the investors and creditors to have a thorough knowledge of the object of the company. So that their investment should not be used in unauthorised activities. Moreover, the company may go into insolvency while doing an unauthorised business and the creditors of the company cannot be paid in such circumstances, this doctrine prevent the company from doing unlawful business which may result in insolvency. Thus protects the creditors.

Initially the doctrine of ultra vires was observed by all the developed and developing countries alike. However, with the passage of time the corporate business in developed countries expanded with more speed than in the developing countries. Amendments were made to the doctrine of ultra vires in order to bring it in conformity with current scenario of the corporate business.
3.1. Doctrine of ultra vires in Developed countries. The doctrine of ultra vires was strictly observed after the 1885 from the Ashbury railway carriage case. However, the virtual abolition of the ultra vires clause was made by the section 35 of the companies’ act 1989 as amended by the companies’ act 1989. This enabled the company to act beyond the powers granted to it by the memorandum. Section 35 stated that the any act of the company shall not be called into question mere on the ground of having lack of capacity by reason of anything in the company’s memorandum. It means that a company can be engaged in a lawful business whether such business is provided by the object clause or not. The temporary elimination of ultra vires rule becomes firm and permanent by the companies’ act 2006 that came into force in October 2009. The act removed the requirement of the memorandum of association for a company that actually have the object clause. The company can now do any kind of business it wishes to do unless it is specifically prohibited by its constitution.

3.1.1. Advantages. The abolition of the ultra vires rule resulted in the prosperity of the companies. A single registered company can do several different businesses at the same time. A company can also made contracts for the improvement of its business. The elimination of object clause not only removes the legal formalities for the company to expand its business but also helps in the economic growth and prosperity of the company.

3.1.2. Disadvantages. The main disadvantage of the elimination of ultra vires rule is that the creditors and investors do not have any idea about what kind of business should be carried out by the capital raised from them. The investment in the company have become like gambling for the creditors and investors. Moreover, monopolies may be created by the large corporations in the market, thus creating hurdles for nascent companies to flourish.

3.2. Doctrine of ultra vires in developing countries. In developing countries like Pakistan and India, the doctrine of ultra vires is fully effective. Two important documents are required for the registration of the company. One is the memorandum of association and the other is the article of association. Memorandum of association which is usually known as the external constitution of the company must contain the object clause. The object clause of the company shall state about the type of business carried out by the company. The object clause of the company must be open to general public and investors. The company shall not deviate from the object specified in the memorandum of association. The acts beyond the object of the memorandum shall be considered as ultra vires.

3.2.1. Advantages. The main advantage of doctrine of ultra vires is to protect the interests of creditors and investors. This doctrine prevents the capital of company to be utilized in the activities other than prescribed by the object clause of the memorandum. It enables the investors and creditors to know about the business that should be carried out by the company through the money raised from them. Thus, assures them that their money shall not be used in unauthorised activities. Similarly, the doctrine also puts check on the directors and prevents their deviation from the prescribed object.

Moreover, the strict adherence of the companies to their object clause prevent them from starting business other than allowed by the object clause, thus discourage monopolies of large corporation in the market. In other words the business market remains open for a number of companies to take initiatives and develop businesses.

Similarly, the economy of developing countries mainly depends on the revenue collected from various corporations. The doctrine of ultra vires encourages people to register new companies as the object clause of a company may not cover all aspects of business. Thus, increases the economic growth of the country.

3.2.2. Disadvantages. Besides the advantages of ultra vires doctrine, it has several disadvantages too. One of the disadvantages of this doctrine is that it narrows the scope of business carried out by a company. It prevents a company from widening its business by making contracts with other corporations mere on the grounds of lack of capacity as prescribed by the object clause.

Another main disadvantage of ultra vires doctrine which in fact was the cause of its abolition in developed states is that it permitted the corporations to take the benefits of the contract and then refuse to perform the obligation on the ground that the contract was ultra vires and thus void.

4. Conclusion. The doctrine of ultra vires is developed to protect the investors and creditors. This doctrine prevents the companies to act beyond the powers granted to it by the object clause of the memorandum. An ultra vires contract cannot be enforced by the company. The main reason for the development of the doctrine was to protect the interests of the creditors and investors in to order assure them that their investment shall not be invested in unauthorized activities by the company. However, the doctrine was misused by the corporations which resulted in the abolishment of the doctrine in developed countries. The companies after taking the
benefits of the contracts usually refused to perform the obligations on the grounds that the contract was ultra vires. Although the abolishment of doctrine has removed the evils of its misuse, yet it brings its own evils too. The abolishment of doctrinw has created ambiguity about the object of the company. The investors and the creditors do not have any idea about what kind of business shall be raised through their investments. However, the doctrine still remains effective in developing countries.

No doubt, the abolishment of the doctrine by the developed countries is in the interest of both the states and the corporations. The reason is that usually large corporations are working in developed states. The revenues collected from these corporations are proportional to their business. The larger the business of the company, the greater amount of tax should be paid by them. However, the developing countries, where small and private companies are working, the ultra vires rule is strictly observed and the companies are restricted to their object clause. Tax is collected from the newly formed companies through registration fees. It is in the interest of the developing countries to register more companies. For this reason they have made it much easier to register a company as compare to the developed states.

It is concluded from the discussion that doctrine of ultra vires have both useful and harmful effects. Different jurists argue that rigidity is the main defect of law and suggest that laws must be in conformity with needs of the society. The same rule has been applied to the doctrine of ultra vires. The doctrine has been eliminated from the developed countries as there was a need for its abolishment. While according to the needs of the developing countries, the rule is still observed by them.

REFERENCES

IMPACT OF ORGANIZATIONAL JUSTICE ON EMPLOYEE’S JOB SATISFACTION

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ABSTRACT: The success of any organization greatly depends on organization justices, organizations required to create good environment, where perception of organization justices are systematically developed. Therefore, organization justices seem to be a victim of unfairness and unethical activities. Concerns of employees have always been observed regarding fairness in allocation of resources and employee relationship with their supervisors. The study examines the nature and prevalence of organization justice and to identify the impact of organization justices on job satisfaction. For this purpose total 140 self administrative questionnaires were distributed among the employees of Bata shoes company Lahore and Service shoes industry Mureedka Pakistan. The data were analyzed by using statistical test with 5% level of significance and a 1% probability level.

Key Words; Organizational Justice, Job Satisfaction, Chi-Square, Likert Scale

Introduction: Presently the world is undergoing a unique economic model characterized by quickness and return, which make firms growingly vulnerable to followed unscrupulous methods as well as capability wrong doing with the improved scrutiny in both compass and concentration by the employees and all stakeholders concerning these decisions. Till the understanding the formulating the ethical decision making process it is very difficult to conform that unethical is eliminated. In this speedy global economic situation where business and organization are continuously changing, it is very difficult for the organization to formulate and implement rules and regulations which are working and beneficial in every situation. In this respect organization required to provide ethical environment which discourage discrimination and developed the organizational justice. It is considered a barometer of employee’s experiences of fairness within their particular organization.

As the management field becomes more sophisticated in its efforts to link individual works attitude to performances the “justice” construct has emerged as a focal variable. One of the biggest challenges facing organization these days is to treat all their employees and customers in a fair and equitable manner. The organizational justice theory demands that all decision makers are required to well known regarding the equity, fairness treatment and impartiality as well. Justice is much important because it enhance the motivational level of employees. The process by which worker ascertain that they are treated fairly in their jobs, and also it ascertain the other variable related with job. (Moorman, 1991). So, organizational justice illustrated the individuals experience at workplace that they are treated fairly or otherwise, it determines the organization fairness. Organizational justice have been related to job satisfaction and performance, employees turnover intention, leadership style, organizational commitment and bond, worker trust, stakeholder satisfaction, theft, role breadth, alienation and leader member exchange etc. Fairness at workplace is much important from all aspects. The subject of fairness is required not to be ignored where decisions are made about the various aspects of the employee’s jobs. Therefore, when decisions are made.
regarding allocation of resources, hiring of people, dealing with the employees and customers both decisions makers and all other stakeholders are worried about these decisions and fairness. Correspondingly, all decisions related to organization policies, changes and / or other functions are also provoke one to consider their fairness.

**Statement of the problem:** Understanding impact of organizational justice on job satisfaction in shaping work attitude has recently been come under focus. Therefore, organizational justice seemed to be a victim of unfairness and unethical activities. Concerns of the employees have always been observed regarding fairness in allocations of resources, adoption of procedures and employees relationships with their supervisors and fair treating of decision recipients. The result of such concerns develops in the form of perceptions of the employees qualifying the work behaviors as injustices. The effects are therefore, results in decreased commitment and subsequently job performance (Daft, 2003). Not only do victims directly affected by organizational injustice but also sometimes take retribution actions. Within this context, it was appropriate to conduct research study to determine the impact of organizational justice on job satisfaction.

**Research objectives:** The main objective of this study was to extent that organizational justice is related to job performance. The specific objectives thus include:

1. To examine the nature and prevalence of organizational justice in organization.
2. To identify the relationship between organizational justice and job satisfaction.

**Review Of Literature**

**Organizational Justice:** Organizational justice refers to employee perceptions of fairness (Somers 1995). Organizational justice historically begins with the work of Adams (1965) on equity theory. Researcher acknowledged that the fundamental of organization justice is equity theory. Adams (1965) revealed that when things are not operates in the way by which the workers expected, he undergo to cognitive conflict. It assumed that workers are motivated through fair treatment. Equity theory affirms that human being (man and woman) are continuously engaged in social comparison with other similar groups individuals. Adams equity theory assumes that the consequences of injustice are more dynamics and reduce the level of distress as well as loyalty and enhance disagreement.

Workers regularly compared their effort and output with other workers. Adams describes that inputs in social exchange as qualities and characteristics that a person possesses such as age, status, qualification, skill and ability. The output is the substance which received by individual on result of their effort i.e. monetary, status, position or any other pleasurable reward or work as well as assignments (Greenberg, 1990). Any inequity produces two different social behaviors such as if worker experience inequity and his efforts more as compared to his outcomes or vice versa, it’s anticipated result may be the individual decrease his effort or anger will follow. The marketing and management fields have traditionally distinguished between three types of justice: distributive justice, procedural justice, and interactional justice (Tax, Brown, and Chandra shekaran 1998; Smith, Bolton, and Wagner 1999; Smith and Bolton 2002). Researcher acknowledged that this three type traditional justice mannerly explained the model of justice as compared to four types of justices (Greenberg, 1993).

**Distributive justice:** Distributive justice is a phenomenon that all employee should get what they deserved. Thus it is the fairness of distributions or allocations of rewards. Job satisfaction, organizational commitment, organizational citizenship behavior, turnover, and performance are outcomes of Distributive justice (Change, 2002).

Distributive justice is the perceived fairness of outcome allocations, and generally evaluated with regard to the equity of those outcome distributions (Adams 1965; Deutsch 1985; Homans 1961). Research study revealed that settlement of perceived distributive justice complaint leave positive effects on employees which include job satisfaction (Smith, Bolton, and Wagner 1999; Smith and Bolton 2002), output satisfaction (Clemmer 1993), grievance settlement satisfaction (Brown, and Chandrashekar 1998; Maxham and Netemeyer 2002), turnover intentions (Blodgett, Hill, and Tax 1997), employees general satisfaction (Clemmer 1993; Maxham and Netemeyer 2002), and fairness perceptions (Goodwin and Ross 1992), also reduce negative image and reputation (Blodgett, Hill, and Tax 1997).
Procedural justice: Procedural justice is concerned with the fairness of the procedure used to make a decision. Cohen and Spector (2001) used a Meta analysis approach for data analysis and found that the employee perceptions of procedural justice can be related to all the desirable organizational outcomes. In the area of marketing research study revealed that perceptions customer regarding procedural justice are on the basis of product convenience, flexibility, feedback time, opportunity to voice, process control, process knowledge, helpfulness, efficiency, as well as responsibility belief and its follow-up (Conlon and Murray 1996; Tax, Brown, and Chandrashekaran 1998). The customers perceptions regarding the fair complaint settlement leave positive impression and enhance outputs from different direction like, encounter satisfaction (Smith, Bolton, and Wagner 1999; Smith and Bolton 2002), output satisfaction (Clemmer 1993), complaint settlement satisfaction (Tax, Brown, and Chandrashekaran 1998), overall satisfaction (Maxham and Netemeyer 2002), re-buying decision (Maxham and Netemeyer 2002) also reduce the harmful behaviors and word of mouth (Maxham and Netemeyer 2002).

Organizational Justices and Job Satisfaction: Streams of research have been focused as to how both can be related in different work settings and environment. Stilwell and DeCohinck (2004) examined the association between organizational justice job satisfaction, and organizational commitment, role status, compensation satisfaction, and with drawl cognitions. Compensation and supervisor satisfaction considered direct influence on with drawl cognition. A study was conducted by Rebecca and Anne (2008) to determine the relationship between employees. Perception of organizational justice & trust and employee antisocial organizational behavior and communication their results indicated that perceptions of justice and trust negatively predicted indirect interpersonal aggression, hostility and deception. Justice and trust together predicted hostility and deception. Post hoc analysis demonstrated that justice and trust interacted to predict antisocial responses, and trust mediated the relationship between justice and antisocial responses.

Literature revealed a paired approach with respect to organizational justice in the area of remuneration. The results revealed that employees distinguish between pay satisfactions and benefit satisfaction the perceptions about procedural justice are good predictors as compared to the perceptions distributive justice. Research study also revealed that in the area of remuneration the distributive justice play significant role as compared to procedural justice in employee’s job satisfaction and their satisfaction from organization. In another study, Andrews et al (2008) acknowledged that the effects of centralization on the relationship between organizational justice and job satisfaction using referent cognitions theory as a theoretical foundation. Warner et al (2005) in their study tested three theories regarding distribution and procedural justice and its impact on job satisfaction. Their finding supported the group value model more than the personal. The result show that with regard to job satisfaction and output, procedural justice is considered more significant factor as compared to distributive justice.

Research Methodology: The employees of Bata Shoes Limited Lahore Pakistan and Service industries Limited Mureedka Pakistan were considered population for this study. Sample size was 140 randomly selected and self administrative questionnaire was developed for collection of data. Total 140 questionnaires were distributed, 40 among employees of Bata Shoes Lahore Pakistan and 100 questionnaires among employees of Service industries Limited Mureedka Pakistan. Out of which 20 questionnaires received back from Bata Limited Lahore Pakistan and 60 from Service industries Limited Mureedka Pakistan. The collected data were analyzed by applied appropriate statistics test. Chi-square test was applied at 5% level of significance and a 1% probability level to test that association between variables of interest.

Initially the research proposal of the concerned research article was submitted to the Office of Research, Innovation and Commercialization (ORIC), Abdul Wali Khan University Mardan. After the ORIC approval, a formal letter was sent to Service and Bata Shoes industry to get prior permission for data collection. It is certified that all the data for this research article has been collected after getting approval from the Bata and Service industry through ORIC.
Reliability Tests: Reliability analysis is helpful in deciding about the reliability of collected data. In the present investigation, two different approaches viz Cronbach's Alpha ($\alpha$) and Guttman split-half reliability were used to obtain the said objective. The results of both the methods tabulated below. It is evident that for each data set (distributive justice, procedural justice and job satisfaction) the Cronbach's Alpha is greater than 70%. The data for which the Cronbach's Alpha is greater than 70% suggesting that the data found is reliable. The same pattern can be seen from Guttman split-half reliability method, taking into account the upper $\lambda$-value ($\lambda_6$). Considering the lower value of Cronbach's Alpha and $\lambda_6$, overall data were subjected to reliability and in both the cases; high values of reliability ($\alpha$ and $\lambda_6$) were recorded. These results boom the research confidence to perform further analysis needed to obtain the required objectives.

<table>
<thead>
<tr>
<th>Category</th>
<th>Cronbach's Alpha ($\alpha$)</th>
<th>Guttman Split-Half Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\lambda_1$</td>
<td>$\lambda_6$</td>
</tr>
<tr>
<td>Distributive Justice</td>
<td>0.795</td>
<td>0.596</td>
</tr>
<tr>
<td>Procedural Justice</td>
<td>0.894</td>
<td>0.766</td>
</tr>
<tr>
<td>Job Satisfaction</td>
<td>0.786</td>
<td>0.589</td>
</tr>
</tbody>
</table>

Employees response for Distributive Justice: Results regarding the distributive justice for employees of Bata and services shoes companies are displayed in Table for the question that up to what extent the employees outcome reflects the effort s/he have put into their work. Result indicates that 2.5% of the employees from Bata were strongly disagreed and no employees of Service showed this type of opinion. The percentage of employees regarding the extent to which their outcome reflects the efforts he/she have put in their work was higher about “agree” in Service as compared to the employees of Bata. About the same statement, similar higher percentage was recorded for Service employees in comparison to Bata employees.

Table of data for the question that up to what extent which reflects the efforts put into the work by the employees

<table>
<thead>
<tr>
<th>Response</th>
<th>To what extent your outcome reflects the effort you have put into your work</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bata</td>
<td>Service</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>2 (2.5)</td>
<td>-</td>
</tr>
<tr>
<td>Disagree</td>
<td>1 (1.2)</td>
<td>11 (13.8)</td>
</tr>
<tr>
<td>Undecided</td>
<td>10 (12.5)</td>
<td>21 (26.2)</td>
</tr>
<tr>
<td>Agree</td>
<td>6 (7.5)</td>
<td>26 (32.5)</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>2 (2.5)</td>
<td>2 (2.5)</td>
</tr>
<tr>
<td>Total</td>
<td>20 (25)</td>
<td>60 (75)</td>
</tr>
</tbody>
</table>

Chi-square = 12.538, P-value = 0.014; values in parenthesis are the percentages.

Respondent response shows that the outcome of employees is justified in terms of his/her performance. Only 1.2% respondents showed their concern as “Strongly disagree” by Bata but none of the employees of Service did so. Maximum (13.8%) of employee of the Bata were “Agree” while 2.5% were “Strongly agree” with the given statement. Only 4 (5%) responded to “Undecided” about the question under investigation. On the other hand, majority (28.8%) of the Service employees showed their concern as “Undecided” 8.8% “Disagree”, 27.5% “Agree” and 10% “Strongly agree”.

Tabulation of the data for the question up to what extent that the outcome is justified based on the performance of employees

<table>
<thead>
<tr>
<th>Response</th>
<th>Your outcome is justified given your performance</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bata</td>
<td>Service</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>1 (1.2)</td>
<td>-</td>
</tr>
<tr>
<td>Disagree</td>
<td>2 (2.5)</td>
<td>7 (8.8)</td>
</tr>
</tbody>
</table>
Results for the question “that up to what extent employee are fairly (distributive justice) treated by the organization i.e. Bata and Service. It is evident that maximum 11 (13.8%) employees “Undecided” about the statement of both Bata and Service employees. Only 32 (40%) and 3(3.8%) employees of Service and Bata respectively were agree with the given statement. Of the 25% interviewed employees of Bata, 3(3.8%) are found “Strongly agree”, while 2 (2.5%) of Service employees showed the same response.

Tabulation of data for the question that up to what extent distributive justice are fairly followed in this organization

<table>
<thead>
<tr>
<th>Response</th>
<th>To what extent your organization fairly followed distributive justice</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bata</td>
<td>Service</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>2 (2.5)</td>
<td>3 (3.8)</td>
</tr>
<tr>
<td>Disagree</td>
<td>1 (1.2)</td>
<td>6 (7.5)</td>
</tr>
<tr>
<td>Undecided</td>
<td>11 (13.8)</td>
<td>17 (21.2)</td>
</tr>
<tr>
<td>Agree</td>
<td>3 (3.8)</td>
<td>32 (40.0)</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>3 (3.8)</td>
<td>2 (2.5)</td>
</tr>
<tr>
<td>Total</td>
<td>20 (25.0)</td>
<td>60 (75.0)</td>
</tr>
</tbody>
</table>

Employees response for procedural Justice: Respondent information about the extent which reflects the influence over the (outcome) arrived at by those procedures by the Bata and Service, in terms of various responses. It is evident that maximum percent of Service employees showed “Agree” to the extent that influence over the (outcome) arrived at by those procedures which is nearly 2-fold in comparison to the employees of Bata. In comparison to the employees of Service, minimum percent of the employees of Bata were “Disagree” with the given statement.

Tabulation of data up to what extent that the outcome influence over the (outcome) arrived at by those procedures

<table>
<thead>
<tr>
<th>Response</th>
<th>You have had influence over the (outcome) arrived at by those procedures</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bata</td>
<td>Service</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>1 (1.2)</td>
<td>2 (2.5)</td>
</tr>
<tr>
<td>Disagree</td>
<td>1 (1.2)</td>
<td>13 (16.2)</td>
</tr>
<tr>
<td>Undecided</td>
<td>5 (6.2)</td>
<td>19 (23.8)</td>
</tr>
<tr>
<td>Agree</td>
<td>13 (16.2)</td>
<td>23 (28.8)</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>-</td>
<td>3 (3.8)</td>
</tr>
<tr>
<td>Total</td>
<td>20 (25)</td>
<td>60 (75)</td>
</tr>
</tbody>
</table>

Responses of employees show that the outcome is justified in terms of procedures that have been applied consistently. Maximum employees (15% and 26.2%) showed their response as “Undecided” while 6.2% and 20% were “Agree” with the given statement are the employees of Bata and Service respectively. Maximum (18.8%) of Service employees were opted “Disagree” regarding the problem concerned. Only one employees from Bata and four employees from Service showed their concern as “Strongly agree”. A great deal of deviation between Bata and Service regarding the problem under consideration was recorded.
Tabulation of data up to what extent that the outcome of the employee’s are justified in terms of procedures applied consistently

<table>
<thead>
<tr>
<th>Response</th>
<th>Those procedures have been applied consistently</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bata</td>
<td>Service</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>1 (1.2)</td>
<td>4 (5)</td>
</tr>
<tr>
<td>Disagree</td>
<td>1 (1.2)</td>
<td>15 (18.8)</td>
</tr>
<tr>
<td>Undecided</td>
<td>12 (15.0)</td>
<td>21 (26.2)</td>
</tr>
<tr>
<td>Agree</td>
<td>5 (6.2)</td>
<td>16 (20)</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>1 (1.2)</td>
<td>4 (5)</td>
</tr>
<tr>
<td>Total</td>
<td>20 (25)</td>
<td>60 (75)</td>
</tr>
</tbody>
</table>

Chi-square = 5.422, P-value = 0.247; values in parenthesis are the percentages.

Tabulated data indicates the results pertaining to the association between the stated problem of procedural justice and employees of Service & Bata shoes limited. Within the employees of Bata, maximum (12.5%) were “Strongly agree” with the statement that the procedural justice are fairly followed. On the other hand, within the employees of Service, maximum (30%) were unable to decide (Undecided) while 27.5% were “Agree” with the statement. Remaining were found disagree.

Tabulation data for the question that up to what extent procedural justice are fairly followed in this organization

<table>
<thead>
<tr>
<th>Response</th>
<th>Procedures justice have been followed fairly</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bata</td>
<td>Service</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>2 (2.5)</td>
<td>2 (2.5)</td>
</tr>
<tr>
<td>Disagree</td>
<td>-</td>
<td>7 (8.8)</td>
</tr>
<tr>
<td>Undecided</td>
<td>4 (5)</td>
<td>24 (30)</td>
</tr>
<tr>
<td>Agree</td>
<td>4 (5)</td>
<td>22 (27.5)</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>10 (12.5)</td>
<td>5 (6.2)</td>
</tr>
<tr>
<td>Total</td>
<td>20 (25)</td>
<td>60 (75)</td>
</tr>
</tbody>
</table>

Chi-square = 20.552, P-value = 0.000; values in parenthesis are the percentages.

Organizational Justice And Job Satisfaction

Association between Distributed Justices and Job Satisfaction: Results pertaining to the association between distributed justice and that of job satisfaction are tabulated below. It indicates a significant (P < 0.05) association between the studied attributes i.e. distributed justice and that of job satisfaction. It suggests that distributed justice and the job satisfaction are two dependent variables and can not be addressed separately. Majority of the respondents showed their concerned to the category “3” and “e” of the distributed justice and job satisfaction respectively. It suggests that only 15% of the employees were “undecided” to like their jobs. However, the percentage of those who love their job and strongly agree to show their concern was very low i.e. (3.8%).

<table>
<thead>
<tr>
<th>Distributed Justice</th>
<th>Job Satisfaction</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>b</td>
</tr>
<tr>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Chi-square = 27.813, P-value = .033; values in parenthesis are the percentages; a = I hate it; b = I dislike it; c = I don’t like; d = I am indifferent to it; e = I like it; f = I am enthusiastic about it; and g = I love it.
Association between Procedural Justice and Job Satisfaction: Tabulated indicates the results regarding the association between procedural justice and job satisfaction. It is evident that maximum employees i.e. 12 (15%) respond to the category “4” and “g” of the procedural justice and job satisfaction (I love it) respectively. The same was observed for category “5” and “g” of the procedural justice and job satisfaction (I love it) respectively. In addition, a high value of Chi-square (49.52) and lowest P-value (0.000) suggests that the procedural justice and job satisfaction are strongly associated. Furthermore, it can be stated otherwise, that procedural justices could develop relationship with job satisfaction, or, this means that if organizations bring changes in the procedural justices, it will also change the employees’ perception towards job satisfaction. In total, maximum number of employees (38.8%) responds to love their job, while minimum (2.5%) were of the opinion that they don’t like it.

<table>
<thead>
<tr>
<th>Procedural Justices</th>
<th>Job Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>b</td>
</tr>
<tr>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>-</td>
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<tr>
<td>3</td>
<td>-</td>
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<tr>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>-</td>
</tr>
</tbody>
</table>

Chi-square = 49.52, P-value = 0.000; values in parenthesis are the percentages; a = I hate it; b = I dislike it; c = I don’t like; d = I am indifferent to it; e = I like it; f = I am enthusiastic about it; and g = I love it.

Conclusion And Recommendations

Conclusion: Private sector organizations are characterized by provision of job and low wages, irrespective of performance of employees that may not lead to job satisfaction; however they have HR practices, which help them in job satisfaction. Organization justices are considered one of the most important factors in job satisfaction. Within the organization justices, two types of justices like procedural justice and distributive justice were considered. In addition, the job satisfaction was measured on a Likert scale from four different directions. The following main results were obtained from the given study.

1. Procedural Justice has developed strong relationship with job satisfaction (P < 0.05) irrespective of the organization (Service and Bata). It shows that if organization brings changes in procedural justices, it will also change employee perception towards job satisfaction.
2. Distributive justice also developed a significant (P < 0.05) relationship with job satisfaction suggesting distributive justice and job satisfaction are not independent phenomena, and organizations are required to take both the factors in to account while bringing any change and/or change in their policies associated with justice and job satisfaction.
3. Overall, procedural justice and distributive justice played a vital role in job satisfaction and perception of the employees.

REFERENCES


ANTIGLYCATION AND ANTIOXIDATION PROPERTIES OF BERBERIS LYCEUM AND TERMINALIA CHEBULA: POSSIBLE ROLE IN CURING DIABETES AND SLOWING AGING

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ABSTRACT: Plants have been shown to possess a great potential to benefit mankind. Extracts from plants that have antiglycation and antioxidation abilities can be of great therapeutic value in reducing complication of diabetes and slowing down aging. Advanced glycation end-products (AGE’s) formation due to non-enzymatic glycation and oxidative stress has been demonstrated in the pathogenesis of diabetic complications and aging processes. In this study we investigated the antiglycation and antioxidation potential of methanolic extracts of Berberis lyceum and Terminalia chebula. Results indicated that the methanolic extract of Berberis lyceum had more antiglycation ability with a Minimum inhibitory concentration (MIC50) of 123 µg/mL as compared to the MIC50 of 110 µg/ml of Terminalia chebula. While the results of antioxidation assay showed that Terminalia chebula has more antioxidation potential than Berberis lyceum. Terminalia chebula had 46.55, 35.01 and 32.81 % antioxidation potential at 0.5 mg, 0.25 mg and 0.125 mg respectively as compared to the 16.53, 16.09 and 15.10 % oxidation inhibition at same mass values by Berberis lycium.

Keywords: AGE’s, Antiglycation, Antioxidation, Berberis lyceum and Terminalia chebula

Introduction: Maillard reaction involves the non-enzymatic glycation of proteins to form advanced glycation end-products (AGE’s). Some of the recent studies have shown that this reaction not only involves non-enzymatic glycation but oxidation as well (Chetyrkin et al., 2008; Argirova and Ortwerth, 2003; Prince, 2001). Therefore agents that have antiglycation and antioxidation abilities could be used to prevent this reaction.

Accumulation of AGE’s in different parts of the body like heart, muscles and large blood vessels, results in the promotion and progression of diabetic complication like nephropathy, neuropathy, cardiovascular disease and atherosclerosis [Sugimoto et al.,2008; Fukami et al.,2008; Yamagishi et al.,2008; Nathan, 1993; Muhammed and Nessar, 2006]. During diabetes mellitus AGE’s are formed at an accelerated rate because of the hyperglycemic condition in the body (Kumar et al.,2004; Kumar et al.,2004). Therefore any drug or agent that could stop AGE’s formation can be of therapeutic value. Glycation of proteins and its further oxidation alters its conformation, stability and induces protein aggregation and immobilization through cross-linkage (Kumar et al.,2004; Kumar et al.,2004; Watala et al.,1996). Collagen elasticity is responsible for the proper shape of the body. Glycation results in loss of collagen elasticity and results in arterial stiffness decreased myocardial compliance and hence aging (Sing et al.,2001; Aronson, 2003).

One of the ways to reduce diabetic complication and slowing down aging is to stop glycation and oxidation process. This is only possible by using compounds or agents that have antiglycation and antioxidation properties. Plants have been major sources of drugs in the world and the drugs derived from them have fewer side effects (Samina et al.,2008). In the subcontinent, various plants have been used to treat diabetes. Galenga officialis has been used for diabetes throughout history (Oubre et al.,1970). It is also believe by folk medicine experts (Hakims) that certain
plants like *Berberis lyceum* have anti-ageing effect and keeps the skin fresh. Hence in this particular study we have tried to find out antiglycation and antioxidation effect of *Berberis lyceum* and *Terminalia chebula*.

**Materials And Methods**

**Plant Material:** Stem of *Berberis lyceum* and fruits of *Terminalia chebula* were collected from Mardan and kindly identified by Prof. Dr. Abdur Rasheed, Plant taxonomist, Department of Botany, University of Peshawar, Khyber Pukhtunkhwa, Pakistan.

**Extraction:** The stem of *Berberis lyceum* and fruits of *Terminalia chebula* were kept in shade for drying and were then chopped and ground to powder. The powdered materials were soaked in methanol (twice) for 15 days at room temperature. Each time the filtrate was filtered and the filtrates were combined and concentrated to crude methanolic extracts using rotatory evaporator at 40°C.

**Materials:** The materials used for in vitro antiglycation assay were: Bovine Serum Albumin (BSA), D-glucose, Sodium dihydrogen phosphate (Na2HPO4), Potassium dihydrogen phosphate (KH2PO4), Sodium Chloride (NaCl), Potassium Chloride (KCl), Aminoguanidine (Merck), Retinoid (Merck) and Tri-Chloro Acetic Acid (TCA) (Sigma). While alkaline PBS (137mM NaCl, 8.1mM Na2HPO4, 2.68mM KCl, 1.47mM KH2PO4) was prepared and its pH adjusted to 7.4 with 0.25N NaOH. The materials used for Nitric Oxide (NO) free radical scavenging assay were: Sodium Nitroprusside (Na2[Fe(CN)5NO].2H2O) (SNP), Sulphanilic acid (SA) (0.33% in 20% Acetic acid), [N-(1-Naphthyl) Ethylene diamine Dihydrochloride] (NED) (0.1% in H2O), Phosphate buffer (10mM, pH=7.4), UV double beam spectrophotometer, micropipettes, test samples (crude methanolic extract), Methanol (as blank) and Ascorbic Acid (Vitamin-C) as positive control.

**In Vitro Glycation assay:** The method of Matsuura et al., 2002 was followed with little modifications. Stock solutions of the plant extracts were prepared by dissolving 3 mg in 1 ml of alkaline PBS. From the stock solution 10, 50, 90, and 130 µL solutions were taken using micropipette and were mixed with a solution containing 400 µg BSA and 200 mM glucose. These reaction mixtures were kept in a water bath at 55°C for 48 hours. BSA and glucose without any inhibitor was used as control. After the incubation time the reaction mixture was transferred into separate Eppendorf tubes and 10 µL of 100% w/v TCA was added and centrifuged at 14500 rpm at 4°C for 4 minutes. Supernatant then discarded and the pellet was re-dissolved in 400 µL alkaline PBS. Usingfully automated UV double beam spectrophotometer, the degree of absorbance for both the control and the test reaction mixtures were taken at 350 nm. Percent inhibition was calculated using the following formula:

\[
\text{Percent inhibition} = \frac{[1 - (A_s - A_t)/(A_b - A_o)]] \times 100}
\]

Where A_s is absorbance of test samples, A_b is absorbance of reaction mixture without plant extract and A_o is absorbance of blank control.

**Nitric Oxide (NO) Free Radical Scavenging assay:** To perform NO free radical scavenging assay the method of Ebrahimzadeh et al., 2009 was followed.

Stock solutions of test samples were prepared by dissolving 3mg of the test samples in 1 ml of methanol. Different dilutions i.e. 0.5, 0.25 and 0.125 mg/ml of test sample were made from the stock solution and 1 ml of each dilution was introduced into separate test tubes along with 1 ml of SNP to make the reaction mixture. This mixture was then incubated for 90 minutes at 27°C. After incubation 0.5 ml of the reaction mixture was added to 1 ml of SA and incubated at 27°C for 5 minutes. Add 1 ml of NED to it and again incubate for 30 minutes at 27°C. Results were obtained by taking absorbance at 546 nm. Methanol and Vitamin C were used as blank and positive control respectively. Percentage antioxidation potential was calculated by the following formula:

\[
\text{Percent inhibition} = \frac{[A_o - A_t]/A_o] \times 100}
\]

Where A_o is absorbance of control; reaction mixture without extract; A_t absorbance of test samples.

**Results**

**Antiglycation assay:** The UV double beam spectrophotometric analyses of both the reaction and test mixtures for *Berberis lyceum* and *Terminalia chebula* are shown in the Fig 01. It can be seen from the figure that as the
concentration of the *Berberis lyceum* extract increases the absorbance decrease from 0.079 nm and reaches minimum of 0.022 nm at 390 µg/ml. The same trend is observed for *Terminalia chebula* too which reaches its minimum of 0.030 nm at concentration of 390 µg/ml from maximum absorbance of 0.074 nm.

![Absorbance at 350 nm](image1)

**Fig 01:** Antiglycation properties at different concentration of *Berberis lyceum* and *Terminalia chebula*

It can also be inferred from the Fig 01 that the minimum inhibitory concentration (MIC$_{50}$) of aminoguanidine and *Berberis lyceum* are 70.14 µg/ml and 123 µg/ml respectively, while for *Terminalia chebula* it is 330µg/ml. Fig: 02 shows the percent inhibition of Millard reaction or glycation by aminoguanidine and the two plants extract verses the amount of test sample used i.e. Sample concentration.

![Percent Inhibition](image2)

**Fig 02: Percentage inhibition at different concentration of *Berberis lyceum* and *Terminalia chebula***

NO free radical scavenging Assay
The antioxidation potential of both *Berberis lyceum* and *Terminalia chebula* was compared with ascorbic acid (Vitamin-C) as standard. Results obtained from NO scavenging assay are shown in table 01 and Fig.03.

<table>
<thead>
<tr>
<th>Test Sample</th>
<th>Percent antioxidation activity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.5mg/ml</td>
</tr>
<tr>
<td>Ascorbic Acid</td>
<td>26.50</td>
</tr>
<tr>
<td><em>Berberis lyceum</em></td>
<td>16.53</td>
</tr>
<tr>
<td><em>Terminalia chebula</em></td>
<td>46.55</td>
</tr>
</tbody>
</table>

Table01: Percent antioxidation activity of Ascorbic acid, *Berberis lyceum* and *Terminalia chebula* at 0.5, 0.25 and 0.125mg per ml concentration.

**Fig03:** Antioxidation potential of both *Berberis lyceum* and *Terminalia chebula* in comparison with the standard.

It can be seen from both the figures that *Terminalia chebula* among the two had more potential of antioxidation and even exceeds the antioxidation potential of the standard i.e. Ascorbic acid, at all the concentration. While *Berberis lyceum* shows antioxidation potential at all the test concentrations but its percent antioxidation effect is less than the standard and *Terminalia chebula*.

**Discussion:** As far as we had investigated there has been no antiglycation study on both *Berberis lyceum* and *Terminalia chebula* and this study is the first one that reports that both of them do have antiglycation potentials. Our findings for the antiglycation in-vitro assay showed that among the two, *Berberis lyceum* is more effective as an antiglycation agent. We also found that the percent inhibition of glycation is concentration dependent.

The consistency of our antioxidation findings for *Terminalia chebula* with the findings from other studies on the same plants shows that our findings are reliable and applicable for further research (Hua-Yew *et al.*, 2003). In our study we found that both *Berberis lyceum* and *Terminalia chebula* have antioxidation potential. However when we compared the results it was found that *Terminalia chebula* had more antioxidation potential than Ascorbic Acid (standard) and *Berberis lyceum*. Keeping in view the involvement of glycation and oxidation reactions in
complication of diabetes and aging effects we suggest that both of these plants can be useful therapeutically for the problem. However our finding also suggest that a combination therapy of both Berberis lyceum and Terminalia chebula extracts would be most suitable.

REFERENCES


THE UNITED STATES POLICY CONTOURS IN AFGHANISTAN

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ABSTRACT. The contour of US engagement policy in Afghanistan revolves around various factors as neutralization of the Afghan Taliban threat by military means, training and arming the Afghan National Army and the Police, to strengthen the capacity of the Kabul government to govern effectively. This article highlights the influence of the US political engagement on the Afghan power dispensation and to illustrate the US foreign policy parameters in the regional political dynamics. The initial policy parameter has been shifted to reconciliation options in order to secure peace in Afghanistan but the success of which demands some basic agreements among power contenders and stakeholders inside Afghanistan.

Keywords: Policy, Reconciliation, government, power, ethnicity.

1. Introduction: The contours of US engagement policy in Afghanistan are described differently by various military officers and diplomats. For example, Brig. Ghazanfar, former Director ISI, is of the view that US wanted War on Terror for global peace; to weaken Al-Qaeda by dismantling, disrupting and destroying its infrastructure and to destroy Al-Qaeda’s alleged safe-haven inside Pakistan. The underlying contours of US engagement policy were, firstly, to watch over Pakistan nuclear assets, secondly, to contain China, thirdly to monitor Central Asian Republics. (Ghazanfar, 2013) Colonel Zahurul Haq, described it that US wanted to operate militarily in order to avenge Al-Qaeda for their attacks on New York and World Trade Centre in 2001 which later on became war on terror against Taliban. The US intends to gain a firm foothold in the region for CARs. It intends to check the advancing influence of China in the region. It aims to build up India in Afghanistan for the same objective. It intends to keep Pakistan away from Afghanistan being an ally of China. (Haq, 2013) Former Ambassador to Afghanistan, Rustam Shah Mohmand has illustrated US policy contours in this way; US wanted to have military presence in Afghanistan, to have access to the Central Asian Republics (CARs) in order to exploit oil and gas resources of Caspian Sea, to encircle China based on China containment policy; to intimidate Iran into submission; to retain military bases in Afghanistan from where Pakistan nuclear proliferation could be observed and checked. (Mohmand, 2013) According to Brig. Javed the contour of US engagement policy in Afghanistan is aimed at physical occupation; to operate intelligence operations; to involve the regional countries, as Pakistan was involved to provide logistic support and assisted US with bases inside Pakistan and to instigate neighboring countries to destabilize Pakistan. (Lodhi, 2013) Overall policy has remained consistent and changes have occurred only on operational level.

Former Secretary of FATA, Brig. Mahmud Shah observed that US engagement comprised political and economic aspects as well to build its institutions, to stabilize the society, to enable it’s government to run the State as per rule of law, to make it a financially viable, to liberate the people of Afghanistan from an authoritative regime of Taliban and War Lords to replace it with a democratic government and so on and so forth. (Shah, 2013). Former Chief Secretary of Khyber Pakhtunkhwa, Azam Khan, opined that the underlying policy of US engagement and America’s main motives were Central Asia-focussed oil and gas-led Great Game. The Afghan war was a clear manifestation of America’s concern over the growing influence of China.
in the Central Asian Republics. The security of East Asia is shifted, US is still hegemon, is also being gradually balanced by the rapid rise of China which is using its phenomenal economic, political and military influence as a major factor of regional and global stability. (Khan, 2013)

The major worry for the US currently is the rapid growing resurgence of Islam, particularly the militant extremist ideology which they preach. As the leader of the western world the US perceives this as grave threat to the western culture and belief leading to a clash of civilizations. We can see what is happening presently in Iraq, Libya, Egypt, Yemen and Syria etc. The US is looking for excuses to attack these countries and bring about a regime change of its liking. (Ibid)

By contemplating these contours of the US engagement in Afghanistan it is clear that under lying policy options were catered for access to oil and gas rich region. Oil is like blood running in the veins of American’s economy. In 1994 Washington was jolted away by the fact that Central Asian region has enormous potentiality and reserves of hydrocarbon. The US was following policy guidelines for this region, to contain Russian hegemony over Central Asian energy resources leading to Caspian Sea basin. To overcome Iran’s impressive status to lower level, the US recommended supply lines to Turkey aimed at countering Russian dominancy. (McCauley, 2002, p. 139). Afghanistan is at the world focus since 9/11 with international cooperation towards reconstruction and development but it has given birth to chaos and miseries only. There are numerous factors responsible for this instability as highly centralized political system, demarcation of internal stake holders (most probably warlords) due to controversial background, connecting ongoing insurgency and terrorism with ‘Pashtun alienation’ and interest oriented usage of this notion by self-seeking politicians, inadequate international aid has exacerbated already worst insecurity. (Qassem, 2009).

Since 2002 Afghanistan government is keen to convert ‘landlocked’ Afghanistan image to ‘landbridge’ among Central Asia, South Asia, Middle East and Far East. (Vielkind, 2003) This will generate enormous revenue and can be capable to stabilize the country. (Manila Asian Development Bank, 2004, pp.19-22)

2. Formulation of Government
   a. Representation vis-a-vis ethnic composition of Afghan population. Afghanistan as a state came into existence in 1747. It was founded by Ahmad Shah Abdali. Afghanistan has population of approximately twenty million, dividing into twenty ethnic groups more than fifty in all. People speak one of official languages Pashto and Dari. There are thirty different languages in Afghanistan due to myriad factions. (Ewans, 2001, p. 3).Pashtun are abode in the east and south of Afghanistan and same ratio of Pashtun are across the Durand Line on Pakistan side. There are two subdivision of Pashtun as Durrani, who lives in between Herat and Kandahar. Abdali is a sub-tribe of the Durrani tribe which is ethnically Pashtun. In its initial days, Afghanistan was structured around the Durrani tribes’ prowess and it consisted of territories inhabited by the Durrani tribe or where the influence of Durrani and their control prevailed. Ghilzai, who are between Kandahar and Ghazni. These tribes lived at south of Afghanistan with not ending confrontations and enmities. Eastern hills comprised Wazirs, Mohmand, Mehsuds, Afridi, Khattaks, and Shinwaris. They are famous for their aggression and were known to British army for skirmishes over north west frontier. (Ibid. p. 5) Tajiks are one fifth of population who are concentrated in Badakhshah around Kabul, Herat, Kohistan and Panjshir. They have major role in country’s administration. (Ibid. p. 7)

Uzbek are semi-independent under begs or amirs. They were conquered by Afghan Amir. They are mostly farmers, horse breeders and karakul sheeps. Hazaras are of mongol origin and are descendants of Genghis Khan as flocks of thousands arrived in the same era. Some people opined that they have been migrated from Central Asia. They are mostly sheep breeder. (Ibid. p. 9).So basically it was a tribal state and its borders in the Northwest and Southeast were not internationally demarcated as such. There is representation of all major ethnic groups in Afghanistan’s administration as for instance president, foreign minister and finance minister are all Pashtun, vice president and defense minister are Tajiks, second vice president is of Hazara, minister of mine is an Uzbek besides others. (Flourney, 2013).In order to understand the ethnic strife in Afghanistan it is better to depict the background, which stretched to the treaty of Panjdeh and treaty of Durand Line due to which Afghanistan was transformed from tribal state to national state status. In 1887 in the Treaty of Panjdeh, Afghanistan and Czarist Russia demarcated Afghanistan’s North Western border with Central Asia which by then had fallen under Russian control. In 1893, Ameer Abdul Rehman the ruler of Afghanistan under the agreement of Durand Line demarcated Afghanistan’s border with British India. With set and internationally
demarcated borders Ameer Abdul Rehman initiated the process of transforming Afghanistan from a tribal into a national state. But his task was not easy.

More so since under the Treaty of Panjdeh, significant chunks of Tajik and Uzbek territory had become part of Afghanistan. And under the Treaty of the Durrand Line some major Pashtun tribes like Yusufzais, Khattaks, Mehsuds and sizeable portions of Wazirs, Shinwaris, Mehmunds and Achakzais had come under the control of British India. Besides, the Hazara tribes in central Afghanistan mostly Shiites and of Mongol ethnic origin had also become Afghan nationals. So, this process of transforming a Pashtun tribal state into a national state did not succeed much. It only papered over the cracks or reality of a multi-ethnic and multi-sectarian polity. However, by establishing a delicate balance of intra-Pashtun and inter-ethnic (Pashtuns versus Tajiks, Uzbeks and Hazaras) tribes following a policy of strict neutrality which contributed to regional power equilibrium, Afghan rulers were able to acquire a degree of stability for their country.

That intra-Afghan tribal and ethnic balance and regional equilibrium was disturbed by Sardar Daud who toppled the monarchy of King Zahir Shah in a military coup in 1973. Sardar (President) Daud’s government in turn was also toppled five years later in a military coup by General Abdul Qadir Dagarwal and the Afghan army gave power to two little known leftist parties: Khalq (mostly Pashtun dominated) and Parcham (mostly Tajik and Uzbek dominated). While Sardar Daud had disturbed the delicate tribal balance inside Afghanistan and regional equilibrium by adopting a proactive irredentist posture against Pakistan, Soviet intervention in Afghanistan (28 December 1979) completely destroyed the balance and equilibrium enjoyed by Afghanistan as a non-aligned neutral state. In Afghanistan there are myriad factions besides transitional government. There is ethnic strife between Pashtuns mostly Taliban and minority comprised Tajiks and Uzbeks of North of Afghanistan which has hampered integration. Trade of Opium has also intensified this ethnic dispute. Besides ethnicity this unity has been muddied by external actors in order to access and exploit oil resources. Disintegration is apprehensive not only to the local Afghan population but regional countries and above all international community are also at dismay about Taliban brutalities of their recent past regime and even the ongoing insurgencies. (Marine Barracks, p. 23)

Sources: Maps website, Institution of strategic Studies United Kingdom books and Journals.
The defeat of Taliban has led to the Afghan society’s polarization and most probably it is better to state that it get bisected into Taliban and anti-Taliban with two different streams of abiding. Tajik and Uzbek were domineering in comparison of Pashtun. The resistance against foreign forces was waged by Taliban and diverse factions and the strain on the US was further intensified by warlords. (Yunas, 2011)

There are various factors which have destabilized the political structure of Afghanistan as ethnic strife, poor governance, no viable connections of central government with the people, moreover there is no impartial political dispensation at the local level. Worst of all vested interests have been with due weightage in quite illegal way. To cap it all, the share of common Afghans is negated and their desire for peace and stability is also in dire straits by both Taliban and local power broker. (Felbab, 2013)

By political engagement the US aim was to change people’s mind set so that to deviate them from traditional abiding to Taliban and to spread the western influence and culture there. This strategy has been working in Afghanistan and Obama is steering his way in an adventurous type mode, without consideration of factor that his administration has faced more losses than gains. (Hilaly, 2012) He does not evaluate tactical retreat until and unless the strategic environs turned into his favor. The underlying political objective of America is to impede Russian, China and Pakistan entry to Afghanistan so that to have control over natural resources of both Afghanistan and CARs which comprised oil and gas. (Ghananjfar, 2013) The US has established Karzai’s Government as puppet there. Albeit Karzai has been played in this chessboard but now he has sensed that after the US pull out and in security quagmire only Taliban can be ultimate rulers consequently Karzai is more favorable to the former now.

Afghanistan’s main apprehension is ethnic strife which is capable to dismantle the political settlement. Stability cannot be ensured in Afghanistan with increase in size of Afghan forces unless and until people get secure at local level as well. On the eve of withdrawal both security and political stalemate can be happened. (Brown, 2013) After western exit, the major stack holders in Afghanistan will be Kabul regime, Taliban and northern alliance supported by Afghanistan’s neighbours. (Mir, 2013) On the eve of exit the US needs Zalmi Khalilzad like persons to carry out the US policy, sponsored by CIA in Afghanistan, where they will not physically present. Aftab Sherpao, the former interior minister, Rustam Shah Mohmand, the former Ambassador to Afghanistan, and Hasan Askari Rizvi, Defence Analyst, conceded that After ISAF/US/NATO pullout there will be The Kabul government, various groups working as the Afghan Taliban, tribal chiefs and local Taliban commanders as main power holders. (Sherpao, 2013) Regional stakeholders will be Pakistan, Iran besides Tajikistan, Uzbekistan, Turkamanistan, Russia, USA, UK and Saudi Arabia. (Munir, 2013) The level of control of present Afghan Government over the country is moderate and after US pull out is likely to be minimal. The Afghan Taliban are likely to control large parts of the country more so in the South even if Kabul does not fall to them in quick time. (Mir, 2013)

b. Composition and effectiveness/ influences. The US influence is spreading to whole world in shape of its economy and culture. Transnational politics is at forefront which has reduced distances and the US has to include its interests in realm of its foreign policy. She is grappling to eliminate illegal criminal activities as drugs trafficking and terrorism across the border. The US is now to set priorities and to adapt feasible options that what it has to perform for strengthening its domestic politics and to maintain its image to outside world as well. For this purpose it will require coalition to part with and work for stability of democracy, social values and economic growth. Joseph Nye debated on power and divided it into soft and hard power, former dealt with economic and military while latter with cultural and ideological perspective. Both are for coercive and co-optive stances respectively. For him soft power fascination is in international trade and institution that work for it. Soft power is more powerful and obliging than hard power which is compulsive. It was the soft power attractions of hard currency commerce that played a dominant role in bringing down the Iron Curtain and shaping the post-Cold War world. (Nye, 2002) Both powers are indispensable for each other as in arena of world politics and especially foreign policy is game of intermingling both soft and hard powers. The US in order to accomplish her policy options, has spread its tentacles to Afghanistan political setup by both soft and hard powers. According to United Kingdom’s ambassador to Afghanistan, Afghanistan is not a failed today as things have changed over the last ten years, particularly over the last three years, provincial governance in places like Helmand is very effective, every district has district governor, there is prosecutor, schools are opening and moreover, Afghan people have stake in governance. (Patey, 2013)
The present Afghanistan government is totally dependent on the US. There are continuous desertions from the Afghanistan army and police. The Afghanistan President is often referred to as the “Mayor of Kabul.” The central government has hardly any control over rural Afghanistan. (Khan, 2013) Many parts of Afghanistan are not under the effective control of the Kabul government at the moment. This control is expected to decline after 2014 when the Afghan Taliban will become more assertive. (Rizvi, 2013)

But as stated by Aftab Sherpao, former interior minister, that Karzai government has been right from historical point of view because all kings and president had control over Kabul and provinces were under command of Warlords and chieftains. (Sherpao, 2013)

Albeit Karzai has welcomed the entry of peaceful Taliban to join key position in his government on condition to obliged the provisions of constitution. (Gall, Abrashi, 2007) He proceeded to include Mullah Omar and Hekmatyar in his government but Taliban are indifferent and have bad taste for political system. They opposed the government backed by US, UK and UN and put forwarded their own notion of constitution based on Islamic doctrines. (Wilkinson and Ali, 2007)

To sum up, Karzai was committed to handle sleaze with iron hands but the matter has gone otherwise. As it has been revealed from one case in which Karzai come to the rescue of person being imprisoned on corruption charges in interrogation into ‘hawala money transfer businesses, comprised distortion of billions of dollars from Afghanistan. Karzai has dismissed the deputy attorney general, Fazel Ahmad Faqiryar, who had sanctioned that arrest and taken the interrogation process in his control. (Nordland and Filkins, 2010) Karzai administration is nefarious for sleaze. After the US decade long engagement Afghanistan is the third most corrupt country after Somalia and North Korea. (Transparency Report, 2011) According to United Nations report in February, 2012 Afghan Locals had greased the state official’s palms with approximately $3, 9. Moreover, for taking projects of Afghanistan’s rebuilding, Western companies had paid $1 billion to Afghan concerned officials. (Bobkins, 2013) According to Center for American Progress (CAP), the US think tank, which have closer links with the US government have commented after studies that main reason for Afghanistan bad governance are the overwhelming influence of the US and NATO at the costs of Local Afghans views. (Carlstrom, 2013)

c. Capabilities- Running the affairs without US assistance?
Corruption menace has eaten the fabrics of Afghan political system as according to the Head of Anti-corruption office of Afghanistan Azizulla Ludin, there existed main reason of people resentment and reservation against Karzai government which has alienated them. There are rampant corruption cases and government is unable to curb these. (Afghan Online, 2011) According to New York Times report the biggest source of corruption in Afghanistan is the US. The CIA has poured ten millions of dollars in cash to Karzai, and Karzai has conceded with this report. Karzai has confessed that it had been since last decade, this money was given to Afghan warlords in an attempt to secure stability before the foreign forces exit. (Buying Peace, Video on Aljazeera, 2013) According Glenn Carle, former CIA Deputy national intelligence officer, this is not the entirely new story because ghost money or likely assistance are behind the scene intelligence diplomatic functions. (Ibid)
The Karzai government main interest is power politics. Albeit Karzai has claimed to relinquish presidential powers as soon as his second term terminated in 2014. But the question is that whether till that time this chaotic political setup would persist? The Kabul Government has been damned for its corruption ridden nature, where lay person is deprived of all basic amenities. As one analyst has described in 2010 that “The corrupt dysfunctional and nepotism nature of Karzai government is well documented. Karzai has instituted a system of governance dominated by patronage, unsavory, strongmen, ethnic, entrepreneurs and incompetent policymakers. (Saikal, 2010)

Due to US engagement in Afghanistan the situation has turned from bad to worse and the political and security set up has become so intricate and it became a nightmare that what could be the post withdrawal scenario as the US is not leaving Afghanistan altogether and will keep minimum presence. This presence will not let Afghan government to decide according to their own will. The US who is staunch advocate of Human Rights, must give a chance to the Afghanistan to develop their political set up. No doubt that Afghan history is abounds with scintillating examples of political chaos but recent turmoil has turned Afghanistan a horrible, ethnic strife ridden soil, where Afghans are tormented by Foreign occupants and has infested insecurity in the region as well. The US is pouring money in Afghanistan for securing her own purposes in the garb to win people minds but all this political engagement has been proved as moth eaten for Afghan society.

3. Political challenge: The US intervention has caused disparity and discontent due to undue national and provincial power distribution short of public preferences and interests. It has excluded Pashtun from key power position for the sake of Tajiks and Uzbeks. There is dominancy of military power and weak civilian control in Kabul has trembled security. Karzai has even no control on all Pashtun factions. (Harrisan, 2009) Afghan’s military has no independence from Northern Alliance in accomplishing any task and to vanquish militants. (Yunas, 2011) There existed major retaliation from Afghan population by excluding Taliban from mainstream.

Karzai government’s objective is to increase central government control over the country which could be nearly impossible after exit. Neither Afghan national army nor police is capable to have state writ in areas where even US has been succumbed. Karzai is eager to access India for providing additional political and economic assistance in this regard. India’s help regarding military and police training would enhance further in subjugating both Afghan militants and Pakistan supported Taliban. (Hanaur, 2012, p. 54)Karzai is tilted towards India at the expense of Pakistan as Indo-Afghan strategic partnership has also been signed in October, 2011. India disbursed huge aid to Afghanistan for transport, infrastructure, education, reconstruction and development. It has also provided aid for ANSF and national police. (Ministry of External Affairs, 2011) Whatever Karzai strive but could not subdue Taliban from Pakistan life line hitherto he puts an end on poppy cultivation, corruption and to legitimize Durand Line, all these are herculean tasks for him to be accomplished. Taliban should be compelled to negotiation and should be empowered on key position by Karzai. There can be no segregation of non-Pashtun because Tajiks are interspersed and have been posted in security sectors. (Harrison, 2009) There are enormous Tajiks officers in ANA and non-commission corps. (Younossi, Truelsen, Vaccaro, Stalinger and Grady, 2009)

Afghanistan political set up has been infested with so many murky factors as sleaze, grave crime, illegal occupation of land and resources, favor to the kith and kin, lawlessness so on and so forth. Afghans have been anguished by prevalent criminal mafia system henceforth, they are longing for a transparent and accountable system. They hope for steadfast leadership and security for all and sundry.

Meanwhile Afghanistan has myriad ethnic groups and rugged geography so it seems arduous to establish central government writ firmly. For Karzai to have stable central government within short timeline is impossible. Without flourished on the ethnic reality no army or police can control this diverse armed population. (Ahmad, 2011)

Ethnic fissure is troubling not only at the present but it loomed large for forth coming election because head of the departments of current administration are Panjshir (Tajiks) while pathans are second in ranking, so contesting factions will be active in that eventful scenario. Regional stake holders will come to the forefronts by all means possible to defend their concerned factions as Iran has always sided with Shia community, Russia leverage in the shape of Khalq and Parcham will come into ruling echelon as recently Karzai has taken them in ruling ambit.
Engaging Taliban in talks, efforts VS achievements. President Obama’s AfPak strategy was based on the recognition that military force alone was not a solution to the problems in this region. He had also been saying that military force would not end the war in Afghanistan, and that an “exit strategy” with a broader approach involving an effective coordination of military, diplomatic and developmental efforts would be needed for resolving the conflict in Afghanistan. After prolonging the military conflict at huge cost in lives and dollars, Obama has acknowledged that it is quite impossible for peace to have a chance in the land which has perpetually remained strewn with wars unless and until political set up is not stable.

But unfortunately, in spite of efforts for peace talks, the Talks between US and Taliban are not fruitful as the US had never conceded with release of some captives. Taliban have some terms and conditions for talks encompassed to evacuate foreign occupants, flourish their conceived Shariah law, to have power share at provincial and local level, release of Taliban captives and to ensure their stakes in civil and police services with transparent appointments. The Qatar episode of talks with Taliban has remained futile. While the foreign minister of Afghanistan, Zalmay Rassoul was in Qatar during that time and in interview he stated that although Afghan government has not been bypassed in this process but is not directly involved. The approach to Qatar government is crucial for two reasons, one is to talk about peace process and to place in right contact between two governments, second is to work together on other bilateral relations. Afghan government wants “Afghan owned and Afghan led” peace process decided on the conditions of peace Jirga, including the majority of Afghan (females to be included). (Rassoul, 2013) Afghan government conceded with the release of not only five prisoners demanded by Taliban but all of Afghan prisoners from Guantanamo Bay. (Ibid) The US is adamant about their captivity.

Hitherto, High Peace Council is midway in peace deal. Karzai lead peace process is just nominal and has been aimed to secure his ruling. It is also attributed for making rift in Taliban. (Jarveenpaa, 2011) Successful peace process would undermine Karzai powers by giving Pashtun and non-Pashtun Taliban their due. High Peace Council has been established for reconciliation but in spite of all related efforts there is rampage not only in Afghanistan but has been outreached to Pakistan in form of numerous safe havens. Nonetheless how much boisterous the Taliban are but Afghans can turn into their folds more easily because they have abhorrence for coalition forces, no matter how much the developmental projects have become possible just due to foreign aid.

One thing is clear. Had Obama started the talks with the Taliban immediately after his election for the first term in 2008, by now there would at least have been a clearer direction for the peace process in Afghanistan. Apparently, the ‘Establishment’ in Washington is too powerful even to let the American president pursue his own peace agenda. So the viable solution is that both the US and Taliban must concede with peace deals, on some loss and some gain basis in order to settle the turmoil. As far as the Afghan standpoint is contemplated then according to foreign minister their redlines are very clear encompassing all those who are ready to abide by Afghan constitution, to abandon committing crimes against the state and to detach themselves from Al-Qaeda and any other terrorist group. (Rassoul, 2013)

Offensive realism is the sub-division of neo-realism theory, expounded by John J. Mearshaierm in The tragedy of great power politics, where he stated that International system is anarchic where states always coaxed to maximize their relative powers at the costs of other states. This theory is descriptive because it dealt with past events as well as prescriptive as it head on future related foreign policy options. In comity of nation, the maximization of power is the only way possible to escape state failure, consequently it is the primary aim of any state. Mearsheimer, 2001, believes that becoming global hegemon is near impossible so that great power would always wrestle for power. Brandon, 2009, has described the theory as below:

Three Tenets Of Offensive Realism
1. Goal is to maximize share of world power.
2. Ultimate aim is to become the hegemon.
3. Since global hegemony is impossible, the world is condemned to perpetual great power competition.
For power maximization states are ready to offense. (Mearsheimer, 2001, p. 3) The United States is a regional hegemon according to Mearshiemer, she is trying to become global hegemon, which is impossible (Ibid. pp. 41, 140-41) so there is perpetual struggle for power. In this pursuit of power struggle and to become a global hegemon which cannot be short of offensive mode as war, turmoil, blood shedding and civilian casualties. According to Mearshiemer the regional hegemon is not oblivion of the aspiring hegemon of other regions and keep watch on them. As buck passing strategy, which signify that regional hegemon remained sidelined and let the local powers to observe the aspiring hegemon and when the need arise then militarily invade the region in order to curb the peer competitors. There is no satiation in power struggle.

This research has tried to explain the US intervention in Afghanistan in the context of Offensive Realism. The US invasion is fulfilling the three major tenets of Offensive Realism:

The US invasion of Afghanistan gives her:
1. Power maximization by Military operations in Afghanistan and her rehabilitation later on and Status of a regional hegemon in South Asian and Central Asian regions.
3. Since global hegemony is impossible, It’s better to be a hegemon in more regions for a leading world power

The US invaded Afghanistan after 9/11, in order to use pre-emptive power mode, to use force before imminent threat happened to the national interests. (Ibid. p. 12) The US as major power is militarily engaged in the minor state, Afghanistan. The 9/11 was pre-text for the US to invade Afghanistan, because Afghanistan was not directly connected to that incident. The contours of US military engagement policy was to defeat, disrupt and dismantle Al-Qaeda. The operational mode of policy remained in constant state of flux, encircled not only Al-Qaeda but also Taliban in its ambit. Then Obama strategy emphasized on reinvigoration of military engagement but simultaneously came to the reconciliation and talks to the Taliban. It seems the Afghan war is now all about American politics. Obama could have certainly made the peace move two years ago. He could have averted the violence, bloodshed and displacement in Afghanistan produced by the surge, as well as the huge cost involved in the exercise. The strategy of reconciliation has been with no fruitful outcome so the US is to exit from Afghanistan, leaving behind nine military bases. (Mohmand, Sherpao, Ghazanfar, munir Interviews, 2013) NATO will remained in Herat and Mazar-i-Sharif in order to serve the US underlying objectives, to control Iran and China from those basis. The US is also on alarm from Russia and China as stake holders in Afghanistan. As the US has realized this threat and perhaps this can be one of the reasons for its draw down from Afghanistan soil and to be shifted towards Asia Pacific to have access to Thailand, China, Malaysia, Singapore. If contemplated about the remaining troops, then majority of the troops will be of France and UK who are closest ally of US. Australia and Canadian are in lower number now. In Kabul there will self protected system so that in emergency they could protect themselves by using air and will have fortress or cottage like dwellings. (Ghazanfar, 2013)

By analyzing the US engagement in Afghanistan’s turmoil, it stretched to the John Meashiemer’s theory of Offensive realism from the very nature of offense being inflicted by the US in order to maximize her power, to reach the status of global hegemon. The minor state Afghanistan has been destabilized in security, political aspects. Afghanistan security situation, which has been upset by the US military engagement for more than one reason, by rising insurgency, weak central control, corruption, poor law and order situation and hatred and acrimony against the foreign occupation. No doubt the Afghanistan as minor state has no concern with hegemon status or to maximize power, the more it seeks is to focused on its Boundary defense, refugees issue and how to exploit the natural resources. The US according to Mearshiemer is in struggle to become global hegemon and that is impossible due to geography and water are main obstacle in this regard. The US in the past has remained offshore balancer in Europe and North East Asia by deploying military troops there and developed logistical infrastructure so that to ensure the US bases there. (Mearsheimer, 2001, p. 389) The US is using buck passing and offshore balancer strategies against China, Russia, and Iran on Afghanistan ground. The US engagement in the region is not only Afghan centric but focuses on South Asia, Central Asia and East Asia as well. In fact, after exit strategy from Afghanistan, the US pivot will be in East Asia – Pacific to contain
China. The US also seeks Pakistan – India amity while building up India against China. In Central Asia, the US seeks to increase its leverage while blocking Russia and China.

5. Conclusion: The United States of America engagement in Afghanistan is a long war that served no purpose. American media is with feeling that Afghanistan invasion was an irrational decision because in spite of huge expenditure to economy there is no apparent omen of victory. Washington concedes that US invasion has just intensified extremism, militancy and Taliban’s momentum in this region. America is the ultimate sufferer with in the shape of lives, money and civil liberties lose. It has tarnished our (Washington) promise to stand for dignity and grace of human.

But was it an honest mistake? Did President Bush and Vice President Cheney declare war because they genuinely believed it was the best way to guarantee the safety of the American people? Or did they do it in a premeditated attempt to seize greater political and economic power? These are questions that history will answer. For now, at least, one thing is clear. The US invaded Afghanistan on the pretext of 9/11 by waging an unrelated “war on terror” which is now generally considered as the ‘wrong war.’ No other nation has done greater damage to its own global prestige and credibility because of its misdirected policies and misplaced priorities. The offenses of the US have perturbed the security of Afghanistan with uprising in insurgency, Taliban and warlords are fighting with their own agendas in order to strengthen their power holds. The US sponsor government has led to corruption, ethnic strife and instability.

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THE UNITED STATES COVERT WAR IN PAKISTAN: DRONE STRIKES AN INFRINGEMENT ON NATIONAL SOVEREIGNTY

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\textbf{ABSTRACT.} Pakistan is under the United States predator war in the shape of drone strikes which is infringement of sovereignty. The US deemed the weapon as most effective in her war against terror which are ultimately shackles to militants in the areas where writ of the state is nowhere. The situation has remained so murky throughout the usage of drone strikes, whereby one school of thought claim the tacit approval of these strikes by Pakistani governments while the other school is opposite to the same very claim. The US is headstrong about drone war for which the foot prints of Joint Special Operation Command (JSOC) has been strengthened in various countries to outsource the policy by monopoly of power politics.

\textbf{Keywords:} Drone, sovereignty, militants, weapon, covert.

\textbf{1. Introduction:} Cold war era had given birth to nuclear warfare but war on terror has its own weapons in the shape of drones and this technology has been with escalated boom and competition. The US security advisors have endorsed lethal drone technology which at this time is beyond the capacity of other countries. At least 76 countries have acquired UAV technology, including Pakistan, India Russia and China. (Stanford Law School, p. 141). Drones are carried out and defended by the US on the following grounds; firstly, drones strikes have efficiently killed militants and still continued with minimal casualties to civilian. Secondly, drones have killed so many high commands of Al-Qaeda and its associates. Thirdly, drones have discouraged and strained the militants organization and made them incapable to attack on coalition forces. Fourthly, Drones are effective than occupational military forces and are less expensive. (The Royal Institute, 2013)

There are two different ways of drones operation, one is by CIA which is covert and is operating in Afghanistan and Pakistan. The other is by department of defense and is operated in Yemen and Somalia by military forces which are legally bound to international law and the US military law, so these are under legal coverage. Targets are located in many ways, one is by government and simultaneously ‘kill list’ are handed to the US which result in signature strikes consequently. (The Bloomberg Business, 2013)

The US used 9/11 as pretext for war on terror. The US ensured not only physical occupation but also initiated covert activities. Bush government in 2004 was empowered by Pentagon and defence secretay Donald Rumsfeld to launch twelve covert strikes in Pakistan, Syria, Yemen, Saudi Arabia and Persian Gulf states where Al-Qaeda and their associates were suspected to be active. (Sarwar, 2009)

The specter of US drones strikes run by CIA has been stretched to Afghanistan, Somalia, Pakistan and Yemen. The campaigns in Pakistan, Yemen and Somalia are run by the CIA, with little congressional oversight, and their existence has even been denied by the Obama administration in the courts. (Melbar, 2012)
Bush administration has validated their covert activities specially drones strikes under article 51 of UN charter which has granted right of self-defense to nation. As article 51 says, “Nothing in the present Charter shall impair the inherent right of individual or collective self-defense if an armed attack occurs against a member state of the UN, until the security Council has taken measures necessary to maintain international peace and security”.

This article can be applied as shield by all the states rather than by the US only, but the dilemma is that most of the UNSC provisions have been adopted and moulded by the great states and minor states are nearly exempted from this privilege. In the garb of self-defense the aggression has been inflicted on the states, whose main concern is how to survive without any consideration for power maximization.

2. Drones attacks in Pakistan territory, number- causalities- effects- success vis-à-vis failure The United States government has started drones strikes (unmanned aerial vehicle) in Pakistan tribal areas in 2004 which led to a series of such strikes. The purpose behind these attacks was to kill high value targets of Taliban and Al-Qaeda, who have sanctuaries inside Pakistan. Generally the UAVs used are MQ-1 Predator and more recently MQ-9 Reaper firing AGM-114 Hellfire missiles. The drones have become a weapon of choice for the United States in the fight against al-Qaeda.

There remained difference in the strategies of both Bush and Obama as the former ordered for arms to curb terrorism and militancy while Obama has relied on covert activities, the most distinctive of which is drones strikes, known as unmanned Aerial Vehicles (UAVs). Obama’s presidency led the drones enhanced to such an extent which are six times more than Bush both terms. He gave protection to CIA from congressional and judicial oversight. (According to data collected by the New America Foundation, the Obama administration launched 284 drone strikes between 2009 and September 2012. By comparison, the Bush administration launched 46 strikes between 2004 and 2008. (Counter terrorism, 2013)

New American Foundation have worked and collected data that in Pakistan there occurred 334 drone strikes in time period of June 2004 and October of 2012. (New American Foundation 2013) Out of these 228 strikes have been carried out in Obama time which means that there is tremendous increase in drones almost 86% during the timeline of January 2009 and October 2012 only in Pakistan, similar is the situation in Yemen and Somalia as well. During Bush administration only known personnel on ‘kill list’ were used to be targeted by drone but recently escalating ‘signature strikes’ have been order of the day where unidentified leery persons are hit by these strikes. (Amnesty International Report, 2013)

In recent years, the US has targeting Pakistan with military incursions and drone attacks in our tribal areas. This has had an alarmingly adverse impact on Pakistan’s psyche which already is perturbed by America’s continued indifference to its legitimate security concerns and sensitivities. (Ahmad, 2013). According to Brian Glyn Williams elaborated drones with consequences, he stated that people of tribal areas called these drones strikes with various names as machays (wasps) for their stings or bangana (thunder) for its strike at a sudden without any prior information. (Williams, p. 879) There is persistent mistrust in tribes due to drones as even neighbors doubted each other’s that supposedly any one can be informant of US, Pakistani Government or of intelligence and can revenge enmities by drones. Drones have been perpetual source of anxiety and psychological trauma to the local people. They are scared that perhaps they would be targeted by the next drone strike supposedly preyed by mistaken information. (Amnesty International Report, 2013)

Furthermore, the children are greatly alarmed of drone planes and they rushed to their homes on every explosion or loud voice of planes, shelling, whereby they unconsciously hide themselves behind their parents. one father from Esso Khel told Amnesty International. (Ibid. p. 33) Drone strikes have halted social life and resulted in mental suppression, said a resident of Esso Khel, People are unable to sleep at night by loud sounds of planes. They are scared about their lives. Shakeeb from Darai Nishtar told that even in mosques they remained on tenterhook due to thinking about imminent drone strikes. These strikes are most likely because they target gathering and are unable to distinguish locals from Taliban. (Ibid. p. 32)

Consequently drones have exacerbated the insurgency inside Pakistan, there is increase in Anti-American sentiments and doubts about government involvement in drones strikes. This is apparent from increase
membership of TTP to 35,000 through amalgamation of various groups and by entry of new youth. (South Asia Terrorism Portal Profile) It is important to stress that not all of these new recruits are driven by drones, only an unknown percentage.) Armed groups in North Waziristan are engaged in Improvised Explosive Devices (IED) bombing, assault crowded places as marketplaces, mosques, schools in order to ensure maximum of death tolls. (The Hands of Cruelty, 2012) The Al-Qaeda and Taliban callously doomed death on persons suspected for espionage of the US and Pakistan by employing semi-judicial process devoid of transparent trial. (Ibid. pp. 31-34) The reality is that residents of Waziristan are critical of hosting Taliban and other armed non-state actors hence it has pruned them to drone strikes. They are compelled to shelter them for the fear of retaliation on Taliban’s part. Mostly the females are apprehensive in this regard as have been manifested as follows; That hosting Taliban remained very risky to local family because henceforth they could be target along Taliban, explained Fauzia, a student from Edak. (Amnesty International Interview, 2013)

The local people are apprehensive of Taliban because their children could be trained as suicide bombers. The women are restricted to check their sons outside, so fear loomed large in their minds that might their children get preyed by Taliban. Fahmida, a mother living in Datta Khel, expressed her concerns about Taliban visiting their homes from which she forbade her male family members due to fear of drone strikes but they do not consider female advises. (Ibid). Fahmida expressed her concerns that in patriarchal society of their the women have no option other than to comply with male members of family. (Amnesty Report, 2013)

The US armed unmanned predator aircraft has enraged Pakistani civil society and has been remained of major concern. There is no doubt that this covert technology has successfully targeted some of high profile Taliban commanders also. It has been reported that three predators of this type has been operated inside Pakistan with then president Musharraf’s consensus albeit there is official denial of this cooperation. (Washington Post, 2008) Former president of Pakistan, Pervez Musharraf had confessed in one of his interview in 2013 about his consent for the US drone strikes inside Pakistan throughout his era. (Robertson and Botelho, 2013)

Currently in December 2011, the US military and intelligence personnel were allowed airbases in Baluchistan and Sindh provinces, which have been used to launch drones in the recent past. (International Crisis Group, 2013) Among the dead in the apparent Predator attack was Abu Laith al-Libi, a Libyan national said to be an Al Qaeda commander. In May, at least 14 people were reported killed in a dual missile strike on a house in Damadola, Bajaur. Prime minister Yusaf Raza Gilani has termed it violation of Pakistan sovereignty. (Reuters, 2013) Most of these strikes has been targeted successfully and killed foreign militants residing in FATA different agencies especially in Waziristan. Drone strikes in FATA have caused anti-US criticism. (Usama and Julian, p. 119) From 2004-10 there were 120 assaults and out of these 107 targeted on north and south Waziristan. Senior officers in both US and Pakistan not named have claimed for covert undertaking regarding drones in 2008 in which approval has given. Islamabad sternly refuted these reports. (Ignatius, 2008) In 2009 these strikes were escalated. Graham Usher stated that these drones strikes has vanished any of favor from people which was wished by Obama due to financial help. (Usher, 2009)

Pakistani Government has always condemned these strikes as in May 2012 Foreign Ministry statement: “We strongly condemn these drones attacks. We regard them as a violation of our territorial integrity. They are in contravention of international law. They are illegal, counterproductive, and totally unacceptable.” (Foreign Ministry Manuscript, 2012) Pakistan should shoot down drones because it is assault on national sovereignty. (Mohmand, 2013) Drones strikes are countering steps for peace process. (Sherpao, 2013)

President Zardari expressed reservation about drones due to their political strains as besides loss of lives, property it has doubted democratic government and undermined credibility of governance. (Glyn, p. 881) If the costs and effects are considered then it is clear that it has not only killed militants but resulted in loss of civilian as well, therefore these are abominable to Pakistan civil society.

There arise so many questions that if Pakistan can block NATO supply line (GLOC) then why there is no retaliation in case of drones. The US has recently declared that they were never asked to stop drone attacks.
The US standpoint is that they can inform the Pakistani’s governments with minute details of drone strikes but only after strikes have been carried out because pre hand information can alert the targets. Till now Pakistan’s air force has not retaliated and never shot down drones which reflect the collaboration of Pakistan. Pakistan has permitted the US to launch drones from a base inside Pakistan, albeit there is no official approval. (Ibid, pp. 882-3)

Afghan president Hamid Karzai has logically stated that Islamabad had handed over militants list so that they may be ousted from Pakistan. He proceeded that drones have never targeted Haqqani or Afghan Taliban network. (Yusafzai, 2009) There seems some agreements behind the curtain. Some of retired intelligence personnel are with view that drones have been agreed both by Musharraf and Zardari. (Ghazanfar, 2013) If drone strikes are with mutual consent then it is not strategic challenge. Pakistan must keep own house in order to avoid drone strikes. (Amin, 2013)

According to US officials these strikes are effective. Defence secretary Leon Peneta has termed Drones strikes very effective weapon against dismantling Al-Qaeda. (CNN, 2009). Similarly Michael Hayden a former CIA Director, has stated that drones strikes has given a tough time to Al-Qaeda and its associates in FATA, where their sanctuaries has been destroyed to great extent. Both Bush and Obama’s advisers for counterterrorism have approved and included drones at policy operational level. Former Bush counterterrorism adviser Juan Zarate stated that drones have broken Al-Qaeda’s back by killing high command of it. John Brennan, the chief counterterrorism adviser to President Obama, emphasized on drones strikes because according to him these weapons are effective, ethical and exposed militants networks in those remote areas where the writ of state do not exist. (Brennen, 2012) Drones are technically very effective against terrorist hide outs. (Amin, 2013) Drone strikes have costs greatly to the militants because they cannot arrange gathering, planning and moreover they remain in perpetual fear. Drones strikes have killed the high commands as Baitullah Mehsud, Naik Muhammad, Waliullah, Tahir Yusafzai, Qari Zafar, Wali Muhammad Tofan, Malvi Nazir, Badruddin Haqqani, Atiya Abdur Rehman, Mustafa Abul Yazeed, Abu Hamza, Abu Ubaida, Abulais Alibi, Abu Yahya Alibi, Badar Mansoor and recently Hakeemullah Mehsud. (Arfin Report, 2013) The death of Hakeemullah Mehsud happened on first November, 2013, at time when according to Pakistan interior ministry the delegation was ready to visit Waziristan in order to contract peace deal with TTP, albeit opposition parties and even TTP are with views that no such arrangements were taken. This has proved a critical juncture for Pakistan because couple of days ago, prime minister Nawaz Sharif visited the US where he was ensured about halting drone strikes. Consequently, TTP under new leader Fazlulla (who under TNSM has remained active in Swat turmoil in 2007 onwards) has claimed to revenge Pakistani state. What to say of tribal areas, even the settled areas of KPK has been targeted by drone strikes. The recent drone strike in Hangu, in a settled area is a tough challenge for state in general and for KKP provincial government in particular, where Pakistan Tehrik Insaf has been intended for closure of NATO supply line after the death of Hakeemullah Mehsud in drone strike.

There is some understanding between the two states on these strikes. Drones are being used against terrorists in the areas where the writ of state is nonexistent per the responsible people present on ground most of the drone victims are terrorists. (Munir, 2013) North Waziristan is abode of foreigners who taken part in Soviet invasion of Afghanistan and then instead of going back stayed in Pakistan and Afghanistan. These non-state actors are a danger to Pakistani state. If we conduct an operation in North and expel all foreign militants there would be no more drone strikes. Drones have killed more than 80 AL Qaeda, Taliban, IMU leaders, have restricted their movements to a great extent, and have diluted AL-Qaeda abilities. (Ibid)

Drone strikes have been carried out by both presidents Musharraf and Zardari’s consent. (Yusafzai, 2013) There are two school of thought, one says that drone strikes are carried with mutual consent albeit official denial existed, the second says that drones are not allowed by these two governments. (Pervez, 2013) In principle drones are illegal, where civilian casualties resulted from these come under extra-judicial killing, but by contemplating the activities of TTP and Al-Qaeda, where TTP has perpetrated Suicide blast in Afghanistan’s Khost by killing CIA officers and the master mind of this assault was Hakeemullah Mehsud. The US as counter attack will also carried it strategy and most probably covert war in the garb of drone strikes is the only effective devise at their disposal. (Ibid)
To sum up, Drones strikes are violation of national sovereignty. It has diminished the effect of word sovereignty because every now and then Pakistan sovereignty and territorial integrity get assaulted by Drones strikes. Even the US concerned officials have acknowledged this fact. Munter and David Patraeus are both with conception that Obama reliance on drones in counter terrorism has resulted in adverse situation in Pakistan. Sometimes long term and more beneficial objectives get lost by short term gain. Patraeus has strained terms with CIA central command of counterterrorism due to his this standpoint. (Ignatius, 2012)

In a landmark judgment, the Peshawar High Court ruled in April 2013 that US drone strikes breach Pakistan’s sovereignty and constitute an act of aggression “in clear violation of the UN Charter”. (Peshawar High Court Order, Para 16 2013) Drone strikes are a “blatant violation of Basic Human Rights”, international instruments and provisions of the Geneva Conventions, the Court stated. (Ibid, para 22) The ruling ordered the Pakistan government to take steps to prevent further drone strikes, including “by force or to shot [sic] down the intruding drones”. (Ibid, para 17)

As Faisal Karim Kundi, former deputy speaker of the National Assembly, told International Crisis Group researchers in February 2013, that shooting down drone would trigger war from superpower. (International Crisis Group, 2013). Amnesty International report on drones inside Pakistan has concluded that the US usage of drones for targeted killing except in the cases of armed conflict is likely to bereft the basic right to life and is grave case of extrajudicial executions. (Op. Cit Amnesty International Report. P. 43) Even if international humanitarian law is not to applied than international human rights law’s enforcement norms are capable to be applied on the US intentional lethal force usage. Moreover, extra armed conflict usage of lethal force demand justification from the US that this force has been used only when it become inevitable and proportionate at the costs of human lives, target was far from achievement by non-lethal incapacitation or capture. (Human Rights Report, Para. 32)

Illegal and intentional execution carried either on the orders of government officials or with their collusion and collaboration are extrajudicial killing, strictly condemned and is grave crime under international law. (Human Rights Committee, para 18). Furthermore, the circumstances other than armed conflicts cannot justify the drone strikes. For instance the intentional executions by drones in the cases as devoid to capture the leery perpetrator, pertinent warning, armed resistance and where the suspects are not imminent threat to security forces, then it is utter violation of international human rights law and is extrajudicial killing. (Ibid, Para 33)

The US drone strikes inside Pakistan is a matter of extraterritorial force as well. Perhaps the tacit approval is granted by Pakistan government but besides that the US is not exempted from provision of international humanitarian and international human rights law to be followed under the context. (Op. Cit Amnesty International Report). Blackwater existence inside Pakistan has infuriated Pakistan as Blackwater has base in Karachi not only hitting and hunting high command of Al-Qaeda and Taliban but also operating unmanned vehicle (UV) assault in collaboration with joint special operations command (JSOC). This has ignited great hatred for foreign power, as Jeremy Schahill foremost expert on black water argued about black water (JSOC) teams operation inside Pakistan perhaps with Pakistan government’s consent. Both Pakistan and US concealing and refuting it. (Schahill, 2009)

The theory of Defensive realism has been put forward by Kenneth Waltz, the primary goal of state according to which is the maximization of security. States maintain their position in the world. (Waltz, 1991, p. 126) Security can be achieved by many other ways rather than expansionist foreign policy, which is not devoid of bitter consequences. There are two easy ways for acquisition of security, firstly, defensive realist have firm conviction that “offense-defense” military and technological capabilities and balance in international system, this make states capable to defend own territory rather than to annex another territory. (Christensen and Synder, 1990)

Expansionist strategies and policies have always remained expensive. Secondly, there arise the problem that in expanding power, a dominant coalition can come to the forefront who will difficult to neutralize. So it is the best way to remained focused on balance of power. (Synder and Avera)
Consequently, states remained cautious about balance of powers in order to defend and balance against threatening state, therefore aspire for status-quo. States are engrossed with their power, position and above all the security and in pursuance of all these the prevalent competition and anarchy deter them from cooperation in common interests as well. Contradiction result when strategic interests coincide. (Siddall, 2000) The same is the situation of Pakistan and the US, where both are for own security and economic maximization. Pakistan is victim of Security Dilemma about its immediate neighbors India and Afghanistan, an imminent threat on both east and western borders respectively, while the US is seeking for expansionist foreign policy based on economic and security maximization, all these led to the regional instability.

For the sake of own expansionist agenda by the US through “offensive-defensive realism” it is going to upset the security of Pakistan. The theory also concede that while maximizing the security by one state will trigger insecurity for another state and the US is aware that its agenda has fall out for Pakistan. Defensive realists concede that contradictions are inevitable in case of incompatible differences in aspects of security and other interests between security seeking and aggressor states. (Jervis, 1990) Resultantly the relation of Pakistan and the US is one of roller coaster.

The comparative power status is main cause of policy and strategies application. The US being a super power is following the guidelines which are illustration of offensive realism while Pakistan in this whole background can just strive to adopt parameters to defend its security. Offensive realists hold that the link between systemic imperatives and the actual foreign policies states pursue is relatively direct. Power position and capabilities of states build up intentions accordingly, as in the case of the US there are direct rivalries with many more countries of the world because it is super power. It is not because of struggle for security by both states in international system that wars resulted but the aggression of one state. (Mearsheimer, 1990)

The US covert Drones strikes are based on their claim to disrupt the militants safe-havens, which is threat to their security but these are violation of Pakistan’s sovereignty and has kept the tribal belt of Pakistan on fire. FATA is burning, no doubt the militancy and extremism are main reasons behind but all these are connected directly and indirectly with the US policy contours, whether in the time of Soviet invasion or now by direct intervention in Afghanistan in order to become global hegemon. This is direct interpretation of offensive realism, where a regional hegemon have insatiate quest for power maximization. In the same way the US had kept Pakistan oblivion about Operation code named Neptune Spear which was a great blow to the key ally of the US in war against terror. Following the same offensive mode in Salala post incident, a blunt aggression and assault on Pakistan territorial integrity, which is strategic challenge to Pakistan foreign policy. The above-mentioned tragic incidents have indeed brought a humiliating focus on our state.

3. Recommendations: Drone attacks will die their own death once we know the truth. It is still not clear whether Pakistan government allowed these attacks or not. In any case they should end with the departure of US forces from Afghanistan.

- We should never try to confront US on this issue and down the drone. This may give an excuse to US to destroy our vital assets. We should do it only when we are strong enough to do it and the world opinion is with us.
- Furthermore, despite 18th amendment the foreign policy subject belongs to federal government rather than provincial. So only the federal government has the right to decide about NATO supply blockade. There arise no justification on the part of provincial government to decide and act upon in this regard. Every country live according to own national interests that how to safeguard these interests.
- Recently, the matter do not belong to NATO working in Afghanistan, rather it is the time of their exit, to vacate Afghanistan, it is transition time so it is the time for Pakistan to secure short term political gains. The US is searching alternate exit route for herself and It will be tilted more towards India if we take coercive stance at this hour.
- Our security has been directly connected with the drone strikes, but the drone issue can be countered by highlighting it on visits to the US and conducting dialogues on the matter demand sound bases.
- To the great dismay FATA is not with the writ of the state so the access to far flung agencies are not possible to clamp down non-state actors. Besides there exit double policy in Pakistan, where the
provinces are utilizing the foreign aids and on the other hands they are blocking the supply line of coalition forces as well. Pakistan should have clean own house and furthermore clear cut policy should be adopted against non-state actors.

- Pakistani government should ensure political reforms in FATA so that their draconian laws come to naught and they could be merged in mainstream of Pakistani Politics. Only then the security can be stabilized there and militancy would curbed.

4. Conclusion: Everyone wonders in agony if there will ever be an end to crises and tragedies in our country. We somehow seem to have so mismanaged our affairs as to lose respect and credibility in the eyes of the world. Pakistan is now going through the gravest crisis of its history. Its national edifice is being weakened methodically by keeping it engaged on multiple external and domestic fronts. In case of drone strikes if Pakistan remained stubborn and even takes coercive statecraft but the matter of fact is that Pakistan being a minor state cannot maintain coercive statecraft for a long time because the more she focused on is to secure own territory, to neutralize the radical forces.

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IDENTIFICATION OF POTENTIAL RISK FACTORS IN PEDIATRIC POPULATION OF FEDERALLY ADMINISTERED TRIBAL AREAS (FATA) OF KHYBER PAKHTUNKHWA, PAKISTAN

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ABSTRACT. Federally Administered Tribal Areas (FATA) of Pakistan merits attention for social development. The persistent insecurity situation, military operations and lately floods have gravely affected FATA communities’ access to social services including basic health services. The present study was undertaken to determine the potential risk factors associated with the child health and to investigate the immunization status of women with child bearing age in FATA regions of Khyber Pakhtunkhwa (KP). Special attention was given to investigate maternal and child health (MCH) in FATA. Three agencies of FATA and one FR region were selected for the current study including FR Kohat, Bajaur, Mohmand and South Waziristan. A total of 800 children and mothers from the selected regions were enrolled in this study. The potential risk factors were studied with the help of designed questionnaire along with the basic demographic information. Blood samples were taken from the suspected individuals and were processed for the detection of HBsAg and antibodies against tuberculosis by ELISA methods. Hepatitis B and tuberculosis were found as major diseases in pediatric population and their mothers residing in FATA regions of KPK. Lack of Immunization programs against the major communicable diseases is potential barrier against the state of health in these areas. Establishing mother to child health care centers (MCHC) and proper immunization strategies will be a key step to lower the burden of major communicable diseases in pediatric population of FATA regions.

Keywords: Federally Administered Tribal Areas, Maternal, Newborn and Child Health (MNCH), Agencies.
1. **Introduction.** Federally Administered Tribal Areas (FATA) are known to the historian as areas stretched over 100,000 square miles on both sides of the Durand Line, and inhibited by Pathans [James, 1973]. For Pakistanis, it is termed as “Federally Administered Tribal Areas” (Khyber Pakhtunkhwa (KPK) as distinct from the “Provincially Administered Tribal Areas”, of approximately 27,220 Square Kilometers, having a Pathan population of about 3.2 million and comprising of seven Agencies and six Frontier regions. Pakistan Tribal Areas are distinct due their buffer status between Afghanistan and Pakistan’s settled areas. This territory has been kept bereft throughout the history, whether it was under the British ruling or now as federally administered. The area has its own customs, conventions and traditions deeply steeped into history. There is disparity in the resource sharing in this country of the world. In this technological advanced age the tribal belt of Pakistan is away from basic health facilities. The child health laws have been passed and adopted by most of the countries but there are infringements of such rights as well. The death of millions of children under utter miserable poor conditions is the clear manifestation of it. Public programs in the field of survival, early development, education and protections are indispensable in this regard. These fulfillments are burdensome for family income and have other problems interconnected with it as availability and quality of services to issues related with gender discrimination and neglect [UNICEF, 2000]. The situation is fit in tribal areas of Pakistan whereby the adverse socio-economic scenario is worthy to be highlighted in this backdrop. The most important is public health issue where children are suffering for more than one reasons. Undoubtedly, as aforementioned that this belt is deprived in various basic human rights provisions as right to nutrition, right to education, right to access the fundamentals of life. Accumulatively the health of child is in dire need of all these amenities. A baby is born with neurons billion in numbers which are essential for lifelong capabilities; however a great attention is required to assimilate them for learning and development [Kolb, 2009]. The topmost requirement in this regard is the environment to be favorable because it is the environment which either accelerates or hinders development and furthermore give an insight to comprehend other [Barnet & Casper, 2001]. Keeping these factors in mind the tribal areas of Pakistan are the most unfavorable environment for child health. The absence of quality environment led to psychological syndrome as cognitive deficit and sentimental anomalies in later half of life [Bradly & Caldwel, 1988]. On humanitarian grounds these provisions should be ensured to children. As the UNICEF policy deemed the access of basic health facilities to children in general and to the handicapped in particular because their rehabilitations and essential amenities are indispensable which are due by family and local community [UNICEF, 1980]. As considered the insecure environment in FATA drone strikes have caused psychological trauma in children whereby, they remained frightened. As Amnesty International report has stated that the children are greatly alarmed of drone planes and they rushed to their homes on every explosion or loud voice of planes, shelling, whereby they unconsciously hide themselves behind their parents. One father from Esso Khel told Amnesty International [Amnesty International Report, 2013]. In such hard areas it was demanding to conduct research for identification of potential risk factors to pediatric population so that precautionary measures should be suggested for future course of events.

2. **Material and Methods**

2.1. **Selection of Targeted Agencies**
Four main regions of FATA including Kohat (FR Kohat), Bajaur, Mohmand, and South Waziristan agencies were selected to investigate the health situation of pediatric population and women in child bearing age.

2.2. **Exclusion Criteria**
All the children and their mother who belongs to areas other than FR Kohat, Bajaur, Mohmand and South Waziristan agencies were excluded from this study.

2.3. **Inclusion Criteria**
All the children, newborns and their residing in FR Kohat, Bajaur, Mohmand and South Waziristan agencies were included in this study.
2.4. **Study design and data collection:** The current study was carried out in between 2012 to 2013 to determine the maternal, child and neonate health situation and the risk factors associated with acquisition of major communicable diseases. The study was conducted in three separate phases. In first phase according to the feasibility and accessibility one FR region and three agencies as listed in the inclusion criteria were selected. In the second these areas were visited and suspected population was observed. In third phase initial function operations including data collection and sample collection were carried out by trained research scholars. The written consent was also taken from the infected families. Direct interviews with the suspected mothers were also arranged by the volunteers of selected areas.

2.5. **Development of a structured Questionnaire:** A Questionnaire was developed to investigate the potential risk factors associated with maternal health and their children. Special attention was given to investigate the risk factors associated with major communicable diseases such as Tuberculosis (TB) and viral infection such as hepatitis B. The modes of deliveries of the pregnant women were also investigated with the help of questionnaire. Other potential risk factors associated with child health such as Immunization, abrasions during hair cut, circumcision modes, use of therapeutic injection etc were also noted. Parental socioeconomic status and their impact on child health were also observed.

2.6. **Blood collection and Identification of antibodies against Tuberculosis:** About 5ml of blood was taken from suspected children and their mothers. By using ELISA methods blood samples were further processed for the detection of antibodies against Tuberculosis by using the method as reported earlier {Sooraj, Nath, Nathiya, Dhanabalan, Angayarkanni & M. Palaniswamy 2011}

2.7. **Detection of HBsAg by ELISA:** All the suspected children and their mothers were screened for hepatitis B surface antigen (HBsAg) by using 3rd generation enzyme-linked Immunosorbant Assay (ELISA) (DRGIinstruments, Germany) kits using the instructions given by the manufacturers.

3. **Results.** A total of 800 individuals from the selected areas actively participated in the present study. Risk factors were investigated with the help of questionnaire. Out of total 800 individuals involving 370 and 430 children, around 400 children were delivered at home by unprofessional local ladies of tribal areas with unhygienic practices. Blood samples were taken and screened for the detection of HBsAg and tuberculosis by ELISA methods. Samplings were done from all subjects and sera were separated with 6 hours and transported to the clinical laboratory for further processing. An efficient cold chain was maintained for the storage of samples to avoid the contamination. Out of total 800 samples (n=430 children with age range 1-15 years, n=370 mothers with age range 13-42 years), 270 (62.7%) children were found positive for HBsAg while 281 (75.9%) mothers were found positive for hepatitis B surface antigen by ELISA. While antibodies against tuberculosis were detected in 160 (37.2%) children by using ELISA.

The major risk factors identified were unsafe home deliveries (50%), unhygienic obligatory circumcision practices (81.3%), sharing of personal items involving toothbrushes, razors etc. Hair abrasion was also identified as major risk factors (59.3%) as there were no barber shops in these areas. An unsafe practice of therapeutic injections was also observed as a profound risk factor. Usually injections were reused repeatedly within the same family members. Further there was not a single family provided with immunoprophylaxis against the major communicable diseases.

4. **Discussion.** Health situation in FATA regions is very worse as they are bereft of sound and healthy environment. There is unawareness about basic health cautionary measures. Mother health is under various risk factors. The present study was undertaken to investigate the potential risk factors in women of child bearing age and in pediatric population of FATA regions of KPK. Lack of health facilities and access to tertiary care hospitals are major causative agents of poor health situation in FATA regions of KPK.

In current study we have found Hepatitis B and Tuberculosis a major communicable diseases, the major risk factors for the acquisition of these disease are lack of proper health facilities, lack of immunization and screening against Hepatitis B during pregnancy are top leading factors in these regions. Furthermore, vertical transmission may be a causative agent of high of Hepatitis B burden in pediatric population as it was found in the current study that most of the deliveries were held at home by local untrained ladies without any safety and immunization strategies. Other identified potential risk factors are obligatory circumcision mostly.
practiced by untrained quacks in these hard areas.

One of the other risk factor identified in the present study was the unsafe usage of therapeutic injection, which might lead to the development of viral infection such as Hepatitis B. Lack of awareness about safety measures is another contributing factor of poor health situation. This is the first study undertaken to investigate risk factors associated with acquisition of serious diseases such as Tuberculosis and Hepatitis.

5. Conclusion: Hepatitis B and tuberculosis were found as major diseases in pediatric population and their mothers residing in FATA regions of KPK. Lack of Immunization programs against the major communicable diseases is potential barrier against the state of health in these areas. There is an urgent need to establish mother child health care center fully equipped with basic health facilities. Proper immunization should also be assured. Furthermore, a proper check and balance system monitored by trained, well equipped health practitioner must also be established. Regular health awareness campaign in such areas must be launched by the government of Pakistan.

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GENDER BASED VIOLENCE IN PAKISTANI SCHOOLS: INVESTIGATING ATTITUDE OF STUDENTS TOWARDS FAMILY ROLE IN VIOLENCE

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ABSTRACT. The present study examined the attitudes of students in Pakistani schools towards family role in school violence. For this purpose, a case study of selected districts of Khyber Pakhtunkhwa was carried out in districts Peshawar and Mardan with the sole purpose of eliciting the students' perception on violence. A sample size of 522 respondents (54.6% boys and 45.4% girls) was randomly selected on proportional allocation basis from Grade 10 students. Frequency and percentage distribution along with Chi-square test was carried out at uni-variate and bi-variate levels. To understand gender based respondent's perceptions the variable of students attitude towards family role in school violence was restricted to three relevant sub-variables i.e. Students Consult Family in Matters of School Violence, Family Shows Interest in Issues of School Violence, and Friends/Peers are More Important than Family for Consultation in School Violence. Results of the study showed that family interest in school violence was non-significant with physical, psychological, sexual and economic violence. The role of peers/friends had a non-significant relationship with physical, sexual and economic violence.

Keywords: Gender based violence; school violence; role of family; role of peer and friends.

1. Introduction: The institution of family plays major role either in the propensity of adolescent to become violent or to become composed and socially acceptable students. It is often the case that family-related issues such as conflict between parents, parents’ aggressiveness, separation, divorce etc. may contribute towards the development of aggressiveness and violent behavior among school-going children. Theories regarding relationship between delinquency and disrupted family could be grouped into three categories, viz. life course theories, trauma theories and selection theories (Juby and Farrington, 2001 cited in Ngale, 2009). According to them, ‘Life course’ theories consider separation not as a discrete event but as a long drawn-out process. These theories also argue that simultaneously multiple stressors are associated with separation. Trauma theories argue that the loss of parenthood is traumatizing event for children because of the simple fact that children’s sudden loss of strongly tied relationship (with parent). The third group, i.e. ‘Selection theories’ argue that disrupted families significantly contribute to delinquency usually because there are pre-existing differences in family income or child rearing methods.

In this regard, Thornberry et al. (1999 cited in Ngale, 2009) assume that children from lone-parent household or from families where divorce or separation has occurred, usually, are more likely to develop a number of
behavioral problems the most prominent of which is delinquency. However, children coming from two parent families are least likely to develop behavioral problems. This has been substantiated by Wright and Wright (1994 cited in Ngale, 2009), who’s research reveal that single-parent families’ especially female/mother-headed families, produce delinquent children more than the families with both parents. This is supposedly so because for children from lone-parent households the focus of attention and orientation for socialization shifts towards peers and neighborhood gathering and collectivities. It is, therefore, not surprising that such children usually end up as gang-members as this becomes a much appealing source of belongingness (Muehlenberg, 2002 cited in Ngale, 2009). This is substantiated by Resnick et al. (1997 cited in Windham, 2005) survey of more than 12000 teenagers, which found that sense of close connectedness to parents, friends and school protected them from a number of violent and risky behavior. In another study on assessment and comparison of cognitive development of children coming from single-parent households and intact families, Heritage Foundation (Brief No. 35:01), utilized Peabody Vocabulary Test (PPVT1), which measures cognitive development of children. The result showed that children living with single-mother or single mother and cohabiting partners demonstrably fared worse than children living in married and intact families.

Another pertinent point to the above analysis is the type of attention or socialization that youngster receive from parents and other social groups to which they belong. According to their Structural-Marxist theory regarding the production of delinquency Colvin and Pauly (1983 cited in Kramer, 2000) argue that economic reproduction processes coupled with social reproduction processes in workplace, peer group, school and family determine the intensity, type and frequency of a given delinquent behavior. Specifically they argue that “the more coercive the control relations encountered in these various socialization contexts tend to be, the more negative or alienated will be the individual’s ideological bond and the more likely is the individual to engage in serious, patterned delinquency’ (Colvin and Pauly, 1983: 515 cited in Kramer, 2000: 132). With respect to adolescents, then, we could cite Pfohl (1994 cited in Kramer, 2000) who persuasively argue that perception of powerless and alienation and feelings of frustration – whether due to social structure or economic structure – among adolescents develops into violent behavior which works as a means for reasserting their power and control in their lives (Pfohl, 1994 cited in Kramer, 2000).

It is accepted that schools in any society will reflect the outside culture in terms of violence or security, and that they are also likely to have a reinforcing effects on this culture (Davies, 2004, Harber, 2004). However, some schools may be atypical, being less or more violent than would be assumed from looking at rates of violence or criminality in wider society (Astor, Benbenishty, & Estrada, 2009). Schools may be able to act relatively independently and offer an alternative form of socialization. It is important to identify how they do this, yet to make rigorous connections between school ethos and (non) violence requires frameworks for linkage and comparison. This study aims to establish comparative indicators, basically qualitative in nature with space for future research to build on the findings of this study for quantitative research on the subject and to have such framework established for comparison. It also aims to provide systematic trends of violence indicators which would enable establish tools for future researches to analyze trends over time. Such trend analysis would also facilitate scrutiny of what preventive measures have sustainable impact.

There are myriad definitions of violence, and there are a considerable number of different typologies. Salmi(Salmi, Smolej, & Kivivuori, 2007), for example, distinguishes four types, direct violence (murder, harm, slavery); indirect violence or violence by omission (the failure to provide protection); repressive violence (human rights violations such as freedom of religion) and alienating violence (racism, ostracism, living in fear). Dubet (Dubet, 2003) on the other hand uses characterizations which relate more to the causation of juvenile violence: ‘normal’ or tolerated in traditional settings; ‘territorial’ to create micro-societies; ‘utilitarian’ to reduce tension of school failure; and ‘revolt’ or insurgency motivated by feelings of domination or exclusion. Charlot and Emin (1997) are cited to distinguish three levels of school violence(Mallet & Paty, 1999) that includes Firstly, the violence itself (injury, sexual violence, crime,

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vandalism etc.) which would relate to Salmi’s ‘direct violence; secondly, incivilities (humiliation, lack of respect); and thirdly, symbolic and institutional violence (irrelevant schooling, power relations between teachers and students). Social analysts such as Bourdieu (2001) would add structural violence that is the violence perpetrated by dominant groups in society based on social structures such as race, gender, social class or religion, by which certain groups are systematically denied opportunities or rights. In recent years, a concern is increasing about violent extremism, and what sort of contribution educational institutions make to its prevention or otherwise (S. E. Evans, Davies, & DiLillo, 2008).

This study is considering four categories of violence in schools: Physical (corporal punishment, fights, attacks on students or teachers etc.), Socio-Psychological Violence (verbal aggression, humiliation, denial of rights to dignity, cyber-bullying); Sexual Violence and Economic Violence. While it would be easier just to look at physical violence, this would ignore the myriad ways in which students and teachers experience harm in their school life. On the other hand, if the intention is to generate indicators, which are helpful to schools their daily practice, the study cannot enter the complex field of how structural violence is manifested in education systems (access to schools, drop-out rates etc.). These are already tackled in the ‘Global Monitoring Reports on Education for All’ and on the achievement of the ‘Millennium Development Goals’. Clearly, if racism or gender abuse is experienced, as related to wider structures of discrimination or violence, this will emerge anyway in the categories designed in this research for violence. We take the boundary to be ‘the intention to do harm’. Article 19 on the Convention of the Rights of the Child conceptualizes violence as ‘all forms of physical or mental violence, neglect or abuse, maltreatment or exploitation, including sexual abuse’ and this would form a starting point as it is internationally agreed. The World Report on Violence and Health (Krug, Mercy, Dahlberg, & Zwi, 2002), defines violence as ‘the intentional use of physical force or power, threatened or actual, against a child, by an individual or group, that either results in or has a high likelihood of resulting in actual or potential harm to the child’s health, survival, development or dignity’ (Pinheiro & Unies, 2006). Clearly, our definitions of violence would have to include violence against adults as well as children, but the notions of the intentional use of force or power and doing harm to the person, either physically or mentally, are the key signifiers.

Evolutionary perspectives based on successful functional and adaptive strategy of action as envisaged in evolutionary theory of violence needs more consideration to be highlighted while attempting to work on any issue related to violence (Eisner, 2009). The evolutionary perspective categorizes violence as deflected in different categories such as violence in non-state society based on rituals, interpersonal criminal violence based on assault, punishment inflicted by parents or state, organized private violence under a particular organization, legitimate and illegitimate state violence (assassination and execution) organized political violence such as civil war and rights. Violence could not be confined to either reason with exception to moral actions, rather it is situational based activity and have strong roots in moral interpretation as explained by Eisner (Karstedt & Eisner, 2009). However social conditions such as integration and segregation along with individual developmental trajectories could not be ignored as a cause of violent behavior (Wikstrom & Treiber, 2009). The argument of associating violent extremism with madrassa education of Pakistan is largely rejected in current research discourse (Looney, 2004);(Ladbury & Khan, 2008; Yusuf, 2009) as it contribute not more than 1% of the total student enrollment in the education system of Pakistan and the public and private sector school students have shown comparatively high level of support for violence in comparative researches (Khan, 2008).

In this scenario the existing study is very much important for Pakistan, being the only two southern countries studied by Plan International (Pereznieto et al., 2009) to have no laws to protect school-aged children from all forms of violence. This may represent different dimensions of school violence, for example, with the use of corporal punishment in school, with different histories of violence and conflicts among peers in school settings, and different sorts of inequalities which might trigger out frustration and violence due to various expected variable to be recorded. There is no study to date carried out in terms of analyzing the institutional structure of schools where violence is produced/experienced and the variation it has based on nature of school i.e. government schools for girls; boys; and or private schools with co-education. The United Nation Development Program (UNDP) through ‘Peace and Development Program’ intended to have outputs that were aimed towards improving community infrastructure and reducing ‘vulnerability of youth towards extremism. According to the report for the first quarter of the year 2011, the program has helped rehabilitation
of schools in Khyber Pakhtunkhwa Province. However, both locally and globally very few studies exist that have documented various forms of violence in schools (Pereznieto et al., 2009).

Above review comprehensively spills over the importance upon the issue at hand with its application to different societies across the globe on the basis of situational perspectives. Pakistan is a developing country where a number of policies not only framed but implemented also by the government in educational sectors with focus on many dimensions including punishment. Despite all these efforts the literacy rate is still very low which has led to the consistent existence of ignorance. Keeping into these grim realities a number of NGOs has landed into the arena for the purpose of addressing the issue. The main reason associated to this effect is the enhancement in literacy rate and containment of violence existing in all shapes and manifestations (SAHIL, 2008). This study specifically explores the attitudes of students about the role of family school violence in two districts of Khyber Pakhtunkhwa, Pakistan.

2. Research objective: The main research objective of this study is to examine the attitudes of students regarding the role of family in school violence.

3. Literature review: Research on the relationship between family-structure and delinquency demonstrate clearly that the institution of family primarily aims towards conformity among youth by monitoring and disciplining them and by developing close parent-child attachment (Featherstone and Monserud, 2006 as cited in Fry, 2010). On the contrary, if there occurs a structural change in the family, e.g. divorce, single-parent homes, lone-mother working for long hours outside home, adversely affect child-rearing practices, it leads to juvenile delinquency (Fry, 2010). The impact of divorce could be multiple and sometimes serious. For example, Beaulieu and Messner (2010 cited in Fry, 2010) research regarding the effects of divorce on homicide rates, found that children suffer emotionally, academically, and even physically as a result of their parents’ divorce; there are marked differences with respect to academic achievements and tendency towards violence between children whose parents divorce and children living in intact two-parent families. As pointed out by Fry (2010) divorce is just one of the many forms of disruptions in family that could diminish the pattern of socialization and normal personality development of youngsters. Thus even if no divorce occurs but there are issues such as parental conflict, economic distress and meager parenting practices these would compromise children’s psychological, social and economic well-being (Furstenberg and Teitler, 1994 cited in Fry, 2010).

Children coming from single-parent family and those coming from intact family (where both the biological parents/partners are living together) are usually observed to exhibit differences in terms of sociability, achievement and aspirations. According to the findings of Breivik et al. (2009 cited in Fry, 2010) and a number of other scholars (e.g. Mandara and Murray 2009; Aston and McLahan, 1994; Downey and Powell, 1993; Wu, 1996 cited in Fry, 2010) have found that children from single-parent households have higher propensity towards delinquent behavior. On the contrary, children in intact families almost always exhibit greater academic achievement and overall educational attainment. Similarly, they are seldom seen to behave problematically in school. Part of the reason is that their parents tend be involved in their school activities and have high expectations for them (The Heritage Foundation, Brief No. 35: 01). Whether we take the issue of socialization in single-parent families or in intact families, certain extra-familial factors are pertinent to look for with respect to the emergence and sustenance of violent behavior among children. For example, a very well-known fact is that parents engaged in blue-collar work and doing menial jobs where they are strictly monitored, have been observed to have harsh and/or inconsistent parenting styles. Children in such environment gradually develop alienation from parents culminating possibly in serious behavioral problems (Colvin and Pauly, 1983 cited in Fry, 2010). According to Vander Ven et al. (2001), working mothers have negative effect on children’s socialization and possible incorporation into delinquency. However, this is usually the case in urban contexts but not in rural contexts. With respect to urban areas, Vander Ven et al. (2002 cited in Fry, 2010) argues that children whose mothers are working spend more time with peer groups; the pattern of orientation and learning shifts towards peers which in most of the cases lead to delinquent behavior and violence.
In everyday discourse we do not argue about the assumption that educational institution is one of the main agent of harnessing human capabilities and hence the achievement of just, equitable and flourishing society (Sen, 1999). This should be so because healthy and educated population can participate in and contribute towards individual and collective well-being. Assumedly, education contributes to development in at least three ways. Through the ability to read and write, communication and acquisition of knowledge, education directly brings improvement in a human being’s well-being. Secondly, it indirectly improves well-being by increasing productivity of an individual. Finally, education indirectly contributes towards well-being by bringing improvement in earnings of an individual (Sen, 1999). However, it is noted that the institution of education, though assumed to be homogeneously benign, does not always cater for the needs of all students in equal terms. Whether we discuss developed countries or underdeveloped countries participation in educational institution does not bring universally similar and equal psycho-social benefits to pupils. The social space of school is usually wrought with inequality of gender, ethnicity, class, language and other forms of identity. Popular belief is that education gives freedom of thought and action but in reality schools may be the places where some students may learn “… their place of un-freedom” (Unterhalter, 2003). Instead of winning freedom students may learn their un-freedom and violence especially when it comes to gender-based violence. It is not unlikely that years of schooling may translate into participation and interaction in environment wrought with gender-based violence, resulting in poor health, psychological upbringings and socialization into culture of violence.

Schools occupy strategic position in the development effects on children they could be agents of violence as well as violence-prevention given the fact that right from enrolment early in life until school leaving, a student approximately lives half of his/her life in school (Sullivan & Bash, 1967). Should it be surprising to see children becoming violent, when on daily basis and for a number of years they are made to sit for hours, cramming notes in frontal teaching methods in an authoritarian environment? Thus the thesis that rising level of pupil-to-pupil and teacher-to-pupil violence in schools is related to compulsory education seems plausible. This is because, being subject to controlled environment from early childhood to the age of sixteen or eighteen develops considerable amount of frustration (Eacute & Esteve, 2000), which cannot be undone without being externalized by the students in the form of violent reactions in children (Adams, 1991; Harber, 1998), loss of creativity (Harber, 2002: 11), and increased drop out and repetition rates (Green, 1998: 155). This might occur because an individual’s sense of coherence is composed of three elements, viz. comprehensibility, manageability and meaningfulness (Antonovsky, 1987). In line with this Bowen et al. (1998) cited in (Lovegrove, Henry, & Slater, 2012) with respect to school children explained these elements to be (a) learner’s self-perception of feelings, (b) meeting the demands and challenges of education and (c) being engaged in school. It might be true that in 20th century, family and religion have lost their ground to schools as primary means for socialization of children (Omaji, 1992). But is this means of socialization safe and sound for children? We might be right in our belief that school is powerful means for value transmission, reformation and change (Griffin, 1978; A. W. Jones, 1975) through its role in raising critical thinking abilities and innovation in children (Omaji, 1992; Stromquist, 2007) but they also operate as mirror of society (Ngakane, Muthukrishna, & Ngcobo, 2012). Therefore, we must clearly understand, Tunley (1962) warns, that school is agency for violent behavior and attitudes (Tunley, 1962).

From individual-level perspective, individuals in pre-literate societies – quite contrary to the classic myth of barbarism and savagery – enjoyed considerably liberal environment. Yet school based violence has emerged as a bigger issue in developing countries than in developed countries. Complaining about authoritarian environment in schools in South Africa, Harber and Mncube (2011) contend that the European model of state formation, modernization and control got diffused to the colonies. According to (Altbach & Kelly, 1978) see also (Mynard, Joseph, & Alexander, 2000) the effective functioning of colonial administration needed slavish people. Hence, a cost-effective method of mass education through missionary schools was devised wherein learners were taught the superiority of colonial culture thereby paving way for the production of politically docile and controlled environment. Even if we take this as mere exaggeration that hinges on externalization of violence-related problems to extra-societal factors in developing countries, there are still other factors that led to the introduction of violence in mass-education schools in the colonies. The factor of belief system of colonial master seems to be the most plausible reason. For instance, according to Parker-Jenkins (1999: 6), Victorian Britain’s belief in physical chastisement translated into physical disciplining of children which was
upheld by law courts as teachers ‘right. It should not be mere coincidence that corporal punishment, verbal abuse and other forms of violence got introduced in India, Pakistan, and Bangladesh, which were formerly a single colony of England. The persistence of authoritarian mode of administration – including educational administration – in post-colonial era now called violation of human rights (Harber and Mncube, 2011) has had historical roots in colonial administration. The right to discipline a child is resentfully institutionalized in authoritarian form of teaching. This should be so because in many cultures, particular of South Asia, teachers are socially valued as most respectable. Almost every teacher performs his/her role with this ideological backdrop in mind and every student succumbs to teachers’ will under its influence. Resultantly, boundaries between the notion of a right and a duty gets blurred in that teachers’ cognitively focus on extracting respect out of children (the right) instead of imparting skills to them as their main job (Tamutienie, 2008).

In order to have disciplined and morally correct citizens, schooling system usually adopt teacher-administered ‘corrective’ mechanisms – corporal punishment, beating, bullying harassment etc. (Grosvenor, Lawn, & Rousmaniere, 2000). School teachers and administrators could operate both as perpetrators and victims of violence but their documented role is usually of perpetrators. Likewise, boys and girls are both the perpetrators of violence but boys predominantly are more the perpetrators. Violence exists in various forms such as physical injury (assault) (Antonowicz, 2010), abuse of power (bullying) (Piotrowski & Hoot, 2008), sexual harassment (Jones et al., 2008). Diverse typologies of violence in schools could be developed but mostly literature group school violence into three categories of bullying, sexual abuse and corporal punishment (Harper 2010: vi; Plan, 2008: 7). Schooling as violence and violence in schools has become a pressing issue in both developed and developing countries and there is need to undertake methodologically sound researches to prevent schools from becoming violent (Kimmel & Mahler, 2003). Current research warrants it.

The culture of using corporal punishment for disciplining children in schools is a global problem. Despite the fact that corporal punishment is just one of the many ways of disciplining children (Sanderson, 2003) it is practiced at large as the only way for behavior correction. Two reasons are often cited as rationale for its practice. Firstly, it is legitimated on the grounds that all children of the same age are similar in their personality attributes and therefore they should be subjected to similar types of discipline strategies (Harber, 2002: 10). Secondly, it is considered necessary and perhaps essential for disciplining (Plan, 2008: 48; Dunne, Humphrey & Leach, 2006) which besides tantamount to a legitimized form of authority (Harber, 2002) also paves way for other forms of violence in schools. Perhaps, that is the reason why despite UNVAC’s 2009 call for ban on corporal punishment in schools 90 out of 197 countries still allow its use (Plan, 2008). Corporal punishment is legal in both rich and poor societies such as France, Korea, Australia, a number of states in US, Pakistan and Cambodia (Balaya and Debarbieux, 2008). Even where legal, strict guidelines exists for administering corporal punishment but they are seldom abided by and students are reportedly slapped, hit, or kicked (Youssef et al., 1998; Chianu, 2000; HRW, 1999). This shows the formal and informal institutional fabric of societies where in structure of violence is deeply entrenched. A more ironic fact is that in many countries despite its illegality, corporal punishment is practiced (Durrant, 2005). Part of the reason is that many countries; especially Asian, corporal punishment is practiced under the influence of social value of respecting elders. Children would have to keep silent even if a teacher is using it indiscriminately, which according to Plan (2008) perpetuates an intergenerational cycle of violence and support for children’s violent behavior. It is due to such social values that teachers would denounce media reports and would hardly inform authorities regarding such practice (Dubet, 2003). Its practice paves the way for children’s socialization into violence by orienting towards the notion that violence should be used when one does not agree with others (De Wet, 2007; White, 2007; Plan, 2008; Gulbenkian Foundation, 1995). Research also demonstrates that the more it is practiced the more a child would exhibit only overt conformity but in reality he/she would be inculcated with feelings of aggression and tendency towards physical aggression against other children (Naz et al., 2011; Gulbenkian Foundation, 1995). And thus the socially created environment of violence triggers a general tendency towards authoritarian attitudes and violence (Harber and Mncube, 2011). The preceding analysis may suggest school environment as the sole contributor to gender based violence at school among adolescents. However, though central in themselves, schools are part of the agents of socialization of children.

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2 It was as late as 1986 that corporal punishment was finally banned in England (Parker-Jenkins, 1999: 6).
and adolescents. Students’ background factors such as ethnicity, economic status, religious orientation, type of family etc. are also central to the way the process of violence gets shaped and formed in schools.

Current research shows that a multitude of individual, social, economic and contextual factors may be contributing towards adolescent students’ propensity to violence and criminal behavior at and around school (Chandras, 1999 cited in Windham et al. 2005). Research on relationship between poverty and delinquency and violence is, perhaps, one of the oldest areas of academic scholarship. The age-old maxim of poverty leading to violence holds no ground anymore in the sense that showing direct and explicit causal relationship between poverty and violence is seriously difficult. Obviously, there are a large number of intervening variables affecting violence among the power. However, research does clearly substantiate that the intensity and/or frequency of violence is and relatively higher in neighborhoods with low socio-economic status than the high socio-economic status neighborhoods; inversely, with respect to positive personality traits such as intelligence, language acquisition, critical thinking etc. children from higher socio-economic status excel from children from low socio-economic status. For instance, Hart and Risely (1995 cited in Dillon, 2012), in their longitudinal study clearly identified major achievement gaps between children from low socio-economic status (SES) and those from higher SES. Poor SES makes its mark right from the age of 3 such that children from low SES are low on developmental path than children from higher SES. Similarly, in its study of children’s educational achievement in the US, the National Centre for Children in Poverty (2006 Cited in Dillon, 2012) found that among those children involved in the welfare system, 50% suffered from some form of mental health concern. More specifically, of those between the age of 6 and 17 from low SES, 21% had mental health problems. A more vivid fact is that from among those who suffered from mental illness, 57% belonged to households who were at or below the official poverty line (National Centre for Children in Poverty, 2006 cited in Dillon, 2012: 06). In terms of additional consequences and impacts of poverty, Bringewatt and Gershoff (2010 cited in Dillon, 2012) state that such children being exposed to violence, emotional stress, parental distress and parental depression are resultantly vulnerable to behavioral problems and mental health issues. These findings are also supported by Currie (1998 cited in Kramer, 2000) who argues that there is overwhelming evidence regarding the role of inequality, social exclusion and extreme poverty in influencing social experiences to violence and crime. This is so because such phenomena seriously impact on smooth functioning of the institution of family and close-in community. Whether the case in point is a small neighborhood in a city or a country poverty and inequality does lead to higher level of violence (Gartner, 1990 cited in Kramer, 2000). Moreover, within the deprived neighborhoods or regions, it is the chronically and persistently deprived children who are at risk of involving in violence and crime (Werner and Smith, 1992 cited in Kramer, 2000).

If we ask as to how gender influences orientation towards and perpetuation of violence in various social contexts, (Parker & Gagnon, 1995) suggest that researcher(s) should focus on the distribution of power between males and females in specific contexts, i.e. research should aim at understanding how power relations develop and get sustained in specific social and cultural settings (Vance, 1984). Cultural norms and values give birth to specific forms or regimes gender inequality which could pave way for the establishment and perpetuation of gender based violence (Parker, Barbosa, & Aggleton, 2000). School environment usually give legitimacy to teachers’ authority: whether it is regulation or control of students’ behavior, teachers determine ‘appropriate’ behavior for students as gender-differentiated beings. This is done through a system of reward, punishment, sanctions, time-distribution in class and attention span in class. The gender regime gets established and signified in two ways: firstly, by ignoring certain behavior traits and by punishing other acts. For instance, teacher may establish his/her authority by insisting on certain forms of address (‘Sir’ or ‘Madam’) from students but boys fight among themselves or intimidate girls, it would be dismissed as merely ‘teasing’ or as ‘boys will be boys’. Through such forms of interaction, teachers help in normalizing certain behavior traits of students, thus contributing towards gender differentiation and a hierarchy in which males dominate (Jackson & Newman, 2004).

The feminine and masculine identities also get entrenched through the hidden curricula and students’ informal learning. For example, girls in many Asian schools are required to do cleaning while boys are required to do digging. Activities such as these are indicators of gender identities and practices within schools. These also reify sex-based relationships between men and women beyond schools. Hence, if gender based violence are
learned and practices in schools it would definitely be practiced in larger society. Physical masculinity is expressed through forms of violence which does two things: firstly, self-regulation is ensured when a boy abides by the modality of masculinity and secondly, it is also strategy to exhibit one’s power. This exhibition of power occurs both formally and informally, e.g. separate queues for boys and girls and/or appointment of males as class representatives. According to (Robert William Connell, 1987) masculinity today is a matter of the subordination of women, authority, aggression, and technical competence. Emphasized femininity is subordinate to and defined by hegemonic masculinity. [It is] organized around themes of dependence, sexual receptivity, and motherhood” (Cavender, Bond-Maupin, & Jurik, 1999). Similarly, masculinity is often characterized as “tough, professional, public, outdoor, and strong, whereas femininity is sensitive, domestic, private, indoor, and weak” (Cuklanz, 2000). Messner (1992) explained how boys learn to define their gender identity: “Indeed, boys learn early that if it is difficult to define masculinity in terms of what it is, it is at least clear what it is not. A boy is not considered a masculine if he is feminine” (pp. 35-36) (Finley et. al., 2007).

According to Martin’s (2001: 4) qualitative study on harassment in schools, harassment of boys occur just as frequently as it occurs to girls. Usually older boys harass younger ones. Young girls join harassers often as way of dealing with ‘outsiders’ like in-group and out-group feeling etc. (Mills, 2001). Martin (2001: 5) also found that teacher considered boys’ sexual harassment of a ‘slut’ as normal. Moreover, if an incident of sexual harassment is reported, teachers first try to find out as what ‘type’ of girl has been harassed. Martin (2001) also confirmed the belief that teachers are themselves perpetrators of sexual harassment. In relation to the above, it should also be noted that teachers’ differential use of disciplining strategies such as corporal punishment contributes towards reinforcement of gender identities (Antonowicz, 2010) and gender relations between boys and girls (Bisika, Ntata, & Konyani, 2009). Teachers usually justify using corporal punishment with respect to boys under the rationale that it would make them tough (Morrell, 2002). In such an environment it is least unlikely that boys and girls get socialized about their sex-based roles according to the dictates of larger social structure. In addition to these demographic density and size of school as well as size
The main purpose of this study was to investigate the causes of gender based violence in Pakistan. Schools often operate as factories where students are treated as products (Harber, 2002: 12). Resultantly, big-sized schools could lead to alienation from school and disconnection from education and drop-outs are high in big-sized schools (developed countries) (Meyer, 2010a, 2010b). It also introduces inadequacy in teachers’ and managers’ supervision of school environment (Plan, 2008: 39).

The issue of gender-based violence was raised by feminist activists during 1970s. Initially the focus of attention was the unwanted sexual attention that women faced in the workplace (V. E. Lee & Burkam, 1996). The institutional setting of workplace was also the first site for research on sexual harassment (Vappu, Jenny, & Mervi, 2003). Soon the discussion on sexual harassment and other forms of gender-based violence broadened to include institution of education. The first cases of sexual harassment were filed in higher educational institutions but it was soon followed by analysis of primary and secondary schools (Lee et al., 1996: 384-385). During 1970s and 1980s feminists heavily relied on sex-role theory (McLellan, 2002), according to which children are socialized to view their roles in relation to their sex. Secondly, the theory also holds that, children are just passive recipients of knowledge regarding their sex-based roles. Finally, sex-role theory suffered from the assumption of treating girls and boys as homogeneous categories (McLellan, 2002). Later researches, for instance Connell (1987), refuted sex-role theory’s claim that that girls and boys are homogenous categories and that they are not passive recipients of sex-appropriate knowledge (McLellan, 2002: 3). It is also pertinent to mention that the education settings in the North were the initial sites for such research (Leach, Kadzamira, & Lemani, 2003).

According Gardner and his colleagues’ research on schools in Jamaica, ‘Girls, older children, those in higher grades, and those attending all age schools/junior high schools were more likely to know victims of violence or to consider child abuse, insults, or self-defense as violence’ (Gardner et al., 2003: 101). The gender-based risk assessment of Gardner et al.’s (2003: 102) research demonstrate that male students felt more at risk of violence than female students. Similarly, in their research on assessing students’ perception of violence in the public schools, Everett and Price (1995: 346-47) found that 31% of the boys, 7% of girls, and 40% of poor-grade-earners reported to have carried a weapon to school, at least once (Everett and Price, 1995: 346-347). With respect to threatening a teacher, 10 percent of males and 20% of poor grade-earners reported to be involved in it (Everett and Price, 1995). In gender terms, the survey found that comparatively males were more often involved in crimes at their neighborhoods (Everett et al., 1995). Similarly, ‘for most types of violence, males significantly more than females were likely to be victims’. The study also highlight the significance of pre-existing crime rates in an area as they found that in neighborhoods with high crime rate children experienced more violence (Everett and Price, 1995: 348). With respect to causes of violence, the study found that the following as reasons for violence by the respondents; gang or group membership (35%), exposure to violence in the mass media (22%), lack of parental supervision at home (35%), and involvement with drugs or alcohol (24%), as the four top-most contributing factors for violence (Evertt and Price, 1995). Based on the literature review, the following was designed for this study. The model shows the relationship between violent culture in schools with physical violence, socio-psychological violence, sexual violence and economic violence.

4.Methodology: The main purpose of this study was to investigate the causes of gender based violence in schools in KPK Pakistan. Using a survey design, a sample size of 522 respondents (54.6% boys and 45.4% girls) was randomly selected on proportional allocation basis from Grade 10 students. Frequency and percentage distribution was carried out at uni-variate and bi-variate levels. Moreover, chi-square test was used to determine the level of association between variables (both independent and dependent). This study was confined to the gender based dynamics of violence in two selected districts of Khyber Pakhtunkhwa Province, Pakistan namely, Peshawar and Mardan. The focus was on the demographic profiles, reasons, social structure, gender order, social class and ethnic division and measures of school administration besides community to create violence free environment at schools. The data for this study was collected from two districts of Khyber Pakhtunkhwa province of Pakistan namely
Peshawar and Mardan as mentioned earlier. Khyber Pakhtunkhwa province is located in North West of Pakistan at 160 km from federal Capital Islamabad.

5. Data Analysis: Data collected was scrutinized, edited and labeled with codes to make it ready for electrification. A soft data entry sheet was developed with the help of SPSS in a format given in its 16.0 version. The data after complete entry through the help of 3 data entry operators was examined through 10% verification of the total data set locating the missing punches or repeat entry or any other human error before apply statistical techniques or calculating results. Once the data set was ready on all standards, was put for analysis using statistical parameters namely, associational procedures (uni-variate and bi-variate).

5.1. Uni-variate Analysis: For all demographic information and analysis of gender based distribution of respondents for their socio-economic standing, uni-variate analyses were carried out. For this section frequency distribution, percentages of the respondents and chi-square were used to monitor association pattern of these demographic indicators with gender of the respondents.

5.2. Bi-variate Analysis: Test of Association (Bi-variate analyses) were carried out to study the association amongst dependent and independent variables. This type of analyses has shown the trend of the responses favoring or opposing one or other aspect of the variables under enquiry. McCall (1975) outlined the procedure for the Suppositions formulated to work out such type of association between the independent and dependent variables examined through chi-square (Sprinthall & Fisk, 1990).

\[
\chi_{obs}^2 = \sum_{j=1}^{r} \sum_{k=1}^{c} \frac{(O_{jk} - E_{jk})^2}{E_{jk}}
\]  

(I)

Where “O<sub>jk</sub>” was the observed frequency in the data corresponding to the intersection of the j-th row and k-th column, “E<sub>jk</sub>” the expected frequency in the cell corresponding to the intersection of the j-th row and k-th column, “r” the number of rows and “c” the number of columns. The expression in (I) is distributed as chi-square with relevant degrees of freedom, calculated as follows; Df = (r-1)(c-1). It is assumed that, the themes for each group are randomly and independently selected, the groups are independent, and each observation must qualify for one and only one category (Sprinthall & Fisk, 1990). In addition, the sample size must objectively be large such that no predictable frequency is less than 5, for r and c > 2, or < 10 if r=c=2. However, this supposition was dishonored several times in the data and therefore, Fisher Exact Test (also known as exact chi-square test) was used as an alternative of simple chi-square. The relationship developed by Fisher is given in equation-II (Rhoades & Overall, 1982)

\[
Fisher\text{Exact Test} \quad \text{Probability} = \frac{(a + b)!(c + d)!(a + c)!(b + d)!}{N!a!b!c!d!}
\]  

(II)

Where a, b, c and d were the observed numbers in four cells of contingency table and “n” the total number of observations.

Table 1: Gender-based Distribution of Government and Private High Schools in Selected Districts

<table>
<thead>
<tr>
<th>Gender</th>
<th>Peshawar*</th>
<th>Mardan**</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Government</td>
<td>Private</td>
</tr>
<tr>
<td>Boys</td>
<td>103</td>
<td>329</td>
</tr>
<tr>
<td>Girls</td>
<td>50</td>
<td>232</td>
</tr>
<tr>
<td>Total</td>
<td>153</td>
<td>561</td>
</tr>
</tbody>
</table>

As table 1 shows in District Peshawar the total 29340 students study at 714 Schools, out of them 432 schools for boys and 282 are girls’ schools. Out of these total 714 schools 561 are private schools and 153 are government Schools. In District Peshawar the average number of students per school is thus 41.09 however if it is divided on single variable i.e. public and private; 82.41 students per school is in government sector and 29.82 in private sector Schools. In District Mardan a total of 2006 students observed study at 339 Schools. Out of them 207 schools are for boys and 132 are for girls. Total private schools are 204 and 135 government Schools. In District Mardan the average number of students per school is 59.01 however, if it is separated 115.11 average students per school in government sector and 21.85 in private sector.

5.3. Gender of the respondents

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>285</td>
<td>54.6</td>
</tr>
<tr>
<td>Female</td>
<td>237</td>
<td>45.4</td>
</tr>
<tr>
<td>Total</td>
<td>522</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: Field Data

Frequency and percentage distribution of respondents with respect to their gender is given in Table 2. The result shows that a high proportion of 54.6% respondents were male and 45.4% respondents were female. Gender is an important background variable and has cultural significance, specifically in determining violence at School among Students. It is perhaps the prevailing cultural endorsement for attainment towards education being considered as binding upon all human beings irrespective of gender considerations. It is only possible through an institutionalized way as its apparent status is closely revealed by the above findings. Institutional roles are the primary basis for the development of institutional traditions and formal norms which leads to the emergence of a regime with the capacity of participating of both the genders (Dunne et al., 2006; Kessler & McKenna, 1985).

5.4 Frequency and Percentage Distribution of Respondents on the basis of Age

<table>
<thead>
<tr>
<th>Gender</th>
<th>Statistics</th>
<th>15 and below</th>
<th>16 years</th>
<th>17 and above</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>Cases</td>
<td>99</td>
<td>154</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Percent</td>
<td>18.97</td>
<td>29.5</td>
<td>6.13</td>
</tr>
<tr>
<td>Female</td>
<td>Cases</td>
<td>92</td>
<td>125</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Percent</td>
<td>17.6</td>
<td>23.95</td>
<td>3.83</td>
</tr>
<tr>
<td>Total</td>
<td>Cases</td>
<td>191</td>
<td>279</td>
<td>52</td>
</tr>
<tr>
<td></td>
<td>Percent</td>
<td>36.6</td>
<td>53.45</td>
<td>9.96</td>
</tr>
</tbody>
</table>

Chi-Square 1.640 (0.440) Source: Field Data

Age group distribution of respondents is given in Table 1. Majority of 53.45% respondents were of 16 years followed by 36.6% students having aged 15 or below at the time of data collection. A reasonable number of students 9.96% were aged 17 and above most of them 6.13% were male students.
5.5 Status of Students in Present Grade (10)

<table>
<thead>
<tr>
<th>Gender</th>
<th>Statistics</th>
<th>Fresh student</th>
<th>Repeated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>Cases</td>
<td>267</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Percent</td>
<td>51.15</td>
<td>3.45</td>
</tr>
<tr>
<td>Female</td>
<td>Cases</td>
<td>232</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Percent</td>
<td>44.45</td>
<td>0.96</td>
</tr>
<tr>
<td>Total</td>
<td>Cases</td>
<td>499</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>Percent</td>
<td>95.59</td>
<td>4.41</td>
</tr>
</tbody>
</table>

Chi-Square 8.018 (0.018) Source: Field Data

Distribution of respondents on the basis of their joining in grade 10 is given in table 2 shows that a high majority of 95.59% respondents were fresh students and 4.41% were repeated students of grade 10. Relationship between the Joining grade 10 as fresh or repeater at school was found significant (p=0.018) with gender based distribution of respondents.

5.6 Gender Based Distribution of Respondents in Public/Private Schools.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Statistics</th>
<th>Private</th>
<th>Public</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>Cases</td>
<td>145</td>
<td>140</td>
<td>285</td>
</tr>
<tr>
<td></td>
<td>Percent</td>
<td>27.78</td>
<td>26.82</td>
<td>54.6</td>
</tr>
<tr>
<td>Female</td>
<td>Cases</td>
<td>125</td>
<td>112</td>
<td>237</td>
</tr>
<tr>
<td></td>
<td>Percent</td>
<td>23.95</td>
<td>21.45</td>
<td>45.4</td>
</tr>
<tr>
<td>Total</td>
<td>Cases</td>
<td>270</td>
<td>252</td>
<td>522</td>
</tr>
<tr>
<td></td>
<td>Percent</td>
<td>51.72</td>
<td>48.27</td>
<td>100</td>
</tr>
</tbody>
</table>

Chi-Square 0.0180 (0.725) Source: Field Data

Distribution of respondents in Public/Private Schools is given in Table 3. A high majority of 51.72% respondents represents private schools in the study with remaining 48.27 as having representation of Public Sector Schools. However in both public and private majority of respondents picked up as parts of the sample were male representing (145students) 27.78 % and (140 students) 26.82% in Private and Public Schools respectively out of the total 522 respondents.

6. Findings and Discussion

Analysis of Students’ attitude towards Family Role in Violence at School

<table>
<thead>
<tr>
<th>Gender</th>
<th>Statistics</th>
<th>Agree</th>
<th>Disagree</th>
<th>Don't Know</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>Cases</td>
<td>24</td>
<td>239</td>
<td>22</td>
<td>285</td>
</tr>
<tr>
<td></td>
<td>Percent</td>
<td>4.6</td>
<td>45.78</td>
<td>4.21</td>
<td>54.6</td>
</tr>
<tr>
<td>Female</td>
<td>Cases</td>
<td>43</td>
<td>168</td>
<td>26</td>
<td>237</td>
</tr>
</tbody>
</table>
A majority of 77.97% respondents did not consult or inform their family if they were punished physically by teacher. 78% of them were boys and 32.12% were girls. Only 12.83% students shared that they consult their respective families if they are exposed to violence at schools both from teachers, students or peers. Of them who said they consult families in incidence of violence at school, 4.6% were boys and remaining majority 8.24% of them were girls. Obvious results could be detected from the above statements that although punishment is around at school but intimating it to parents are not prevalent. It is probably due to the teacher’s authority who consider while exercising it as legitimate. This is in line to the Jackson (2003) finding that students behavior is often controlled through the process of reward and punishment. Corporal punishment is also believed to be an outcome factor of reinforcement of gender identities upon its relationship (Antonowicz, 2010). The above statistics were drawn from responses to statements asked on Likert scale if students share physical aggression of teachers, peers at school or if they don’t like a particular teacher for his behavior. The gender based analysis of students consultation with family in matters of school violence shows to be highly significant (p=0.001). None sharing of the problems students face at school particularly male students could also be associated with gender role perceptions wherein amongst Pakhtun in a particular and in Pakistan in general like many other parts of the world, the concept of shame is associated with punishment if you are a receiver of it and boys have to avoid it in public.

### Family Shows Interest in Issues of School Violence

<table>
<thead>
<tr>
<th>Gender</th>
<th>Statistics</th>
<th>Agree</th>
<th>Disagree</th>
<th>Don't Know</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cases</td>
<td>42</td>
<td>223</td>
<td>20</td>
<td>285</td>
</tr>
<tr>
<td>Male</td>
<td>Percent</td>
<td>8.04</td>
<td>42.72</td>
<td>3.83</td>
<td>54.6</td>
</tr>
<tr>
<td></td>
<td>Cases</td>
<td>24</td>
<td>191</td>
<td>22</td>
<td>237</td>
</tr>
<tr>
<td>Female</td>
<td>Percent</td>
<td>4.6</td>
<td>36.59</td>
<td>4.21</td>
<td>45.4</td>
</tr>
<tr>
<td></td>
<td>Cases</td>
<td>66</td>
<td>414</td>
<td>42</td>
<td>522</td>
</tr>
<tr>
<td>Total</td>
<td>Percent</td>
<td>12.64</td>
<td>79.31</td>
<td>8.04</td>
<td>100</td>
</tr>
</tbody>
</table>

Chi-Square 3.090 (0.213) Source: Field Data

The respondents were inquired herein about their perception if families inquired for reasons of child punishment or any other form of violence if so happened at schools. The statements for this sub-variable included i.e. family ask for reasons of punishment, consult teachers if child punished and console child if get into fear of classmates or encourage to retaliate bullying if happens at schools. The respondents were also enquired about their parents’ interest and care for them in selection of their friends’ age and nature of relationship/association they have. The responses shows that gender of respondent could not establish significant relation with family interest in child’s reception of violence at school (p=0.213). The table (5.2.3.2) shows that 79.31% students informed that their families didn’t took these events seriously, 42.72% of them were male and 36.59% were female. 12.64% respondents agreed to the statement that their families shown interests in issue of school violence among them 8.04% were male and 4.6% were female respondents. The remaining 8.04% were hesitant to respond. This could be due to a faith of trust on school management considering them as reformative body towards reconstruction of the evil thinking and deeds of students. It is either a high level of awareness amongst parents about the kids company or a close intimacy of the parents with the school management appraising them about the kid’s involvement at the school. Schools occupy a central position in light of development towards children role transformation (Sullivan and Bash, 1967).
Friends/Peers are more important than Family for Consultation in Violence

<table>
<thead>
<tr>
<th>Gender</th>
<th>Statistics</th>
<th>Agree</th>
<th>Disagree</th>
<th>Don't Know</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cases</td>
<td>171</td>
<td>79</td>
<td>35</td>
<td>285</td>
</tr>
<tr>
<td>Male</td>
<td>Percent</td>
<td>32.76</td>
<td>15.13</td>
<td>6.7</td>
<td>54.6</td>
</tr>
<tr>
<td></td>
<td>Cases</td>
<td>161</td>
<td>61</td>
<td>15</td>
<td>237</td>
</tr>
<tr>
<td>Female</td>
<td>Percent</td>
<td>30.84</td>
<td>11.68</td>
<td>2.87</td>
<td>45.4</td>
</tr>
<tr>
<td></td>
<td>Cases</td>
<td>332</td>
<td>140</td>
<td>50</td>
<td>522</td>
</tr>
<tr>
<td>Total</td>
<td>Percent</td>
<td>63.6</td>
<td>26.82</td>
<td>9.58</td>
<td>100</td>
</tr>
</tbody>
</table>

Chi-Square 6.255 (0.044) Source: Field Data

However, friends/peers were more important than family for 63.6% respondents. This was inquired through statements like i.e. do you agree that friends/peers are more concerned than family if get hurt at schools, and I share all my personal problems with friends and not family. The gender based association of the variable was reasonably significant (p=0.044). However if we look at the percentages, 32.76% in agreement were male and 30.84% female. There were 26.82% those who were in disagreement to the statement that friends/peers are more important than family and amongst them 15.13% were male and were 11.68% female. Here too 9.58% were reluctant or did not know or shared their opinion on the subject. The appropriate cultural prerogatives help the pupil in identifying the suitable friends which is also being encouraged by the relevant families. However, these findings are in contrast to the De Wet (De Wet, 2007) and Plan (2008) which claims that in most Asian Countries violence is passed on as socialization to the schooling phenomenon.

7. Conclusion: The main purpose of this study to investigate into the dynamics of gender based violence in Pakistani Schools taking selected schools of Khyber Pakhtunkhwa as a case study. The study was designed with a conceptual framework of independent variable namely attitude of student towards family role in violence at school with dependent variable School Related Gender Based Dynamics of Violence, The effects of these independent variables were investigated upon the dependent variable (gender based violence). The study further disclosed a link of schools and families in the existence of sexual violence pertaining to students. The concept of punishment and socialization at school having lifelong effects is the most contested issue in violence discourse. Besides learning, the child receives his social role and status here. In order to lead a productive life the child is trained into dos and don’ts of the prevalent culture or a society but this been remained the primary task of family institution both have to coordinate to get the most fruitful output for the society. The social controlling mechanisms inside school in form of sanctions help to mold and predict child’s behavior but at the same time if family not remain in loop, may result in child suffer of physical, social or psychologically. School if single out to deal with students may risk of harm student’s personality for the rest of his or her life. Punishment at school is perceived among adolescents (aged 14-18) as an internal age group issue and normal school culture, which is reinforced through peer pressure. This is believed not to be shared with family to remain and give posture of being grown boys and girls. To control those who may deviate by involving family or school administration in such matters, peers may intervene resultanty having another manifestation of violence at schools.

REFERENCES


CHOICE OF PADAGOGICAL APPROACHES TOWARDS FIRST PROGRAMMING LANGUAGE

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ABSTRACT. The development of programming language has long not been driven by pedagogical requirements of novice programmers. Language designers are normally domain experts and they generally neglect problems faced by novice programmers in the language design process. In this research, we highlight different pedagogical approaches used by many schools of thought. We highlight the pros and cons of these approaches, and find imperative first object later approach is most suitable for novice programmers.

Keywords: First Programming Language, Object Oriented Programming, Object Fist Approach, Imperative First Approach

1. Introduction. As the discipline of Computer Science emerged the importance of computer programming became even more pertinent, as it is considered that learning computer programming is an essential skill that must be mastered by all the students of this domain [27]. Most of the introductory CS courses primarily focused on problem solving skills throughout the history. In this context, there has always been an ongoing debate over the selection of a first programming language for introductory programming course [21][31][11][13]. The language chosen for the introductory course in computer programming is generally referred to as a First Programming Language (FPL).

The first programming language is regarded as a crucial factor in a student’s subsequent progress in the discipline. As discussed by Howell et al. [4] and Stephen et al. [7], the purpose of first programming language is to provide conceptual knowledge for the ‘understanding of programming constructs’ and strategic knowledge to describe the ‘abilities of problem decomposition and specification’. Furthermore, in terms of teaching, the first programming language should be easy to learn with a small learning curve. This will help the students to balance the learning while improving their problem solving skills [2][8].

For introductory programming courses selection of programming language normally has long been depends on faculty consensus, evaluation, and industrial demand. This process has increasingly gone unmanageable when faculty, students, language options, industrial demands, and disciplines in education grows. Similarly, as the languages are evolving the quantity of stuff is increasing, but the credit hours in courses are not. So, the students are over burdened, especially if they have no prior programming experience, which ultimately results into student abrasion. Therefore, the selection of an appropriate programming language for an introductory course in computer programming requires serious attention, as Bjarne Stroustrup states, “the choice of a first language is always controversial” [31][37].

In this work we intend to focus on finding the criterion for choosing an appropriate first programming language for the disciplines of Computer Science and Information Technology. We intend to analyze the
existing work and figure out the dimensions in which this problem has been addressed. We argue that this will help us composing a fairly comprehensive set of multi-dimensional criterion for the evaluation of an appropriate first programming language. This inherently triggers the question for the selection of most suitable introductory programming language from the existing languages. Therefore, we look forward to incorporate a quantitative scoring function to measure the strength of any language as a healthy FPL, which in turn, will help us choosing most suitable existing programming language. We also plan to improve the most suitable existing FPL so as to increase its conformance to the already defined criterion. Lastly, we also plan to build pedagogical tools for students and teachers, which will increase the productivity of a novice programmer, and may help the instructors in teaching activities.

2. Related Work. First Programming language or an Introductory Programming Language has been discussed in the literature in different dimensions [17]. Some researchers have proposed new programming environments for learning computer programming. These environments are focused on learning computer programming interactively. Karel [30], Alice [23] [16], BlueJ [15] some examples of such environments. This facet of research work on FPL addresses the pedagogical aspects related to the FPL, where the discussion mainly revolves around teaching methodologies. The main teaching approaches which have been discussed in the literature are object first, object first imperative later, and imperative first object later [21][23][27][14]. On the other hand, many researchers have proposed methods and criteria for evaluating programming languages as an appropriate FPL [32][6]. Some have focused on comparative analysis of the suitability of existing languages as FPL. Lastly, another branch deals with the investigation of the suitability of an existing programming language as a first programming language [12][5][18][19].

3. Pedagogical Approaches. Many efforts have been made to address the pedagogical issues related to introductory programming languages [17]. These approaches relate languages for teaching programming using, Mini language approach, top-down or object-first approach, object first imperative later, bottom-up or imperative first-object later approach, functional first and pseudo language approaches [23][17][16]. Figure 1 shows pedagogical approaches followed and approved by different universities and faculty members.

![Pedagogical Approaches](image.png)

Figure 1 pedagogical approaches of first Programming languages

3.1.1 Mini Language Approach. In an effort to help novices to learn programming several Mini languages have been developed [22]. Here Mini language term is used for languages that use some actor (turtle or robot) which performs different operations in a micro-world using some predefined commands. The main purpose of such approaches is to help the novice programmers learn programming with ease[28]. Logo (the turtle) [10] was the first Mini Language.

There are a number of mini-languages which were directly encouraged by Karel and use several of its features: Martino [18] and Marta [23] in Italy, Darel [24] in Australia and Karel-3D [25] in Slovakia.

**Strengths:**
Learn programming using a visual interface with actor (Robot), which mainly help the students to learn the use of functions, and program flow (conditions, loops etc.).
Weaknesses:
All these languages have a common drawback that they do not have the concepts of variables and parameter passing. Thus, they fail to impart actual programming concepts to the students[26].

3.1.2 Object First Approach. Another approach related to teach first programming language is called the object first approach which is also referred to as top-down approach in which major focus is on modularization, encapsulation, reusability, recursion, creating, manipulating objects and classes [22][23][25]. Object first approaches are based on systematic software engineering.

The object First approach recommended by researchers at, Mærsk Institute at the University of Southern Denmark and Monash University Melbourne, Australia. They developed BlueJ environment for visualizing objects and classes for learning object oriented concepts. The BlueJ environment helps the students to create interesting and fun applications, which enables them to master the basic concepts of the object-oriented approach in early stages of their course-work.

Strengths: Certainly object first approach helps the students to understand the strong concepts of reusability, encapsulation, information hiding, association, inheritance, polymorphism related to object oriented paradigm in early stages.

Weaknesses: Ragonis and Ben-Ari [31] used BlueJ to investigate the learning of object-oriented programming by high school students over the course of an academic year. They found that, while BlueJ helped students understand object-oriented programming concepts, it did not help them understand the overall execution (or “flow”) of a program. These finding suggest that the students were unable to trace the program’s source code, an ability required to understand its execution. There is no concept of main (client program) in BlueJ, and the students trained through BlueJ did not even know how to run program using main.

3.1.3 Object First/Imperative Later Approach. Dann et al. [25] introduced another variant of the object first approach. Alice (a character in Alice's Adventures in Wonderland). It supports either an “objects-first” or an “objects-early” and imperative approach for teaching Object-oriented programming. Alice [29] is a 3D environment in which students can build virtual worlds without writing source code using the drag and drop options. This results into low syntax errors and enhances programming skills without writing any code. Alice users also suffer the same experiences as reported by users of BlueJ. Powers, Ecott, and Hirshfield [30] apply Alice approach to teach programming suggested in “Learning to Program with Alice” by [31] in which they deferred to introduce variables late in Alice course.

Strength: Alice advocates believe that blending traditional problem-solving techniques with Hollywood-style storyboarding will enable students to readily create compelling object-based programs, thereby improving motivation, reducing attrition, and smoothing the road to learning professional object-oriented languages such as C++ or Java [1][25].

Weakness: The major drawback is that students are unable to grasp the concepts and usage of variables which makes difficult to learn the parameter passing concepts [16][18].

3.1.4 Imperative First/ Object Later Approach. The most widely used approach for teaching computer programming is imperative first/ object later approach. This approach involves object oriented, object based, and structural programming languages. Most of the universities which follow this approach span the computer programming course in two semesters. Here, in the first semester the students are taught imperative concepts (such as variables, selection, assignment, expression, loops and functions) which are followed by programming using object oriented paradigm, in the next semester.

Strengths:
This is most widely used classical approach in many universities due to following advantageous features:

i) Compatible with von Neumann architecture.
ii) Its more natural to solve problem with procedural instructions (i.e. loops, selection, assignment, expressions and variables) and decompose a problem into set of functions/procedures

iii) Solve problems with high level abstraction called objects.
iv) Most of third and fourth generation High level Languages support these concepts.

Weaknesses:

i) It introduces the concepts of reusability, modularization, and recursion in later stages.
ii) Highly depends on general purpose programming language.
Generally, the teachers focus more on teaching the syntax of the language in the first semester, instead of teaching the problem solving skills.

### 3.1.5 Functional First Approach

The functional-first approach introduces formal computational concepts with a simple functional syntax, such as Scheme [32], SML [33], Haskell [34]. The approach was named “functional first” in the ACM 2001 curriculum [9]. This approach requires the knowledge of lambda calculus. The advocates of this approach claim that such languages help the students implementing computationally non-trivial problems from the first day.

**Strengths:**

i) The syntax of functional languages is closely related to the core issues in computability which will enhance problem solving skills.

ii) Several important concepts such as data structures, map, sets, sequence, recursion, and functions, formally appears in this domain and covered a lot earlier in the curriculum.

**Weaknesses:**

i) The students may respond hesitantly to learning a language that is external of the conventional programming languages.

ii) This approach naturally requires students to think much formally at an early phase as compared to the traditional programming languages.

### 3.1.6 Pseudo Language Approach

Another approach is pseudo language approach defined by educators in CS Community. Pseudo languages are typically subsets of existing mainstream programming languages with some extra features, in order to teach the basic programming concepts [27]. The idea of a pseudo language is to create code with as simple syntax as possible. So a student can pay more attention on learning programming concepts and problem solving skills instead of learning typical syntax.

MiniJava falls under the category of pseudo language. MiniJava removes inner classes, do-while, Continue, break, and switch statement. It reduces larger set libraries from 700 classes to 17 only. Console window expressions like Lisp, console class for input/output, program and graphics program classes and primitive type as objects introduced as enhancements in MiniJava.

**Strengths:**

i) Learning a subset of the language allows a somewhat moderate learning curve, providing time for the learner to absorb and build knowledge incrementally.

**Weaknesses:**

i) This approach has not been so popular for the reason that there are some extra features which do not belong to the core language. This requires a new compiler implementation which deviates from the main objective of learning the language.

### 4. Language Evaluation and Suitability

The selection of a programming language for pedagogical purposes is often viewed as a tedious job because there is no well defined established technique for performing the evaluation. However, the choice of a programming language for introductory computer science course has severe educational repercussions [35]. With the increase in the number of programming languages, the number of faculties, and students, the selection of most suitable introductory programming language is becoming increasingly cumbersome [36].

The problem of language selection and suitability has been discussed in different dimensions, which involve the cross comparison of existing languages in terms of their suitability as introductory programming languages [36][12], whereas, some people have proposed evaluation methods for the suitability of a programming language [13][5][20][21].

### 4.1 Formal Evaluation Criterion/Processes

Formal evaluation programs for the assessment of programming languages are few and far between, and most evidence gathered is anecdotal in nature. Some approaches have been proposed to evaluate the first programming language, for instance, Parker et al. compiled a list of criteria for introductory programming courses at universities [15]. However, this criterion has not been discussed with technical details of the involved measures, which can be useful for scoring purpose.

Gupta [14] discussed requirements for programming languages for beginners. He has done a thorough requirement analysis for an appropriate first programming language. In his work, he presents technical and
environmental requirements for an appropriate programming language. However, there is no formal assessment mechanism devised for the evaluation of the language for its suitability as an introductory first programming language.

5 Conclusion

As discussed in Section 3, we have conducted a preliminary survey of the literature pertaining to the pedagogical approaches and language evaluation and assessment. In our opinion imperative first and object latter approach is good for novice with some healthy programming tool. We can start programming using this approach from school level to university level. The functional first approach is not recommended because it requires too much mathematical background from novices, which is not possible in the early stage of novices who have not enough mathematical background. Mini language approach is good for starting stage, but it lacks proper conceptual programming, transition to other languages are very tedious after using this approach.

REFERENCES

EVALUATION AND ASSESSMENT OF RISK MITIGATION FACTORS WHILE DEPLOYING CHANGE: EFFECTIVE APPLICATION OF CHANGE MANAGEMENT

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ABSTRACT: This paper discusses about the risk while deploying change in an organization along with risk mitigation strategies. Change management is a term widely used in an organization which mostly leads to risks when people start resisting at it. If the change is not managed effectively it will increase the cost, so this paper tells the cost-benefit analysis of change management. It describes the relation of positioning of change management that leads to risk and factor that cause risk. There are many consequences of mismanaging the risk so this paper demonstrate the model of managing risk while deploying change, according to factors considered. Including new technology not understood, Poor project management, untrained staff, Scope creep, changing needs, altering priorities.

Keywords— Change Management, Change Agent, Risk Management, Risk Mitigation

1. Change Management: Changes management is a strategy towards transitioning of individuals, terms and organization for the sake of attaining the desired future state.
Innovation is always changing. The latest technology and innovations to be adopted to determine which, four main factors to consider are: Strategies, goals and objectives, System of Measurement, Sequential steps, Change as to organization and Implementation
1.1 Concepts for managing Change: In an organization there are several reasons why people resist change. Each organization's processes, practices, traditions, procedures and business and the people that are engrained in the fabric of concepts are defined by its own culture. They developed over time and things are done within the organization for the right way preference and are becoming the standard, as these are not easily changed. So, expectations and belief systems within company working environment by identifying with social and economic factors which are formed. Because of these factors, Luftman, Edgar Shein resistance to change in terms of organizational culture identified as a major power. Consequently, a change in management to understand the complexities of their relationship and business transformation and process re-engineering efforts to support quality in the context of new organizational change has focused on encouraging people to.

“Changing to overcome the resistance of non-negative is about through his statements that the importance of effective change management” [1].

1.2 Risks in an Organization: A situation involving exposure to danger

Or

Expose (someone or something valued) to danger, harm, or loss.

1.3 Risk Management: “Risk management refers to the training of identifying prospective dangers in advance, examining consumers and receiving precautionary steps inside cut down on/curbs the risk.”

1.4 Risk in Adoption of Change: Following are the multiple barriers for/to implement change:

1. Cost pertaining to evolve change
2. Risks associated with change

The above mentioned are mainly involved at the organizational level. [3]

1.5 The Cost of Change Management: Change Management is not a free process. It involves limitations such as time, energy and human resource. The components of change management primarily includes: Change Management Resource Costs: Salary and compensation for change management practitioners, Training Costs: Create, development, delivery and materials,

Communications Costs: Design, development, delivery and materials and Consultant costs

1.6 Cost and Risk Analysis at Organizational Level: This table demonstrates the cost and risk analysis with incurred when organization ignores the people side of change:

<table>
<thead>
<tr>
<th>Organizational Level</th>
<th>Costs</th>
<th>Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Missed milestones</td>
<td>Resistance active and passive</td>
</tr>
<tr>
<td></td>
<td>Budget overruns</td>
<td>Resources not made on hand</td>
</tr>
<tr>
<td></td>
<td>Rework required on design</td>
<td>Obstacles appear suddenly</td>
</tr>
<tr>
<td></td>
<td>Productivity plunges (deep and sustained)</td>
<td>Impact on customers</td>
</tr>
<tr>
<td></td>
<td>Loss of valued employees</td>
<td>Impact on suppliers</td>
</tr>
<tr>
<td></td>
<td>Reduced quality of work</td>
<td>Morale declines</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Legacy of failed change</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stress, confusion, fatigue</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Change saturation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Specific Organizational Costs</th>
<th>Specific Organizational Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table No.1: Organizational Cost and Risk Analysis
1.7 Cost Benefit Analysis: The process begins by identifying potential costs and potential benefits. Observe the due importance and the potential value of managing change. Precisely, a cost-benefit evaluation is a strong a powerful structure.

Below actually table in costs and plans to initials on the advantages of applying alter management is truly showing four assorted approaches. [3]

<table>
<thead>
<tr>
<th>Potential Costs: Change Management applied</th>
<th>Benefits: Change Management Applied</th>
</tr>
</thead>
</table>
| Dedicated Resource(s) On Project Team: to bring a minor change, responsibility lies on a project manager for motivated resources. Greater change requires team of people and a support of sub ordinate teams. Time and cost for training cannot be ignored. From managers to the sub ordinates to workers, all require training which involves money and time. | **Perspective 1:** Return on Investment factors: quick tendency for adoption to change, optimum use of resources and reaching greater milestones. Project ROI is driven by Change Management  
**Perspective 2:** Avoidance to Cost: Unprofessional and weak management for change evolves greater cost.  
**Perspective 3:** Risk Mitigation: weak management for bringing change affects negatively the project stakeholders.  
**Perspective 4:** Likeliness of achieving goals: the chances for effective change increases by keeping a tight budget scheduling and meeting deadlines. [10] |

1.8 Risk Factors While Deploying Change in an Organization:

Underlying are the factors of risk rise in an organization while deploying change:

1. Non-factual worker expectations
2. Lack of commitment
3. Unlikely schedules
4. Limited Budget
5. Lack of staff Staff
6. Unavailability of Staff
7. Non-effective management
8. Not properly architected
9. Platform capabilities exceeds
10. Unsuitable structure of an organization
11. Scope creep
12. Requirements to Changing
13. Fluctuating priorities
14. Sponsor abandons project
15. Uncontrolled and huge database
16. Underestimated data cleansing
17. Vendors out of control
18. Lack of know-how of new technology
19. Unavailability of users
20. Non settlement of disputes
From these 20 factors we identify two more factors that cause risk during implementation of change. [9]

1. Organizational scope
2. Organizational structure

In Figure No 1. Risk matrix shows organizational range to format. At organization large structures and low scope are likely to have less risk. Risk increases as the structure gets tall and down. [4]

![Risk Matrix](image)

**Figure No. 1: Risk Matrix**

**1.9 Risk Impact at Organizational Level:** At the organizational level, the impact of the project is significant. The entire organization, including project team is influenced by costs and risks. Mostly, exceeds the life cycle of a respective project. Employee turn-over increases the cost, which in some cases are irrecoverable. [3]

![No Evaluation of Risk](image)

**Figure No. 1: No Evaluation of Risk**

The above graph shows that deploying change on x-axis and risk on y-axis. It is further divided into three parts Start, Middle and End.

While deploying change at the Start this risk is getting high as the curve shows, because risk is not evaluated. At the Middle it keep on getting high and it moves in the same way till the End stage.
The above graph shows that deploying change on x-axis and risk on y-axis. It is further divided into three parts Start, Middle and End. Now here risk is evaluated and risk mitigation strategies are applied while deploying change. At the Start risk is rising but when the risk is evaluated and strategies are applied the risk will move down as the curve shows.

Case Study 1: The ERM Pivot
Equipment costing $6.6 billion has been called to the resurgence of its ERM system this fiscal year. ERM Vice President aims to put together a strategy that involves an assessment to the organization’s pertaining culture to observe focal dimensions for this program, and to improve the risk culture. [11]

The ERM Vice President pointed out nine areas of prospective value:
   i. Maintaining better reporting standards
   ii. Finding key risk indicators
   iii. Being proactive
   iv. Aiming to deliver favourable output.
   v. Improvement for scenario planning
   vi. Helping better decisions at every level
   vii. Articulating better understanding for risk appetite
   viii. Maintaining the positive risk culture
   ix. Ability to take risk sensibly

   a. Formation of a Strategy: Project manager, firstly and foremost, sends a survey to identify the current environment of risk and ways as to how it should address its resources.

   b. Creating Global Standards: ERM program dates back 5-6 years, "the behavior it was disjointed and the company was not always in accordance with ideal practice." straight to work, it must follow the standard means approach.

   c. Expanding The Reach of ERM: The roadmap ERM professionally prepared to risk identification and communication are taking steps to increase the flow.

   d. Linking Risk to Decision-Making: Cultural spend and risk resources survey company where decisions about how to tap vast organization will help. Starting in the role of risk in organization see: all data entries, you need to decide how to cut. If you follow this strategy you can use the data under the executive manager and card feed a method that existing and analysis, is able to strength. [5]

1. Result Of Mismanagement In Change Process: Mismanaged projects and plans are mismanaged from the “people side” of changed perspective, and hence, required results cannot be achieved. The rate of adoption is slower and resultantly, percentage of expected returns will also fall. [8]

1.1 Analyzing Risk and Managing Change Model:
When we decide to bring change in an organization, we need to evaluate that risk which occurred in deploying change.

Underlying figure will help to move through step by step process for implementation of change and control risk. So first is about why we need change and communication for the change with employees is essential against resistance. Then we
identify all the risk and analyze them to check their sensitivity. After that we need to find out the proper cure for that risk. Next step is to communicate these risks that include the backup plans and then implement the change. As we have taken all the precautionary measure, then keep on monitoring the plans. If we find any problem during monitoring then again go back to step “Evaluation of Risk” and then move on by thorough analysis.

Figure No. 2: Risk and Change Model

3 Risk Management As Change Agent: Many people or organizations change does not come quickly, but change the practice of risk management options and techniques to address the concerns of those offers.

Risk management as a new activity or when something bad might not know how to get there is learning to deal with uncertainty. Your first threat to the management team and board of uncertainty, tolerance for risk appetite need to know about how we feel. Against the risk, you risk and uncertainties comfortable with to get them is a big challenge.

Risk management is an agent of change is another way to put the risks in perspective. Our first reaction to this idea is very dangerous, but after weighing the possible consequences we realize that it's not that bad. Risk may be acceptable or can be effectively reduced. Part of the implementation of the metrics to measure the impact of changes to make. Metrics results are expected to search through or change any aspect of this project. [6]

3.1 Positioning Change Management That Leads to Risk: An approach to change management is its positioning. Instead of a project or initiative effectively, risks related to costs and to ignore or poorly manage change to the line of thought here is to implement change management "up" by focusing on. If these popular perceptions of the organization in terms of costs and risks, change management, communication or lack of influence can be a powerful approach. [12]
1. Additional and unnecessary excessive costs are avoided with the help of bringing the “effective change”.
2. Additional and excessive are mitigated.

Risk mitigation technique as a tactic to change the position of cost management, change management cost by sharing and managing time, energy and support for the distribution of resources may be an effective approach to change. [7]

4 Conclusion: It is concluded that bringing change in an organization is necessary for the growth and prosperity of an organization. Proper communication among the employee for the change is also very necessary to avoid resistance. Organizational change management practices and policies are essential for the continue development. Building and delivering the strategies for growth and evaluating the risk shorten the resistance and mitigate risk. When an organization handle the risk and resistance while implementing change, this aware them to identify opportunity for growth. By following the risk and change model we were able to manage risk in deploying change.
REFERENCES


IMPROVING BIT ERROR RATE OF WIMAX MODEM USING SINGULAR VALUE DECOMPOSITION

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ABSTRACT: Currently Wimax is improving Communication Systems to accelerate business environment using some specific standards to avoid shortcomings of coverage area, data rate and data security. Orthogonal frequency division multiplexing (OFDM) is one of the major applications which are in use to reduce the Bit Error Rate on Wimax Physical Layer. Many techniques are in use to further upgrade and optimize the OFDM systems by inserting useful blocks in the OFDM model to improve bit error rate (BER). These blocks are inter-leaver, convolutional coding, symbol mapping, IFFT which are used to reshape the OFDM and to minimize the impact of noise. In this research work, the concept of matrix factorization has been discussed to transmit the data by computing singular values of data matrices along with the implementation of other data interleaving techniques, i.e., convolutional encoding, symbol mapping, decoding and symbol de-mapping.

Keywordss: Wimax Physical Layer, Convolutional Decoding, Bit Error Rate, Singular Value Decomposition

1. Introduction: The application of orthogonal frequency division multiplexing (OFDM) is in use by Telecom sector to transmit data with high speed on multiple carriers in both directions of wireless systems. The integrated circuits of OFDM application of 1960s are currently in use by Telecom and other industries to promote digital operations on high speed. The concept of Discrete Fourier Transform (DFT) has been proposed in 1971, on transmission of data beside the implementation of modulation and demodulation techniques [1]. In 1980s, the researchers introduced OFDM technology in Mobile Communication Systems as well as in manufacturing of modem devices for high speed communication.

Different techniques of Encoding, Symbol Mapping, Modulation and Demodulation were aimed to include in WIMAX devices to upgrade in order to reduce the bit error rate (BER). To reduce the BER, bit loading algorithms are being used along with modulation schemes to optimize the OFDM systems in the presence of static frequency multiple channels while coding techniques are being in use to mitigate the effects of fading across OFDM subcarriers. However, the implementation of these methodologies is not easy to apply in OFDM systems as described in [1] due to the following reasons:

1. Nonzero correlation of interleaved data between adjacent coded bits.
2. The channel gain may not be concluded by the fading distribution channels.
3. The BER has been considered to be evaluated in supposed symmetric channels and the minimization of BER is supposed to decrease the error rate of the initial and real encoded transmitted data.
2. Current Ofdm System

2.1 Overview: In order to have high data communication over multicarrier transmission technology, OFDM is one of the best applications. In OFDM systems, the data of high power can be spread over multicarrier channels in the OFDM system in which each carrier is a low rate carrier.

In this environment, the provided carriers are orthogonal with respect to each other that mean the dot product of carriers will be zero and the space in the frequency can be gain by the use of the Fast Fourier Transform (FFT) as elaborated in [2].

OFDM has been derived from FDM, in which each signal is carried over separate carrier frequencies. As per research detail in [2], in case of FDM, at the receiver the separation of signal can be achieved by taking the channels far apart by inserting the guard bands to remove inter symbol interference.

OFDM provides a comprehensive results and solutions for problems found in the wireless system that is based on poor bandwidth efficiency, high signal processing complexity, multipath conditions and interference and capacity issues [3].

2.2 Proposed Design Strategy for OFDM: OFDM is required to be used for multicarrier technology in current mobile systems for removing problems, such as

i. Sensitivity to multipath circumstances and low bandwidth efficiency.
ii. Issues of interference and issues of data capacity and complexity during the processing of high signal.
iii. Insufficient presentation of high-speed data broadcasting.

OFDM is an element for performing experiments on broadband wireless systems, which works based on particular frequency and time variant channels. Hutter presented a suitable design criterion for the OFDM symbol duration in [4] based on two (02) parameters i.e. the maximum delay time, reflecting the bandwidth efficiency, system robustness and maximum Doppler frequency.

Ting-Ting Cao et al, in [5] stated that MIMO (OFDM) communication systems provide high data rate. Therefore they constructed MIMO-OFDM communication systems in their research work. The Least...
Square algorithm, the Minimum Mean Square Error algorithm and (SVD) algorithm were studied on the MIMO-OFDM communication systems for getting comparisons to evaluate its performance in [5].

Subsequently, in this paper, the strategy to add the block of SVD in OFDM has been adopted for data needs to be sent on multicarrier in this way, one data matrix was divided into the diagonal matrix. The only diagonal matrix computed by this means throughout the whole OFDM procedure which not only reduces the probability of noise impact on the OFDM data but also increases the probability of receiving the correct data. The concept was implemented and analyzed the graph of OFDM-SVD with Rayleigh AWGN.

Therefore, the purpose of the research is to conclude that the Rayleigh Channel with equalization concept, Gray Code QPSK, Interleaving, and Convolution Encoding reduce the BER. However, by applying the concept of SVD further increases the probability of receiving correct data on WiMAX modems against WiMAX physical Layer attributes for WiMAX communication more reliable and transparent.

2.3 Related Work: Peng Wang et al, in [6] proposed a solution for enhancing the data rate by using of SBJA algorithm with total transmit power and quality of service (QoS). Yuping Zhao [7] in his paper presented the way to calculate the theoretical BER in OFDM systems by using ICI self cancellation algorithm. Zhao Li in [8] described a new scheme for elimination of ICI in OFDM systems by applying concept of Repeated Symbol. Zhenyu Zhou proposed the SAIC i.e single antenna interference cancellation algorithm to reduce the BER due to Co Channel Interference in OFDM systems as mentioned in detail in [9].

Xia WangXi'an presented an algorithm for de-correlation of interference cancellation by using equalization at the receiver in the domain of frequency as narrated in [10]. He described that instead of using the iterative operation in computations, by recurring embedding algorithm. XueLi et al, proposed an ICI cancellation scheme known as Total ICI elimination function in [18] which entirely removed the impact of Interference in OFDM systems. This proposal has no impact on bandwidth efficiency and takes benefits of the orthogonality of the ICI affected matrix for removing the ICI perfectly.

Zhenyu Zhou proposed the SAIC i.e single antenna interference cancellation algorithm to reduce the BER due to Co Channel Interference in OFDM systems as mentioned in detail in [25]. The proposed algorithm together decodes the preferred and intrusive data by the use of a joint trellis, which describes all forms of encoder trellis about Base station. The results reduced the Bit Errors for OFDM systems under brutal CCI conditions.

Elnoubi, S. [19] did work on OFDM. In broadband wireless communication, the adaptive antenna array (AAA) is combined with (OFDM) to minimize the (ISI) and the directional interferences. His work obtained the optimum weight set based on minimum bit error rate (MBER) criteria in pilot-assisted OFDM systems under multipath fading channel.

Radio Frequency impairment may cause expansion and rotation in the signal constellation, and distort the performance of OFDM. NguyenThanhHieu et al, [20] derived an expression for OFDM system to calculate the BER according to amplitude, phase non identical error parameters. This minimizes BER and experimental values become closer to theoretical values.

Yuping Zhao et al, proposed a scheme according to which at transmitter, we will modulated one symbol of data on group of contiguous subcarriers. [21]The weighting coefficients were used to minimize the ICI. At the receiver side, the received signals were combined linearly to reduce the ICI. Yung-Fang Chen proposed the adaptive beam forming schemes for OFDM-based systems. This beam forming vector is eigenvector based on consequential matrix. Simulations presented in [22] utilize the OFDM to demonstrate the effectiveness of planned hypothesis.

Yuan-PeiLin in [23] analyzed the BER performance in [23] of pre-coded OFDM with equalization schemes. If the SNR value become very high then response of optimal pre-coders become just like that of MMSE receivers. Gupta, B stated in [24] that, for wideband transmission the OFDM technology along
with MIMO technology can minimize the inter symbol interference. MIMO-OFDM systems keeping the factor of space and frequency diversity improved the performance of system.

In his work, the Space-Frequency (SF) block coding for MIMO-OFDM the equalizers were investigated and the analysis regarding BER are presented in [24] based on different equalizers.

2.4 Proposed Methodology: Scientists are using windowing and frequency domain coding to remove the ICI and to get better the BER routine of OFDM in wireless GSM channels. Hence, ICI cancellation improved the presentation more and more. Even then BER performance is worse as compared to BER concert of OFDM done without ICI.

Further, ICI self-elimination reduced the ICI at the low transmission rate and reduced the efficiency of the bandwidth. Other frequency domain programming functions did not minimize the data rate and formed less reduction in ICI. Based on above, the purpose of the Research is to find out a solution to minimize the Bit Error Rate by first implementing the OFDM in MATLAB. This OFDM has been finalized first by programming the basic OFDM structure including the given below blocks/units and implementing the concept of SVD so that we can improve the BER using OFDM system.

Transmitter:

1. Bits Interleave Block.
2. Convolutional Encoder Block.
3. QPSK Modulation Block
4. IFFT Block.
5. Addition of Guard Intervals
6. Addition of Cyclic Prefix.

Addition of Noise held when data with guard intervals and cyclic prefix will be sent in space/air. After addition of noise the data will be received by receiver and data passes through the following bocks of the receiver.

Receiver:

1) Removal of Cyclic Prefix Block. 2) Removal of Guard Intervals Block. 3) FFT Block. 4) QPSK Demodulation Block. 5) Convolutional Decoder Block. 6) De-Interleave Block. After programming the complete implementation of OFDM, the concept of Singular Value Decomposition (SVD) has been applied to reduce the BER and to make the OFDM performance better.

2.5 Structure of OFDM: The Block wise functionality of the OFDM is as given below:

Bits Interleave Block And Convolutional Coding: The binary data receives by inter-leaver where binary data re-arrange in non-contagious form to increase system performance. Convolutional encoder encodes the data in order to correct random errors as well as burst errors using shift registers [11] from where, data moves towards Carrier Modulation block.

Symbol Mapping: Carrier Modulation shifts the frequency operation to higher values providing better coverage and reducing the length of the antenna to a practical size according to the transmission wavelength. There are two (02) classes of carrier-modulated techniques that are used in a wireless network, 1) Traditional Radio Modem. 2) Spread Spectrum Modems by changing Amplitude, Frequency and, Phase Modulation Techniques. The two (02) most commonly used modulation techniques in traditional wireless networks are GMSK and π/4 QPSK.

Serial to Parallel Conversion: OFDM has been derived from FDM which is used for spacing the sub-channels closer to each other. This is due to orthogonal frequencies that are perpendicular on mathematical basis, permitting the spectrum of each sub-channel to overlap with one another without interference. Therefore during implementation of OFDM, this block has been added to convert the data in serial transform into parallel transform.

IFFT Modulation: OFDM system is implemented by the use of FFT and IFFT functions that are equivalent to DFT/IDFT as described by the author in [12], but more efficient to implement. An OFDM system takes the data from symbol mapping block in frequency domain. IFFT will take these symbols from frequency domain to time domain. The IFFT takes in X symbols equivalent to no of subcarriers in
the system. Each input symbol has a specific Time Period in T seconds. The value of the symbol finds the amplitude/phase of the sinusoid against that subcarrier. IFFT output is the sum of all X sinusoids.

**Parallel To Serial Conversion:** After IFFT/FFT modulation and demodulation respectively, the data in OFDM is converted from Parallel to Serial transformation in order to have data in series to back to original format to recover the data.

**Guard Interval & Cyclic Prefix:** Use of guard interval is also one of the basic purposes of using OFDM, so that it can deal with multipath fading. The input data will be divided into multiple sub carriers. Guard intervals can be used for removing inter symbol interference. But these guard intervals can’t remove intera symbol interference. Cyclic prefix will be used to remove the intra symbol interference. At the transmitter the constellation diagram in Figure 2.

![Constellation diagram at Transmitter](image)

**Receiver Blocks:** At the end of receiver first the Guard Removal Block will remove all the added guard intervals in the input data stream. After removal of guard intervals the Cyclic Prefix will be removed from the remaining data. After removing the cyclic prefix the remaining data will be gathered and OFDM symbols sort out together to get the data back into the Original shape.

**Serial to Parallel Conversion:** After removal of Guard Intervals and Cyclic Prefixes, the matrix data will be converted from Serial to Parallel for implementation of FFT algorithm as the FFT function requires the data in the Serial Shape of matrix.

**FFT:** FFT is mathematically equivalent to function IDFT but more efficient to implement. At receiver FFT block is used to process the received signal data and bring the data into frequency domain.

**Parallel to Serial Conversion:** The received data from the FFT block of OFDM will be Parallel matrix that will be converted into Serial form of matrix data so that this data will be transferred to the block of Symbol De-Mapping.

**Symbol DE Mapping:** For QPSK demodulation, coherent demodulator is used. For this the receiver must know about the carrier frequency and phase of the transmitted data. This phenomenon may also called Phase Lock Loop. In the de-modulator the referenced frequency will be multiplied with signal data. A threshold detector will be used to distinguish the integrated bits. The bits on the in phase arm are known as the even bits and on the quadrature arm are known as odd bits.

**OFDM Convolutional Decoder:** Viterbi algorithm for the purpose of decoding the encoded data received at the receiver was introduced by scientists Andrew J. Viterbi.[13] Viterbi algorithm recreates the most nearest path of the input sequences in such a way that the decoded data will be exactly like that of the input data symbols.

2. **PROPOSED SYSTEM**

**Singular Value Decomposition (SVD)** Singular value decomposition (SVD) is a way of transforming correlated variables into a set of uncorrelated variables which shows the relationship among original items of data. Singular Value Decomposition (SVD) is a technique to find out and sort the dimensions of data points to know about data points showing more variations. So in this way we can determine the best approximation of the original data points using fewer dimensions.

Hence, SVD can be used for data reduction. In case of 2 dimensional data points the regression line running through them will show the best approximation of original data with a line of 1 dimensional object. This minimizes the distance between each original point and the line. In case we have a
perpendicular line from each point towards regression line and by taking intersection of those lines we may have reduced representation of data.

Incase if we get a second regression line perpendicular to the first line and it captures the variation which shows that less variation. In this way a set of uncorrelated data points may not be visible at first glance. Based on this idea SVD algorithm has been designed.

If we take highly dimensional and highly variable set of data points and if we reduce the data to lower dimensional space then we can expose the substructure of the original data and we can sort that data from most variation to the least. Hence, SVD can be used for Natural Language Processing applications and we can ignore variation below a particular threshold to massively reduce the data.

SVD is used to break a rectangular matrix into product of three Matrices [14]. If there is matrix A that will be divided into three matrices such as given below:

1. An orthogonal matrix U.
2. A diagonal matrix S.
3. Transpose of an orthogonal matrix.

We may present the theorem as given below.

\[ A_{xy} = U_{xx}S_{xy}V_{yy} \]

Here \( U^TU=I \), \( V^TV=I \), the columns of U are orthogonal eigenvectors of \( AA^T \), the columns of V are orthogonal eigenvectors of \( A^TA \), S is a diagonal matrix containing the square roots of eigenvalues from U or V in descending order.

3.1 Addition of Singular Value Decomposition: SVD is extensively used in processing the data and reduction. SVD of several vectors may generate matrix of negative elements. SVD minimizes the errors and create positive matrices during computation. SVD can also be used for matrices decomposition, when SVD give in the essentials beyond the range of zero-one, while modified SVD decomposition produces the data in correct range at any step. [15].

SVD is a well-known technique used for factorization. SVD will decompose the matrix into set of orthogonal factors as well as to reconstruct the decomposed matrix. In reality a matrix will be decomposed into a smaller number of factors and will preserve all of the information in the matrix. The SVD expands the data in a system of coordinates with covariance matrix in diagonal [16].

---

**Fig: 3 Proposed SVD OFDM Block Diagram**

![Proposed SVD OFDM Block Diagram](image-url)
SVD finds out the dimension of a matrix known as rank. The dimension of a matrix represents the no of rows or columns. The SVD can also obtain the inverse of a matrix and provides solutions to least-squares problems when matrices are singular [16].

3.2 Impact of Singular Value Decomposition on WiMAX Modem: People in all over the world are using wireless communication systems. The most modern system WiMAX is using IEEE standard 802.16.

WiMAX technology has improved the data rate, security and coverage area of our wireless communication system. WiMAX provides the followings [17]:

1. Broadband and IP connectivity for last miles
2. Provide LOS and non LOS wireless communication.

WiMAX is using OFDMA. OFDM is using the modulation technique on the physical layer of WiMAX along with the concept of cyclic prefix. The receiver removes the cyclic prefixes at the receiver to minimize the inter symbol interference and to improve the bit error rate [17].

Table 1: The parameters in the OFDM settings have been derived by using the Wimax Physical Layer attributes as per detail

<table>
<thead>
<tr>
<th>Wimax Physical Layer OFDM Parameters</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Channel Bandwidth= BW</td>
<td>1.75 MHz</td>
</tr>
<tr>
<td>Number of Sub Carriers= Nused</td>
<td>200</td>
</tr>
<tr>
<td>Sampling Factor = n</td>
<td>8/7</td>
</tr>
<tr>
<td>Time of NULL Bits</td>
<td>1/4, 1/8, 1/16, 1/32</td>
</tr>
<tr>
<td>Size of FFT</td>
<td>255</td>
</tr>
<tr>
<td>Sampling Frequency= Fs</td>
<td>Floor(n.BW/800)*8000</td>
</tr>
<tr>
<td>Spacing in Sub Carrier = f</td>
<td>Fs/NFFT</td>
</tr>
<tr>
<td>Time of Symbol = Tb</td>
<td>1/ f</td>
</tr>
<tr>
<td>Time of CP= Tg</td>
<td>G.Tb</td>
</tr>
<tr>
<td>Time of OFDM Symbol= Ts</td>
<td>Tb+Tg</td>
</tr>
<tr>
<td>Time of Sampling</td>
<td>Tb/NFFT</td>
</tr>
</tbody>
</table>

3.3 Analysis of Proposed System: The goal was to design the OFDM on WiMax Physical layer and to reduce the impact of noise on data to be transmitted on multiple carriers.

The OFDM was first implemented without convolution coding using AWGN Noise. At the Receiver End the Results of OFDM were derived as shown below.
After this the OFDM was made with Convolution coding with AWGN Noise using Rayleigh channel. Then at the receiver end the Constellation diagram and graph between BER and SNR was shown as given below:

Fig: 04 OFDM Results with ZERO AWGN Noise and without Convolution Code

After this the OFDM was made with Convolution coding with AWGN Noise using Rayleigh channel. Then at the receiver end the Constellation diagram and graph between BER and SNR was shown as given below:
Then Comparison graph was made between AWGN and Rayleigh outputs with Noise. This shows deviations from theoretical graphs as shown below.

Then in next step it was decided to make the OFDM with implementation of SVD with noise variance i.e 0.5. Then at the receiver side the constellation diagram and received signals shows maximum similarity as
compared to input signal. Hence, the comparison graph of AWGN and Rayleigh Channel with implementation of SVD was concluded as given below.

4. Results And Discussion: In order to make this wireless communication system more robust and reliable this system should work against IEEE standard. There are many WiMAX shortcomings w.r.t coverage area, data rate and security.

For minimizing these demerits, OFDM has been decided to use by WiMAX on its physical layer. This combination of OFDM and WiMAX physical layer attributes is better to reduce the interference among the symbols and to reduce the bit errors.

For achieving above mentioned goal, it was first decided to program the OFDM and to program the OFDM in MATLAB, it was necessary to understand the concept of each block of OFDM. Therefore, this research addresses the implementation of the OFDM blocks as mentioned above, in MATLAB.

The blocks known as Inter-leaver, Convolution Encoding, Modulation with QPSK, addition of guard interval and cyclic prefixes were programmed in such a way that if we execute these blocks in reverse then the output should be same as the input was given.

Therefore for reverse order operation, the blocks such as removal of cyclic prefixes and guard interval, demodulation, Viterbi decoding and de-interleaving were programmed in MATLAB. Each block has its own specification.

After implementation of this block the system was introduced with Noise. This noise is the source of interruption of data sequences in space. Therefore our basic purpose of this research work was to design the OFDM on WiMAX physical layer in such a way that the impact of this noise on the data would be small enough.

The bit loading algorithms have been discussed by some authors whereas in this thesis the algorithm of SVD has been thoroughly investigated. The basic purpose of SVD is the factorization of Matrix data. This factorization of data not only reduces the impact of noise on the transmitted data but also can increase the reliability of received data particularly in MIMO-OFDM.

Therefore, the OFDM first implemented without SVD and analyses were made by using OFDM with convolution coding as well as without convolution coding. Then use of OFDM was made with AWGN and then AWGN with Rayleigh Channel.

Separate graphs were plotted for each section. According to the results of OFDM, it has been concluded that the OFDM without convolution coding shows poor performance as compared to the OFDM with convolution coding (see Fig. 7).

As far as symbol mapping is concerned, the Gray code of QPSK is much better than procedural programming of QPSK because the Gray code QPSK compute the data on constellations which is helpful to identify the amount of data which is near to input results on constellations.

Further, the OFDM with QPSK Gray Code and Convolution encoding was refined with guard intervals and cyclic prefix that reduced the probability of inter symbol interference (see Fig. 5). Beside this scheme even the Bit Errors can be realized in the flow of data as shown in Figure respectively. Then the strategy adopted to add the block of SVD in OFDM for data needs to be sent on multicarrier in this way one data matrix was divided into the diagonal matrix.

The only diagonal matrix computed by this means throughout the whole OFDM procedure which not only reduces the probability of noise impact on the OFDM data but also increases the probability of receiving the correct data.

The concept was implemented and analyzed the graph of OFDM- SVD with Rayleigh AWGN. Figure 8 shows that the experimental SVD-Rayleigh graph is much closer to theoretical graph even with noise variance of 0.5 NV.
Bit Error Rate Comparison Tables:

Table 2: Assessment of Bit Error Rate and SNR in OFDM using AWGN

<table>
<thead>
<tr>
<th>Description</th>
<th>Signal to Noise Ratio (dB)</th>
<th>Theoretical Bit Error Rate</th>
<th>Experimental Bit Error Rate</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluation of Bit Error Rate and SNR in OFDM using AWGN.</td>
<td>-2</td>
<td>0.5</td>
<td>0.5</td>
<td>Same</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>0.2</td>
<td>0.150</td>
<td>Error</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>0.9</td>
<td>0.9</td>
<td>Same</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>0.1</td>
<td>0.450</td>
<td>Error</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>0.0</td>
<td>0.023</td>
<td>Error</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>0.0</td>
<td>0.005</td>
<td>Error</td>
</tr>
<tr>
<td>Percentage Accuracy</td>
<td></td>
<td></td>
<td></td>
<td>33%</td>
</tr>
<tr>
<td>Percentage Error</td>
<td></td>
<td></td>
<td></td>
<td>67%</td>
</tr>
</tbody>
</table>

Table 3: Assessment of Bit Error Rate and SNR in OFDM using AWGN without Convolutional Coding

<table>
<thead>
<tr>
<th>Description</th>
<th>Signal to Noise Ratio (dB)</th>
<th>Theoretical Bit Error Rate</th>
<th>Experimental Bit Error Rate</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluation of Bit Error Rate and SNR in OFDM using AWGN without Convolutional Coding</td>
<td>-2</td>
<td>0.5</td>
<td>0.15</td>
<td>Error</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>0.2</td>
<td>0.45</td>
<td>Error</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>0.9</td>
<td>0.45</td>
<td>Error</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>0.1</td>
<td>0.1</td>
<td>Same</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>Same</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>Same</td>
</tr>
<tr>
<td>Percentage Accuracy</td>
<td></td>
<td></td>
<td></td>
<td>50%</td>
</tr>
<tr>
<td>Percentage Error</td>
<td></td>
<td></td>
<td></td>
<td>50%</td>
</tr>
</tbody>
</table>

Table 4: Assessment of Bit Error Rate and SNR in OFDM using Rayleigh Channel with Convolutional Coding

<table>
<thead>
<tr>
<th>Description</th>
<th>Signal to Noise Ratio (dB)</th>
<th>Theoretical Bit Error Rate</th>
<th>Experimental Bit Error Rate</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluation of Bit Error Rate and SNR in OFDM using Rayleigh Channel with Convolutional Coding</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>Same</td>
</tr>
</tbody>
</table>
Table 5: Assessment of Bit Error Rate and SNR in OFDM using Rayleigh Channel without Convolutional Coding

<table>
<thead>
<tr>
<th>Description</th>
<th>Signal to Noise Ratio (dB)</th>
<th>Theoretical Bit Error Rate</th>
<th>Experimental Bit Error Rate</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluation of Bit Error Rate and SNR in OFDM using Rayleigh Channel without Convolutional Coding</td>
<td>0</td>
<td>1</td>
<td>0.1</td>
<td>Error</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>0.1</td>
<td>0.13</td>
<td>Error</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>0.5</td>
<td>0.18</td>
<td>Error</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>0.1</td>
<td>0.45</td>
<td>Error</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>0.05</td>
<td>0.08</td>
<td>Error</td>
</tr>
<tr>
<td></td>
<td>25</td>
<td>0.01</td>
<td>0.1</td>
<td>Error</td>
</tr>
<tr>
<td>Percentage Accuracy</td>
<td></td>
<td></td>
<td></td>
<td>0%</td>
</tr>
<tr>
<td>Percentage Error</td>
<td></td>
<td></td>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 6: Impact of SVD on BER in OFDM using Rayleigh Channel with AWGN and Convolutional Coding

<table>
<thead>
<tr>
<th>Description</th>
<th>Signal to Noise Ratio (dB)</th>
<th>Theoretical Bit Error Rate</th>
<th>Experimental Bit Error Rate</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact of SVD on BER in OFDM using Rayleigh Channel with AWGN and Convolutional Coding</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZERO</td>
<td>0.10</td>
<td>0.45</td>
<td>0.45</td>
<td>Error</td>
</tr>
<tr>
<td>5</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>Same</td>
</tr>
<tr>
<td>10</td>
<td>0.45</td>
<td>0.45</td>
<td>0.45</td>
<td>Same</td>
</tr>
<tr>
<td>15</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>Same</td>
</tr>
<tr>
<td>20</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>Same</td>
</tr>
<tr>
<td>25</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>Same</td>
</tr>
<tr>
<td>Percentage Accuracy</td>
<td></td>
<td></td>
<td></td>
<td>84%</td>
</tr>
</tbody>
</table>
Fig: 7  OFDM Results without Convolution Coding AWGN Noise

Fig. 08:  OFDM with SVD using Rayleigh Channel and AWGN with NV=0.5
5. Conclusion: It has been concluded that Rayleigh Channel with equalization concept, Gray Code QPSK, Interleaving, and Convolution Encoding reduce the BER. However, by applying the concept of SVD on WiMAX modems against WiMAX physical Layer attributes then our WiMAX communication can be more reliable and transparent. Further, the review of comparisons graph values have been discussed with respect to the graph plotted with different techniques as mentioned in Section 4 and snap shots. The comparison of BER values of OFDM with implementation of SVD is much better than the other researches in the literature.

By using SVD, one data Matrix was divided into the diagonal matrix. This diagonal matrix not only reduced the probability of noise impact on OFDM data but also increased the probability of receiving correct data. These results communication through Wimax Modem were more reliable and transparent.

REFERENCES

[17] M.A. Mohamed1, F.W. Zak1, R.H. Mosbeh2,” Simulation of WiMAX Physical Layer: IEEE 802.16e”, IJCSNS, VOL.10 No.11, November 2010
A STUDY ON THE SENSITIVITY OF ILLUMINATION SOURCE IN THE GEOMETRICAL EYE-GAZE MODEL.

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ABSTRACT. Enhancement of computing ability of the smart phones the new use of the said device focus on the eye gaze estimation. The geometrical eye gaze estimation method measure the relation between camera, user’s eye and smart device. The illumination source on smart device generate glint on capture pupil image of the user’s eye. From the relation of glint and pupil center the eye gaze position is captured. Slight variation on light source position will drastically reduce the accuracy of the system. This research paper proposed a method to reduce the noise at light source position. The results shows significant performance and reduce the noise at light source location with 1 degree angular error.

Keywords: Illumination Source, Noise reduction and eye gaze position.

1. Introduction. Both in Cognitive based experiments and Human machine interaction the eye gaze plays a pivotal role. Recently a new smart game designed with eye gaze estimation ability. In the human machine interaction the course can controlled through human eye gaze. This will increase the role of the human machined interface based technologies. Eye gaze systems broadly classified in two groups namely image based eye gaze estimation and geometrical based gaze estimation[1]. The image based eye gaze estimation is based on mapping function namely polynomial function to define the relation between pupil image and the screen position. The major draw backs of such system with slight head movement the system performance reduced drastically. Second, geometric based gaze systems defines the mathematical relations between image feature, the visual axis of the eye, and a screen object. Goemetric method is non-intrusive and head-free eye gaze estimation.

Most recent research work has focused on the relationship among image features with varying geometric models having many hardware combinations of one or more light sources and a camera [2]. In order to find that geometrical relationship the system required to estimate the subject dependent parameters namely, cornea center, cornea radius and gaze angles between pupil axis and visual axis. Many researcher has focused to estimated these subject dependent parameter by either varyin geometrical realtion ship or increase the hardward to reduce the number of parameters. In some existing system used calibration prodecure inorder to measure accurately the subject dependent parameters. The method due to Guestrin et al. [2] used two illuminatin sources, a single camera, and nine calibration points in order to estimate the subject-dependent parameters. Hennesssey et al. [3] demonstrate geometric gaze estimation with four calibration points. The algorithm due to Villanueva et al. [4] used a geometrical model with a single camera, single eye and a single point calibration and also demonstrated that regardless of how many camera or light sources are used, a calibration procedure is necessary for geometrical gaze estimation.
Recently, many researchers focus on calibration free gaze estimation. Nagamatsu et al. [5] used two cameras and two light sources in order to reconstruct the optical axis. The point of intersection between the optical axis and the screen was calculated. The midpoint of this intersection from the both eyes was used to reconstruct the point of gaze (POG). A method due to D. Model [6] used a stereo camera in order to reconstruct the optical axis without distance parameter estimation and the offset relations among visual and optical axes of both eyes are expressed by four angles. In order to determine this offset relation has used the assumption that the visual axis of both eyes converges to a single POG. N.Iqbal[7][8] shows the eye gaze estimation with smart hand held device having subject dependent parameter cornea center estimated through objective function and error reduced at image glint position. In most recent research work the main focuse is to reduce noises at image glint position while assumed the other parameter should be measure correctly. Empricaly its observed that those parameter still posses some measurement error which is quite sensitive to the point of gaze estimation. In this paper, we analyzed the noise at the light source position. Section 2 is demonstrated the the proposed algorithm. Section 3 and section 4 is about experiment stetup / simulation results and conclusion respectively.

2. Error Reduction Model. In order to reconstruct the eye gaze estimation an multistage system with many user dependent paprmeter need to be estimated. Slight variation in the illumination source will effect the estimation of gaze position. In geometrical gaze model, the illuminated rays generated from light sources \( s_i \) reflected from the user eye-cornea having cornea center \( c \) and the reflected ray passes through camera center \( o \) and display corresponding image position \( u_i \). Each light sources with camera center \( o \) , and image position \( u_i \) defines a plane. Two planes, defines from two light sources having intersection line on which both \( o \) and \( c \) is located[7]. We expressed \( w_{ij} \) as th unit vector along the intersection line of the planes of two illumination sources namely \( s_i \) and \( s_j \) having the vector multiplication is defines as

\[
\hat{w}_{ij} = \left(s_i \times u_j\right) \times \left(s_j \times u_j\right), \quad w_{ij} = \frac{\hat{w}_{ij}}{||\hat{w}_{ij}||}
\]

Where “\( \times \)” represent the cross product. Inorder to introduce the noise at light source position the light source \( s_i \) are expresses as spherical coordinates. Whose origin is attached to the camera center and z-axis is out of the camera.Single light source position is expressed in form azimuth angle \( \Phi \) and inclination angle \( \Phi \). Having all light sources are on attached on the same plan as shown in Figure 1, therefore the inclination angle is same for all the light sources.

![Figure 1. Display screen and light source position on hand-held device](image)

Therefore error at X-axis ad Y-axis will effect the azimuth angle . Incase of no noise at light sourced position the the reconstruction of \( w_{ij} \) from different sources will be identicacal with average \( w_{av} \) which is defined as.
\[ \hat{w}_{av} = \frac{2}{N(N-1)} \sum_{i=1}^{N} \sum_{j>i}^{N} w_{ij}, \quad w_{av} = \left\| \hat{w}_{av} \right\| \]

(2)

Where \( N \) is the number of light sources. However, noises at different light sources produced corresponding \( w_{ij} \) which is not identical to \( w_{av} \). Also, single light source produced reflections in both eyes and generate two glints in corresponding images of the eye. Having noise at azimuth angle \( \phi \) is minimized having the following cost function

\[
\begin{align*}
    f(\phi_1, \ldots, \phi_n) &= \frac{1}{2} \sum_{k=L,R} \left( \sum_{i=1}^{n} \sum_{j>i}^{n} (\hat{w}_{av}^{(k)} - w_{ij}^{(k)}) \right)^T \left( \hat{w}_{av}^{(k)} - w_{ij}^{(k)} \right) \\
    &= \frac{2}{n(n-1)} \sum_{j=1, j \neq q}^{n} \left( \frac{\partial w_{av}^{(k)}}{\partial \phi_q} - \frac{\partial w_{ij}^{(k)}}{\partial \phi_q} \right) \\
\end{align*}
\]

(3)

Where \( L \) and \( R \) is the left and right eye respectively. We have correct noise at only one angle therefore one parameter for one light source, therefore for \( n \) light sources system, \( n \) number of parameter are to be optimized. In order to apply gradient descent algorithm to optimize the parameters the gradient of cost function is calculated as.

\[
\begin{align*}
    \frac{\partial f}{\partial \phi_q} &= \frac{1}{2} \sum_{k=L,R} \left( \sum_{i=1}^{n} \sum_{j>i}^{n} (\hat{w}_{av}^{(k)} - w_{ij}^{(k)}) \right)^T \left( \frac{2}{n(n-1)} \sum_{j=1, j \neq q}^{n} \frac{\partial w_{av}^{(k)}}{\partial \phi_q} - \frac{\partial w_{ij}^{(k)}}{\partial \phi_q} \right) \\
\end{align*}
\]

(4)

2.1. Experimental Result. We have done experiment to analyze the noise correction algorithm. We used multiple light source attached to smart hand-held device. A 2 mega pixel camera at 30 fps is center at the top of display screen. The distance between user and the device is about 200mm. The system parameter namely camera focal length and pixel size must be obtained from manufacturer specification. One hundred independent realization of an additive zero mean Gaussian noise with standard deviation between 1 to 5 mm were added to each light source position inorder to simulate the noise at light source position. The angular error between the true and the corrected light source position is calculated. The angular angle is shown in Figure [2].

![Figure 2. Angular error estimation. a) angle with noise  b) angle after noise correction.](image)

In the experiment, we consider eight light source among twelve light sources. All the light sources has considered noise and then corrected the noise through proposed object function. The method reduced the 1 degree angular error approximately. The results exhibits some light sources reduce more error than others. In comparison light source location namely s7 reduced angular error more than light source location s5. The reason observed that light source location s5 is more parallel to camera x-plane than light source location s7.
TABLE I: Angular error on different light source position with-out-correction.

<table>
<thead>
<tr>
<th>Light Position</th>
<th>1 mm</th>
<th>2 mm</th>
<th>3 mm</th>
<th>4 mm</th>
<th>5 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>S-5</td>
<td>0.65°±0.35°</td>
<td>1.2°±0.64°</td>
<td>1.94°±1.01°</td>
<td>2.44°±1.16°</td>
<td>3.2°±1.7°</td>
</tr>
<tr>
<td>S-12</td>
<td>0.60°±0.27°</td>
<td>1.19°±0.65°</td>
<td>1.93°±0.98°</td>
<td>2.36°±1.26°</td>
<td>3.17°±1.78°</td>
</tr>
<tr>
<td>S-6</td>
<td>0.49°±0.25°</td>
<td>0.97°±0.52°</td>
<td>1.50°±0.64°</td>
<td>2.08°±0.96°</td>
<td>2.70°±1.22°</td>
</tr>
<tr>
<td>S-11</td>
<td>0.51°±0.25°</td>
<td>0.97°±0.52°</td>
<td>1.41°±0.74°</td>
<td>2.07°±1.01°</td>
<td>2.61°±1.24°</td>
</tr>
<tr>
<td>S-8</td>
<td>0.42°±0.20°</td>
<td>0.93°±0.53°</td>
<td>1.38°±0.76°</td>
<td>1.78°±0.95°</td>
<td>2.46°±1.32°</td>
</tr>
<tr>
<td>S-9</td>
<td>0.46°±0.25°</td>
<td>0.92°±0.49°</td>
<td>1.26°±0.69°</td>
<td>1.86°±0.80°</td>
<td>2.11°±1.14°</td>
</tr>
<tr>
<td>S-10</td>
<td>0.38°±0.20°</td>
<td>0.73°±0.37°</td>
<td>1.11°±0.58°</td>
<td>1.40°±0.70°</td>
<td>1.93°±1.02°</td>
</tr>
<tr>
<td>S-7</td>
<td>0.35°±0.20°</td>
<td>0.77°±0.39°</td>
<td>1.09°±0.51°</td>
<td>1.69°±0.97°</td>
<td>1.83°±0.99°</td>
</tr>
</tbody>
</table>

During experiment, we have considered among eight light sources half of light source location is noise and rest half light source location is noiseless. The results exhibits high angular error reduction.

TABLE II: Angular error on different light source position after noise correction.

<table>
<thead>
<tr>
<th>Light Position</th>
<th>1 mm</th>
<th>2 mm</th>
<th>3 mm</th>
<th>4 mm</th>
<th>5 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>S-5</td>
<td>0.43°±0.22°</td>
<td>0.86°±0.52°</td>
<td>1.33°±0.69°</td>
<td>1.73°±1.10°</td>
<td>2.18°±1.19°</td>
</tr>
<tr>
<td>S-12</td>
<td>0.47°±0.24°</td>
<td>0.80°±0.52°</td>
<td>1.33°±0.78°</td>
<td>1.66°±0.83°</td>
<td>2.41°±1.41°</td>
</tr>
<tr>
<td>S-6</td>
<td>0.25°±0.13°</td>
<td>0.54°±0.35°</td>
<td>0.79°±0.40°</td>
<td>1.04°±0.60°</td>
<td>1.29°±0.74°</td>
</tr>
<tr>
<td>S-11</td>
<td>0.27°±0.14°</td>
<td>0.46°±0.26°</td>
<td>0.77°±0.40°</td>
<td>1.00°±0.52°</td>
<td>1.36°±0.67°</td>
</tr>
<tr>
<td>S-8</td>
<td>0.19°±0.12°</td>
<td>0.41°±0.23°</td>
<td>0.56°±0.27°</td>
<td>0.75°±0.45°</td>
<td>0.93°±0.54°</td>
</tr>
<tr>
<td>S-9</td>
<td>0.19°±0.11°</td>
<td>0.36°±0.19°</td>
<td>0.55°±0.27°</td>
<td>0.74°±0.43°</td>
<td>0.93°±0.48°</td>
</tr>
<tr>
<td>S-10</td>
<td>0.19°±0.10°</td>
<td>0.34°±0.18°</td>
<td>0.54°±0.28°</td>
<td>0.72°±0.41°</td>
<td>0.94°±0.47°</td>
</tr>
<tr>
<td>S-7</td>
<td>0.18°±0.10°</td>
<td>0.40°±0.25°</td>
<td>0.55°±0.28°</td>
<td>0.74°±0.43°</td>
<td>0.91°±0.53°</td>
</tr>
</tbody>
</table>

3. Conclusion. The proposed methodology is based on geometrical optical method using smart-phone/monitor screens for controlling and measuring the human eye position. In this paper, a new method was proposed to investigate the relation of noise at light source position. The proposed algorithm used binocular eye and their reflection properties to reduced measure noise at light source position. The experiment setups for hand-held device were simulated the results shows significant improvement in the measurement of light source position. The algorithm is quite useful to automated the process of measuring light source and this will in turn increase the importance of gaze detection for the future human-machine interface development.
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ABSTRACT. This research paper highlights the importance of basic human rights in the light of Islam and specifically focusing on right of justice. The evidences from the Holy Quran and Sunnah of our beloved Holy Prophet (P.U.B.H)) has been quoted to described the significance of human rights. Today the rights of human specially right of justice are not being observed in our societies at universal level. A clear procedure to provide support and right justice is already available to us from Holy Quran and Sunnah, but its implementation is the key factor which is not being seen in our communities. Hence the main objective of this paper is to provide evidences from Islamic teachings regarding the rights of justice. Islam stresses on justice individually and collectively. It gives special focus on social, legal, political and economical justice in order to establish a strong society.

Keywords: justice has a comprehensive domain but the famous type of justice such as social justice, legal justice, political justice and economical justice will be elaborated in the research paper.

Introduction. How do you define the word ‘right’? What are the basic human rights? Why is it important to respect human beings? These all are the questions which lead us to the concept of right of justice. Islam is the religion of peace and harmony. It has highlighted various basic human rights for man kind living in a society. This paper defines one of the human rights i.e. the right of justice. Before the explanation of rights of justice I shall describe right, human right and the respect of human being.

Right is defined as:
“In accordance with accepted standards of moral or legal behavior.”

Basic human rights are the need of every society. Human rights are defined as
“The right of individuals to liberty”

Justice is one of the basic human rights that have the vital importance for every society. Every person deserves respect and it is his right also. It is a fact that a man is respectable and honorable apart from all sorts of prestigious characteristics like caste, creed, color, nationality and language etc.

The concept of humanity in the Holy Quran: Islam has guided us how to respect the human beings and has taught us a lesson for the human respect in the following verse, Allah (SWT) says:
“Verily, we have honored the children of Adam. We carry them on the land and the sea and are made provisions of good things for them, and have preferred them above many of those whom. We created with a marked preference.”

Allah almighty says in Surah At-Teen:
“Surely we created man at the best standard.”

The messages of above verses are that man is the most respectable among all creatures. The Holy Quran has mentioned him as respectable pious and an honest.

Man has appointed as a vicegerent (Khalifah) on the earth: Man according to the Holy Quran has been appointed as a vicegerent (Khalifah) on the earth. Allah has given the responsibility to man that will preach his religion in the society and will adopt it in his life individually and collectively for the obedience of Allah and his prophet Muhammad (PBUH).

If the man goes against the will of Allah(SWT) and obeys the Devil and his inner self and if the inner will and love for worldly gains come over him, then definitely he loses the privileges given by Allah Almighty to him.

Islam the unique quality of unity and equality: Islam does not differentiate between man and man. It does not give any preference owing to cast, color, language, or tribal or zonal security etc.

Allah Almighty says:
“O mankind, we have created you from a male and a female, and divided you into tribes so as to know one another. The noblest of you, in the sight of Allah, is one who is the most pious of you”.

The Holy prophet Muhammad (PBUH) told in his last sermon:
“O people, you are all the children of Adam and he was made out of clay. An Arab has no preference to a non-Arab and non-Arab has no preference over Arab. No Blackman has any preference over white, nor does a white person have any preference over a black. Preference is only on the basis of piety and pious.”

Respect of woman in Islam: History of the Islam is evidence that Islam has provided the most due respect to the women. They were thought despicable in the days of ignorance. The Holy prophet Muhammad (PBUH) gave the good news of paradise to those who became guardians and trainers of women. In this respect Allah has declared in the Holy Quran:
“……..Then a woman must be retained in honor or released in kindness…….”

Respect of Slaves: At the time when the prophet Muhammad (PBUH) was blessed with the prophet hood, slavery was in vogue in the Arab society and also in the surrounding areas. At that time, the slaves did not enjoy rights of humanity and worked like animals.

Islamic history is witness that Osama bin zaid (RA) was made the commander chief of the Islamic army in the presence of a number of prominent and outstanding companions. Similarly, the prophet Muhammad (PBUH) nominated Hazrat Bilal (RA)as a caller for prayer in Madinah Munawwrah, and undoubtedly he was respected by everybody. Umer Bin Khtab (RA) CALLS HIM SYEDANA Bilal (RA).

Right of justice: There are many human rights such as rights of faith, right of merit, right of women, rights of parents and right of justice etc. The right of justice in the light of Islam will be explained in detail. Justice is called adl in Arabic language and it means to keep a thing in its right position and pay everybody’s right and dues correctly and judicially. Individual Justice: Islam stresses individual justice. Every person has the right to get justice fair and free in his society.

Collective Justice: Collective justice is defined as “belonging to or involving all the members of a group.” Justice is defined as: “The quality or fact of being just, the principle of fairness that likes cases should be treated alike, the administration of law according to prescribed and accepted principles, conformity to the
Opposite of justice is injustice which means not to keep a thing in the right place and not to pay rightful dues to a person who is entitled to it and to make excesses and deficiencies. Allah(SWT) has ordered about justice and says:

“Allah enjoins justice and generosity”.\(^{13}\)

The relation between Allah(SWT) and his slave is a relation based on the rights of Allah and the rights of His slaves. There are various types of justice which will be explained as follows:

1. Social justice
2. Legal justice
3. Political justice
4. Economical justice

**Social Justice:** Social justice is defined as:

“A relation to social institution, rule of properly, taxes and welfare payments, the provision of education and health care and so on.”\(^{14}\)

Social justice means to provide justice to every member of the society irrespective of any discrimination, caste, creed and language. If there would be any preference, it would be absolutely on the basis of knowledge, character and piety. Otherwise, one should have equal opportunity to take part in the development of the society so that every person gets chance to develop himself including those who delay behind and are covered up.

Every person should have equal opportunities in the trade and business also. Allah Almighty says in the Holy Quran:

“….. And keep your weights and measures right.”\(^{15}\)

And in another place Allah Almighty says:

“Woe is for those who deceive in weights (and measures), that is, they who take things from others in full weights and measures but when they give others, they give short weights”.\(^{16}\)

Allah Almighty further says:

“We sent our messengers with clear signs and instructions and sent down with them the Book and the balance so that the people may stand by justice.”\(^{17}\)

In this verse, the mission of the prophet has been described. Syed Abdul Alla Maududi (RA) has explained it as under:

“In this brief sentence the whole essence of the mission of the prophets has been fully described. All the messengers who came to the world from Allah brought three things:

i. Bayyinat: The clear and manifest signs and proof’s and instructions.

ii. Kitab: the book containing all the teachings required for the guidance of man so that people may turn to it for enlightenment.

iii. Meezan, the criterion of truth and falsehood which may precisely indicate, like a balance, the golden mean between the elements in matters of thought and morals and dealings.”\(^{18}\)

Even people have been stressed to cause justice in the rights of the oppressed persons. Religiously a man has been allowed to marry four women, but it has been underlined with a condition. Allah Almighty says:

“If you are afraid that you cannot do justice with (more than one wife), then suffice it to pick only one.”\(^{19}\)

“Similarly, man has been ordered by Allah justice in the matters of the orphans.” And there is an injunction. Allah further instructs that:

“Not to ad mix the belongings of an orphan with your own belongings with a view to eat it up”.\(^{20}\)
The prophet Muhammad (PBUH) has especially drawn attention to the rights of the woman, the slaves, and the oppressed, and has wiped off the distinction on ground of caste, creed, language and generation.

**Legal justice:** Legal justice means that “nobody should be excluded from getting justice owing to his poverty, and nobody can influence a court, or a judge because of his position”\(^2^{1}\). It is for this reason that the position of a Qazi (justice) in Islam has always been all powerful. A Qazi (justice) has been empowered even to call a caliph (Muslim ruler) to the rostrum to explain his conduct and position. There is a famous example that when a woman belongs to Makhzoom named Fatima committed theft and the people of Quraish approached the prophet Muhammad (PBUH) interceding not to impose punishment of the theft on her and let her go after taking some amount from her, The prophet, Muhammad (PBUH) said at this time. “You are interceding in the limits imposed by Allah(SWT). Please don’t forget that former nations were destroyed only for this. Some recognition was made for some people who were rich and the laws were forcefully imposed on those who were poor and penniless”\(^2^{2}\).

It is also a bright example of Islamic justice that all the tribes accepted the Holy Prophet Muhammad (PBUH) as a final decision maker and chief justice for their disputes including the Jews and other non-Muslims as well in written contract called “Meesaq-e-Madinah”\(^2^{3}\).

Allah Almighty says:
“When you sit to decide among the people, and then decide the case with justice”.\(^2^{4}\)

Allah Almighty further says:
“And when you decide, do decide among people with justice”.\(^2^{5}\)

**Political justice:** It is mandatory to do justice among the people and to create such type of atmosphere that even an outsider will feel that justice is actually being made and clearly seen. Allah Almighty says, “And the enmity of a nation should not excite you on doing injustice. Do justice, it is very near to piety.”\(^2^{6}\)

It is a bright example of the Holy prophet Muhammad (PBUH) in the entire world of history that he forgave the people of Makkah at the time of conquers of Makkah and took no revenge from any person\(^2^{7}\).

The Holy Prophet Muhammad (PBUH) said, “On Dooms Days. A just king will be very close to Allah(SWT)”\(^2^{8}\).

**Economic Justice:** This term carries the sense to live with in the means and to do justice to the people so that it is felt that no injustice is made to any person.

Allah Almighty say, “And those bondsmen, who, when they spend, are neither extravagant nor miserly but keep the golden mean between the two extremes.”\(^2^{9}\)

The holy prophet Muhammad (PBUH) has given the golden rule regarding the economical justice. He said, “The best way of life is based on moderate and balance”\(^3^{0}\).

Another meaning of economic justice is that there should not be monopoly of a few people on the public wealth and there should be a system that all people should have the chance to utilize the resources equally through Zakat, Fitra in the Holy month of Ramzan and inheritance, including optional charities and Alms.

All Persons should be provided with equal opportunities to utilize their full value, this is what Islam wants and what is required by Allah Almighty. And this is what is called socio-economic justice, which means that if a person is deprived of utilizing his worth owing to his poverty, or could not earn his livelihood for any other reason, then he must be helped otherwise it would be termed” economic oppression”. This is not approved by ALLAH Almighty and His Prophet Muhammad (PBUH).

**Conclusion** The above mentioned quotations conclude that to run a strong and smooth society the basic human rights should not be looked back. The rights of justice is one of the most important human right in order to establish a healthy society. Islam in its teachings focus a lot on the rights of justice. Without implementing the rules and procedures regarding individual justice, collective justice, economic justice, political justice, legal justice and social justice, no society can be well establish. Therefore the principles of Islam are very clear to understand these rights.
**Recommendations:** Following are the recommendations regarding the rights of justice:

1. Justice plays a key role in the society.
2. The principle of equality before law is the corner stone of justice in Islam.
3. No person either Muslim ruler is above the law.
4. Every person has an equal right, for they all are born equal.
5. The Holy Prophet Muhammad (PBUH) is the best role model for believers and messenger for all human beings.
6. The Holy Prophet Muhammad (PBUH) gave individual, collective social, legal, political and economical justice practically to all members of the society without any discrimination.
7. We can maintain peace and prosperity in our beloved country Pakistan and all around the Muslim world in order to adopt the rights of justice directed by Allah Almighty and his beloved Prophet Muhammad (PBUH).

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A SURVEY ON DIVERSIFICATION TECHNIQUES FOR UNABMIGUOUS BUT UNDER-SPECIFIED QUERIES

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ABSTRACT. The amount of data placed on the web has been greater than before and is increasing rapidly day by day. Web searching, the huge size of result set, ranking and presentation of results becomes important. Mostly users only look at the first page of available results and neglect the rest. To improve user’s satisfaction, the listed results should be relevant to the search topic and different from each other. Web search effectiveness and user satisfaction can be improved by providing various results of the search query in a certain order of relevance and concern. The purpose of diversification is to avoid presenting similar results and introducing diversity with variety of search results. In short, diversification re-ranks the relevant search. Diversification and personalization methods are common approach to deal with the one-size-fits-all model of web search engines. In this paper, we discuss different techniques and algorithms to deal with underspecified query.

Keywords: Web Search, relevance, diversity, personalization

1. Introduction. These queries are unambiguous in the sense that the sense of these queries is clear; there is only one way to read or understand these queries. They refer to an unambiguous entity however, it is not clearly specified what the user wants to know about the entity. Consider, for example, the query “Madonna” in Fig. 1 there is no ambiguity in what the query means but still it is not clear what the user wants to know about Madonna does he want to watch the music videos, read news, find song lyrics, or purchase songs at the iTunes store? The user’s intent is not stated. For such queries, the search engine needs to focus on determining the underlying intents behind the underspecified query and create a result list to cover these different intents accordingly.
In our study we found that the problem of unambiguous but underspecified queries has been addressed using two different techniques

1. **Personalized diversification**: This procedure is built on two steps, first the system requirement gathers personal information from user profile, and second the diversification must be applied on the result set which is saved in first step [1], [5]. Such type of technique is discussed in section 2.

2. **Query Log**: In Query log scheme the system automatically suggests a set of queries, based on the original query; the proposed suggestion represents different possible interpretation [2], [4]. Such kind of procedure is discussed in section 3.

2. **Personalized Diversification**: Personalization is the process of presenting the right information to the right user at the right moment. In order to learn about a user, system must collect personal information, analyze it, and store the results of the analysis in a user profile. Commercial systems tend to focus on personalized search using an explicitly defined profile, for example, users are asked to select the categories of topics which they are interested in and the search engine applies this information during the retrieval process [3].

User profiles can also be divided in two other groups

1. **User's preferences** (e.g., search engines preferred, types of documents)
2. **User's interests** (e.g., sports, photography).

The basic principle behind personalized search is simple. When a user goes to WSE and type in a search query, WSE stores the data. As user returns to the engine, a profile of user’s search habits is built up over time. With this information, WSE can understand more about his interests and serve up more relevant search results.

For instance, let’s say that user has shown an interest in the topic of sport fishing in its search queries, while his neighbor has shown an interest in musical instruments in his search queries. Over time, as these preferences are made clear to the engine, the user’s personalized search results for the term ‘bass’ will largely be comprised of results that cover the fish while his neighbor’s results for ‘bass’ will be comprised of results that primarily cover the musical instrument.

At present, the user need to have signed up for a WSE service for the results to be personalized. Such services include Gmail, Ad Words, Google Toolbar, and many others. By default, as long as user is signed in to one of these programs, his personal search data will be collected, WSE already places a cookie, or unique identifier, on the machine of anyone who types in a search query on it would not be hard for them to use that information, rather than the WSE account, to collect individual user data and personalize results.
2.1 User Profile: A user profile is constructed from Web pages browsed by the user. However, this technique focuses on using the user's search history.

Profile Based on User's Preferences: User profile, based on user's preference, runs as a background process on the user's machine. The application can retrieve results immediately after a query has been submitted. The agent running in the background should help users to reduce the amount of time spent on a search. In this case, the profile is supplied to an agent that can automatically gather information on behalf of the user.

Profiles Based on User's Interests: Interests-based profiles are more determined than preferences-based profile, because they try to extract from documents topics and subjects that match user's needs. User browsing histories are the most frequently used source of information to create interest profiles.

In this system, user profiles are implicitly created based on browsing histories rather than explicitly created from user input. The hierarchy of user's interests is created using a clustering approach. The set of interests represents a user profile which can be used to automatically search for information, for filtering or to personalize the way of showing information. The analysis is based on documents collected from web pages visited and emails received or sent [3].

Classical Web Search Model: In Figure 2 the user pass the simple Query “Queen” which is unambiguous but underspecified query by using classical web search model, the result set of the query is based upon query log technique.

Figure 2 shows the result sets of two famous web search engines Google and Bing. In Google log four user's used the web site Queen (Band), three user's used “Queen Sofia of Spain” and two user's used “Queen official site”. In Bing log four user used the web site “official queen site”, three users used “queen-int com” and two users used “You-tube Queen”.

![Figure 2 Result sets of personalized web search model](image)

The ordering of results set are based upon the no of user’s interested in the past on that particular query.
Figure 3 shows that by using personalized web search model, query goes to user profile and from where it will map to user’s interest and at the end personalized ordering will have to be done. In this example query “Queen” goes to user profile, from there using personalized ordering result will come according to Figure 3.

Diversified Web Search Model

Figure 4 shows the result set of query “Queen” by using diversification model. One positive aspect of this model is that all links are relevant and almost different from each other.
2.3 Diversify personalization Framework:

i. **Probabilistic model:**
\[ p(c|q) \]: Relation between category and the query (e.g., popularity of certain aspect in a query)
\[ p(q|d), p(d|q) \]: Relation between document and query (e.g., ranking score of document)
\[ p(c|q), p(d|c) \]: Relation between document and category (e.g., document classification)

ii. **IA-Select:**
This framework use the following equation [1]
\[ f(d) = \sum_{c} p(q|d)p(c|d)p(c|q) \prod_{i \in S} (1 - p(q|d^i)p(c|d^i)) \]

Where
\[ p(q|d)p(c|d) = \text{Document relevance} \]
\[ p(c|q) \prod_{d' \in S} (1 - p(q|d'))p(c|d') = \text{Novelty} \]

iii. **Personalized IA-Select:**
Adding a user component [1]
\[ f(d) = \sum_{c} p(q|d, u)p(c|d, u)p(c|q, u) \prod_{i \in S} (1 - p(q|d^i, u)p(c|d^i, u)) \]

iv. **xQuAD:**
This framework use the following equation [1]
\[ f(d) = (1 - \lambda)p(d|q) + \lambda \sum_{c} p(c|q)p(d|c) \prod_{i \in S} (1 - p(d'|c)) \]

Where
\[ p(d|q) = \text{document query relevance} \]
\[ \sum_{c} p(c|q)p(d|c) = \text{document topic relevance} \]
\[ \prod_{i \in S} (1 - p(d'|c)) = \text{Novelty} \]

Allowing adjusting degree of diversification (\( \lambda \))

v. **Personalized xQuAD:**
Adding a user component [1]
\[ f(d, u) = (1 - \lambda)p(d|q, u) + \lambda \sum_{c} p(c|q, u)p(d|c, u) \prod_{i \in S} (1 - p(d'|c, u)) \]

3. **Query Log:** To implement personalization the search system records and analyses some additional information concerning the users together during helping the user operations earlier to submitting the query. This information can have many forms such as: user profiles, search history or click history of users. By using personalization following issue arise:
- It may be difficult or impossible to collect information or data from the user to effectively build their profile
- Gathering such data usually violates user privacy

Another approach to deal with under specification of user information need is query suggestion and this approach is based on query log i.e. the system automatically suggests a set of queries, based on the original query, such the each proposed suggestion represents different possible interpretation [2].
3.1 Algorithm based on Time Succession: This framework [2] is used for automatic query suggestion based on historical query logs. A graph \( G(V, E) \) is built so that each vertex \( v \in V \) represents some unique query found in logs and there is an arc \( (v, w) \in E \) if the following conditions are satisfied:

- The query \( w \) occurs at least once directly after the query \( v \) in the logs and was submitting by the same user
- The difference in time between submitting the queries is not higher than some threshold \( T \), that is one of the parameters

3.2 Diversification Framework: To improve the coverage of different interpretations or aspects of an underspecified query in the set of query suggestion, MMR (“Maximal Marginal Relevance”) algorithm, usually used to diversify recommendations. By using the original formulation of MMR, This framework proposes to adopt this method to problem of diversified query suggestion. Thus the adopted formula is as follows:

\[
q' \sim a \sum_{q \in W \backslash \bar{R}} [\lambda \cdot 1(q, q) - (1 - \lambda) m \cdot q \in S \tau(q, q)]
\]

Where \( q \) is the original (underspecified) user query and \( W \) is the set of candidate query suggestions and \( q \) represent candidates to be selected to the final set of query suggestions \( S \).query suggestion method described in section 3.1 to compute the initial set of candidates \( W \).

4. Discussion: In our study we found that the problem of unambiguous but underspecified queries has been addressed using two different techniques.

First technique is suggested personalized diversification. In this technique, a user profile is constructed from Web pages browsed by the user. User profile, based on user’s preference runs as a background process on the user’s machine. User’s query match from the user’s preference which are mentions in user’s profile and based on this method relevant result set will come. This framework used two state of art IA-Select and xQuAD diversification algorithms. The personalized forms of IA-Select and xQuAD offer a framework that supports the combination between diversity and personalization.

David Vallet performs different experiments, a general summary of the results show that the best performing method in term of diversity metrics is PxQuAD. The fact will change with respect to the baseline both in terms of topic and user relevance. In subtopic recall the PIA-Select is the best performing one.

Second technique is suggested query log. This framework applied and combined the algorithm for query suggestion and diversification. This technique was diversified with the MMR-based diversification algorithm. Marcine Sydow performs different experiments, a general summary of the results show that MMR perform very fine in the absence of user personal profile data. He also associates non-diversified results with MMR-based algorithm. MMR-based algorithm improved the level of diversification.

5. Conclusion And Future Work: This Framework presented two novel approaches to improve user experience in search engines by means of automatic, log-based query suggestion and User profile, in particular, diversified query suggestion. There are two state of art diversification algorithms xQuAD and IA-Select which are used for personalized diversification. MMR is used for query log method. There is room to find better categorization in personalized diversification in future..

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COMMUNITY PERCEPTION TOWARDS WORKING WOMEN IN NGOS: A CASE STUDY OF HUB CHOWKI, DISTRICT LASBELA (BALOCHISTAN, PAKISTAN)

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ABSTRACT: This paper explores the perception of community members regarding working women in Non-Governmental Organisations (NGOs). It seeks to investigate the role of women in the development sector and their empowerment in Hub Chowki, District Lasbela, Balochistan, Pakistan. Additionally, the paper is aimed to examine the role of women in social development and their working with NGOs. It attempts to highlight the socio-cultural and economic factors that influence the behaviour of community towards women’s role in development sector. To reach these objectives, three union councils of tehsil Hub Chowki are selected where 60 research participants are interviewed applying interpretive approach. The participants view the employment of women in NGOs sector against the cultural norms and customs of the community. Consequently, most of the participants still believe that women should not work in development sector as equally as men counterparts. Conversely, the results also indicate that because of the deconstruction of social and cultural norms in Balochistan, particularly in District Lasbela, the attitude of community has been changing in the favour of women’s involvement in social and development sector, including NGOs. Moreover, the findings also reveal that women’s overall empowerment is an essential factor for women to easily engage with NGOs sector. In Balochistan, the society is traditional with patriarchal norms that have strong impact on social behaviour favouring men to have a superior role in social and community affairs. Therefore, women are suppressed to exercise their social and political rights. Such constraints make it difficult for them to join workforce, particularly NGOs.

Keywords: Community; Perception; NGOs, Women, Empowerment, Lasbela, Hub

1. Introduction: The international organisations operating in Lasbela District of Balochistan, Pakistan, have been for the strengthening of civil society, providing social services and empowering the women. Issues like women empowerment and civil society has become conflated with non-governmental organisations (NGOs), the number of which in any given society including Balochistan has been used as a crude index of the health and strength of the civil society. During recent years the international community has therefore channeled considerable resources into the NGO sector in Balochistan to enhance the humanitarian aid and service provision including building the civil society. Whereas, to many people NGOs in Balochistan are perceived as panacea to multiple social and economic problems, some however are in the view that while NOG sector helps in providing social services and strengthens the civil society, it come at the expense of disregarding the local socio-cultural norms. People in Balochistan, living in a tribal or semi-tribal setup, place the preservation of their sociocultural norms and customs at top priority. Therefore, any social development that may potentially change the structure of the society would certainly have mix reaction from different social groups. Those who are inclined to more conservative thought would perceive such changes detrimental to social norms. On the contrary, social groups with more liberal attitude to society would encourage such developments considering them crucial for overall social and economic development of society. NGOs being the driving force for social change and women empowerment are perceived by various groups differently in Balochistan. It is pertinent to note that women empowerment and social change may not take place
unless women are freely allowed to participate in social and economic affairs. Thus, the women’s participation in NGO sector is a good barometer through which the role of women in a given society may be measured.

This paper addresses this question by examining the perception of community towards working women. This paper evaluates the perception of local community to NGOs workers through the experiences of working women themselves as well as participants from the community. In other words how female employees feel they are being viewed by the community and how community itself perceives the working of women with NGOs. The nature of this research requires a field trip to investigate how people view those women who work with NGOs as employees. For field study three union councils: Barooth, Patada and Hub Chowki, of Hub tehsil in Lasbela District Balochistan Pakistan are selected. Lasbela District is chosen because an overwhelming number of national and international NGOs are present, whose organisational operation ranges from humanitarian aid provisions to the development of social society and women empowerment in the District along with employing a considerable number of women as their staff members. Tehsil Hub within District Lasbela is chosen for field because the majority of NGOs are stationed at Hub and particularly at Hub town therefore it provides a reasonable field to carry out this research.

It is worthwhile mentioning that in a strong patriarchal society like Balochistan the women are mostly deplorable in socio-economic activities hence their social mobility is a formidable challenge. But presumably the presence of a large number of NGOs in District Lasbela brought a paramount change to the approach of the local people to the urgency of women participation in every walk of life for the sake of social mobility and development. Therefore anecdotal evidence reveal that women are expectedly more mobile in terms of participating in social and economic affairs of life compare to other parts of Balochistan. Consequently, people in Lasbela District are expectedly less stringent in allowing their women to participate in workforce including development sector. However, to evaluate the perception of community towards working women demands a systematic empirical work that is not provided in the existing literature. This paper therefore is aimed to fill this gap in sociological research by looking at: 1) How people perceived women working with NGOs as employees; 2) To what extent the NGOs engagement in the region has changed the community perception about women’s working in development sector; and 3) What are the opinions and views of working women about their work with NGOs.

This is typically a sociological behaviour issue. Thus, in order to understand the social behaviour of community members, particularly men, to females’ employment it is important to know the socio-cultural and economic factors that influence the thinking of community towards women’s role in development sector. To identify the sociological factors shaping the bahaviour of people, this paper applies social dominance theory (SDT) as a theoretical framework. SDT evaluates the dominant role of men in social, economic and community spheres of society that led to gender discrimination. The application of SDT to the empirical outcomes and analyses to shows how much theory corroborates with primary results. For primary qualitative data collection 10 women who current work with NGOs as employees and 50 members from the community are interviewed.

The empirical results indicate that the participants’ view the employment of women in NGO sector against the cultural norms and customs of community. Consequently, most of the participants still believe that women should not work in development sector as equally as men counterparts. Equally, however, the results also indicate that because of the deconstruction of social and cultural norms in Balochistan, particularly in District Lasbela, the attitude of the community has been changing in the favour of women’s involvement in social and development sector, including NGOs. Furthermore, the field results reveal that women’s overall empowerment is an essential factor for women to easily engage with NGOs sector. In Balochistan, the society remains traditional therefore women are suppressed to exercise their social and political rights. And such constraints would potentially make it difficult for them to join workforce, particularly NGOs. That is because the patriarchal norms have strong impact on social attitude that favours men to have a superior role in social and community affairs.

The rest of the paper is organised as follows. Second section of the paper reviews the related literature and identifies the research gap. This section also briefly illustrates NGOs and their role in social and economic development of communities and describes the theoretical background of this paper. Whereas third section describes the methodology for conducting this research, section four demonstrates research findings and analyses. Section five summarises and concludes the paper.
2. Related Literature and Theoretical Background: NGOs are increasingly important actors across multiple scales in pursuing and achieving various forms of ‘development’. NGOs act as donor organisations, represent specific groups’ interests, strategise advocacy plans, educate, organise and generally insert themselves into ‘aid chains’ at different levels in different places, depending on the goals and resources of the organisation. There are Southern NGOs, Northern NGOs, grassroots NGOs, development NGOs, international NGOs, environmental NGOs and even ‘mutant’ NGOs; the list could go on. The term “NGO” originated from the United Nations in 1945, and referred to societal actors that are international bodies and work within the United Nations context (Martens 2002). Today, that definition has obviously widened quite considerably, and NGOs operate internationally as well as nationally, locally and all of the places in between. In fact, defining ‘NGO’ succinctly can be difficult to accomplish, and there are debates over what exactly the term encompasses (Fisher 1997; Martens 2002; Silk 2004). The goal of this paper is not to problematise the term ‘NGO’ but rather to provide a framework for understanding about; first, the perception the community develops when women participate in NGOs as employees, second the role of NGOs in the context of grassroots social change and women empowerment. NGOs are often hailed as having certain advantages that make them the ideal mechanism through which to pursue development or social goals, including efficiency, flexibility, a participatory approach and the ability to work closely with vulnerable people (Wils 1996). In the late 1980s, the development community adopted NGOs as “a new institutional form of development resource” (Carroll 1992, 1). However, NGOs are often the location of struggles over power, whether it is the amount of funding resources to be allocated to various groups, what is to be done with those resources, or who decides the value of what the resources accomplish. This is especially the case when NGOs impose development strategies on their local stakeholders, have norms imposed on them by donor organisations, or when NGOs fail to equally distribute funding resources.

1.1. Conceptual Understanding of Community: Defining the ‘community’ has been debated and deliberated extensively by social researchers, scientists, social workers and community-based participatory researchers over the decades. A number of structural characteristics have been suggested by them that are concerned with the concept of community. Similarly, different sociologists and anthropologists have suggested various definitions as well as the merits and demerits of community. For instance, Hobsbawm and Ranger (1983) explain that in a locality where people live together, share some common socio-economic and political interests, language and religion can be described as a community. In other words, a community may be described as a social group of any size whose members reside in a specific locality that share government and often have common culture and historical heritage. A social, religious and occupational or other group sharing common characteristics or interests may perceive itself as distinct in some respect from large society within which it exists. A group of associated nations sharing common interest and heritage may also be a community (Datta and Kornber, 2002).

According to Talcott (1964) the community is best described as the collectivity and togetherness of individuals who share a language, strong cultural bonds, territorial land, and common sharing of livelihood and material well-being in daily lives. Talcott’s description of the community is similar to that of others illustrated above, but his explanation of the concept is broader in perspective. In a similar fashion, Davis and Moore’s (2006) definition of community is ‘the smallest group of individuals who live on a territory and share all aspects of social and economic life.’ However, Tonnies’ (2002) illustration of community is somewhat different from that of Davis and Moore (2006). Tonnies’ (2002) describes the community is a social group whose units live together having a sense of belonging that comes from their everyday interactions and human social activities.

Thus, from the above definitions and descriptions of community given by many sociologists and community researchers, unanimity exists among them that community is formed based on commonality either in language, culture, territory and social bonds. The people of Lasbela and particularly the Hub telsil where various linguistic and ethnic groups live side by side, however, the majority of them were ethnic Baloch spoken either Balochi or other languages of Baloch, like Lasi and Bravi, qualify the definition of the community, as elucidated above.

1.1.1. Community Perception

The discussion and debate of community perception is vital to members of the community who wish to exercise their opinions and convictions over particular problems and conditions pertaining to the community as whole.

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1 Rubin et al. (1983) share similar ideas regarding community.
2 This description on community is shared by many including Suliman (1983); McClure (2006).
Community perception to various organisations including NGOs in participatory process may be considered in decision-making, implementation and maintenance and evaluating successes and failures of these organisations for the socio-economic development of the community (Lane, 1995). Because, community participation always influences the direction and execution of community development projects in contrast to those who are only the beneficiaries of these projects. Burkey (1993) believes that participation, if it is to be practiced in its true sense is more than a policy statement, rather an active involvement of community that perceives certain projects productive for their social and economic uplift.

However, despite these claims of NGOs in success of tackling of communities’ issues and corresponding community’s positive perception to their working, the inability of the latter in recent years to bring changes in communities’ life where they function, invites criticisms on them, and dilutes their claim of positive community perception towards their working with communities. The criticisms on NGOs are mostly focused on lack of accountability, transparency, legitimacy, performance and representation of local community. These criticisms basically are due largely to their strong association and tie up to the donor agencies rather than the communities itself where they work (Anderson, 2007). However, in Ronald’s (2010) opinion NGOs came to light to fulfill gap that was created because of the dysfunctional performance of government. He is in the view that without community’s involvement NGOs would not work effectively, therefore, the perception that NGOs are cut off from community, not accountable to local people or not transparent in their working may not be a plausible argument.

In Pakistan, alongside basic service provisions, NGOs are equally active in creating social awareness and supporting participatory process among the people to realise their socio-economic and democratic rights. And for this, the NGOs provide equal opportunity and encourage the women to work with them. Now a key question arises here that needs careful examination is that: in a country like Pakistan with typical stereotypical social norms and customs with sheer male dominance in every social sphere, how the working of women with NGOs is perceived.

### 2.1.3. Women and NGOs in Pakistan: a Case of Lasbela

NGOs have been extremely important in keeping women’s issues on the every (including political, social and economic) agenda and in providing essential services for women (Hawkesworth, 2001). Plemper (1996) asserts that participation of women in community volunteer work, especially through NGOs, enhances their empowerment, particularly in less-developed society where government policies inadequately reflect women’s social and economic issues.

There are, of course, several reasons that can be put forth to know this gender dynamic in the NGO sector in Pakistan. In Pakistan and in Balochistan in particular association with development sector and community activism through NGOs sector has numerous positive implications for women. NGOs have been a driving force to uplift women socially and economically, and most importantly they have a significant impact on those who work with NGOs for their career building. Women’s engagement as paid-workers or non-paid volunteers has become a means of gaining work experience and professional skills for those women who aspire to develop a career. However, in addressing these implications, many other issues arise which are common in Pakistan. Those issues may be socio-cultural, gender-role-expectations, power relations in society, domestic issues and minimum skill of women required for such work. These factors may impede women from participation in NGO sector in Pakistan, and particularly in Balochistan where above mentioned factors are more prevalent (Cheema, 2003).

Discussing women and NGOs, it is safe to argue that in Pakistan often there are social, cultural and structural limitations that are in place limit to a large extent women’s involvement in paid work. Significantly, in a culture where men and women have separate spheres and women are ideally not supposed to join the labour force but instead become caring mothers and housewives. Therefore, women’s empowerment and a career based on activism can, indeed, be a difficult proposition. Analysing these social and cultural impediments facing women to join labour force in relatively a traditional society in Balochistan, it may be argued that women are largely discouraged to work in public sector, let alone private sector including NGOs. However, Balochistan society should not be considered as a monolith, rather there are many regions/Districts where women are encouraged to join the work – although may not be as equally as their men counterparts - be it public or NGOs sector, respectively.

The literature that deals with societal expectations of women as active workers views the issue from different perspectives. The first perspective considers women as housewife and her husband is actual breadwinner. These are
those women who are always available to do unpaid tasks. According to Jenner (1983) and Karl (1984) this perspective also proposes that women are not expected to follow a career or secure financial independence. Instead they are expected to devote themselves for family’s welfare. Applying the same argument on Pakistan and particular on Balochistan, one may notice the similar attitude towards women and their working with any organisation including NGOs is strongly present.

Salman (2003) conducts a study about the impact of family life on work efficiency in Pakistan. His study focuses on the employed women from different occupational statuses in a metropolitan area. His research findings suggest that women with better conditions (high education, profession, etc.) experience less professional discrimination compared to those low rank female workers in the same organisations.

Akbar (2010) studies the perception regarding the NGOs specially working on woman rights in Pakistan’s tribal areas (Federally Administered Tribal Areas). Focusing on the communication strategies and different methods of project implementation his study reveals the negative perception about NGOs and particularly the women’s working in NGOs. Khan and Mirza (2011) conduct a study to figure out the main problems faced by females in pursuing jobs in Pakistan. The author chose 100 female graduates respondents randomly applying purposive sampling techniques. His findings show that the attitude of males’ towards the females is the main problem or hurdles in pursuing professional career for the latter, besides of course the culture, religious and family constraints.

The actual number of NGOs in Pakistan is not known. However, the UNDP (1990) reported the total number of NGOs between 8000 and 16000. As far as working nature of NOGs in Balochistan is concern, not a single study has been undertaken to explore the issue. Therefore, it is hard to argue that how many NGOs are working in Balochistan and what is the nature and scope of their work.3

2.2. Theoretical Background

With the aim of understanding the perceptions of community in Balochistan towards women’s working with NGOs and women’s empowerment programmes, a strong theoretical background is required to frame the research that can be employed as the main theoretical framework. Social Dominance Theory (SDT) is used as a theoretical framework to frame this research. SDT is relevant to underline the social dominance and community members’ attitude to the women and particularly working women in developing sector in District Lasbela, which is the core theme of this study. SDT highlights the male dominance and control of the social and economic system in one hand and community attitude for achieving and maintaining autonomy, and resisting males’ domination on the other. SDT considers gender a key factor in knowing the social hierarchy of a society (Sidanius and Pratto, 2004).

SDT, proposed by Pratto and Walker (1993), exhibits that the age and gender based social hierarchies is present in all society and culture. The theory underlines that in the age system adults have social power over children and males have socio-cultural, economic and political power over females. Moreover, it also assumes that social hierarchies based on group generate social repression such as sexism, racial discrimination and prejudice (Sidanius and Pratto, 2004). Keeping in view the basis of above argument, this paper adopts SDT to explore the core research question. I maintain the argument put forward by Pratto and Walker (2006). According to them, it is not only SDT that generates women related problem, for example discrimination based on sex, ethnicity and language, but with the same token there are other causes too that have created impediments for women working in development sector.

SDO is used for this research for the following three reasons:

- To explicate findings that show support for biasness based on gender and males’ superior over their females’ counterpart therefore the women may not exercise the same right of working in NGOs sector or otherwise as their men counterparts do;
- To know the larger effects of socio-cultural norms, economic and religious ideologies of people’s perceptions towards women’s working in NGO sector and women’s empowerment;
- To examine and understand the differences in people’s perceptions towards gender inequality and social discrimination.

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3 However, statistics provided by Deputy Commissioner Office to the author record 63 total NGOs working in Lasbela District.
3. **Methodology:** This paper employs critical, descriptive and interpretive methods of inquiry. Typically, the interpretive paradigm is used to know how individuals of a society in their natural setting made sense of certain events that take place in their surrounding in daily life (Frey, et al., 2000). The interpretive approach explains that reality largely depends on the observer’s observations (Wimmer and Dominick, 2003). In other words, the method of inquiry for this research is subjective, and it explores the research participants’ knowledge, experience and accounts as their realities. This method allows collecting rich narratives of participants’ accounts of an issue. Through this research method by interviewing the participants, one is able to elicit their accounts and experiences as they really exist (Warren and Karner, 2005).

To approach research question, a descriptive and experimental method with a combination of qualitative and quantitative technique is used. The descriptive method helps in describing a given state of affairs that is scientifically completed with extreme care to the extent possible. Qualitative technique, on the other hand, allows studying naturally occurring phenomena in all their complexity that may determine the perception of people to working women in NGOs sector, and help to discover the relationship between social elements and framing of community perception.

During the field, open-ended questions are asked to male and female participants, allowing them to provide their perception regarding women participation in NGOs as active members as well as employees. In addition to this, interviews are conducted with 10 selected women who are currently work as employees NGO sector as employees asking for their experiences in working with NGOs.

A strategic sampling technique is used to select the participants from among the population of the town and the villages of three union councils of Hub Chowki: 1) Barooth; 2) Patada; and 3) Hub town. Strategic sampling enables the researchers to draw non-random selection of participants on the basis of specific characteristics (Frey, et al., 2000), while the sample of female participants is drawn from a population of women leaders in women’s NGOs, the male participants are recruited from a population of professional men because they are understood to be more involved in institutional policy and practices than non-professionals. 25 men and 25 women are interviewed from the general community separately, and in-depth data of their perceptions of women working with NGOs are collected. Thus, including 10 female workers who are also interviewed, total number of participants of the study is 60. The selected participants are 25 years of age and above having more experience and able to share their expert views on the topic of research. In all the three selected union councils, the NGOs are effectively engaged in community development projects and the selection of participants from the areas is more appropriated where the NGOs are operational.

4. **Findings and Analyses:** Constant comparative technique devised by Lincoln and Guba (1985) is used to analyse the transcribed data based on participants’ responses. This process engages in revealing categories, themes and relationships among themes from each interview. I create a coding sheet to be able to easily manage data and the analysis of themes involved. All participants of this research are ascribed fictitious names to protect their identities and to avoid associating the information with them they provide to me.

The majority of the participants are ethnic Baloch with respectively Balochi, Lasi and Bravi linguistic backgrounds. The remaining are ethnic Punjabis, Urdu speaking Mahajir, Sindhi and Saraiki. The participants are all Muslims except one female and their level of education ranges from higher secondary school to post-graduate study. Socio-economically the participants belong to different backgrounds. Table 1 shows the demographic data of 50 participants excluding 10 working women in NGOs who are described later in the paper.

<table>
<thead>
<tr>
<th>Age</th>
<th>27 – 35</th>
<th>35-45</th>
<th>45 and above</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>19</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Females</td>
<td>14</td>
<td>9</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 1: Demographic data of participants other than Women Working with NGOs (N=50)

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*4 There are total five union councils in tehsil Hub, and this research took its sample from three union councils: 1. Barooth; 2. Patada; and 3. Hub Town.*
The demographic data presented in table 1 show that the male participants are better educated and therefore are expected to have higher incomes than the female participants. While, the literacy rate among females is lesser than the male counterparts in Lasbela District\(^5\), the disparity in education between males and females is understood. However, within the parameters of the study, the difference in education and income could be attributed to the sample selection process, as the sample of male participants is drawn from educated and socially aware members of the community, the female participants are selected from women-oriented NGOs, public employees, semi-workers, housewives and students. One of the goals of this paper is to explore the views of the professional men because they are perceived to be more involved in institutional policies and practices than non-professional men. Additionally, the purpose of selecting female participants is to capture the views of women leaders from all walks of life who are the members of, and active participants in, NGOs and involved in other social activities. As a result, the disparity in education and social and economic status between the male and female participants is not surprising. It is worth mentioning that in terms of higher qualification - intermediate graduation and post-graduation - the males and females coincidently are equivalent.

As mentioned earlier, 10 women are interviewed who work with various NGOs in tehsil Hub, the majority of them are social Mobilisers and use Balochi as their native language (table 2). It is worth mentioning that, Hub is not a homogenous society. Instead communities with different ethnic backgrounds lived there for decades as well. Nonetheless, Baloch being the majority ethnic group well represented the sample size.

<table>
<thead>
<tr>
<th>Religion</th>
<th>Muslims</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>24</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Education</th>
<th>Illiterate</th>
<th>Secondary High School</th>
<th>Intermediate</th>
<th>Graduation</th>
<th>Post. Graduation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>0</td>
<td>6</td>
<td>3</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Females</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Marital Status</th>
<th>Married</th>
<th>Unmarried</th>
<th>Window</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>12</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>15</td>
<td>9</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Socioeconomic Status</th>
<th>Unemployed</th>
<th>Students/Labour</th>
<th>Public sector employed</th>
<th>Private sec. employed</th>
<th>Own Business</th>
<th>Political Activist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>4</td>
<td>1</td>
<td>6</td>
<td>4</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>Females</td>
<td>8</td>
<td>1</td>
<td>12</td>
<td>4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: The author

As mentioned earlier, 10 women are interviewed who work with various NGOs in tehsil Hub, the majority of them are social Mobilisers and use Balochi as their native language (table 2). It is worth mentioning that, Hub is not a homogenous society. Instead communities with different ethnic backgrounds lived there for decades as well. Nonetheless, Baloch being the majority ethnic group well represented the sample size.

### Table 2: Brief profile of NGOs working women (N=10)

<table>
<thead>
<tr>
<th>Age</th>
<th>27–35</th>
<th>35-45</th>
<th>45 and above</th>
</tr>
</thead>
<tbody>
<tr>
<td>Females</td>
<td>7</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Religion</td>
<td>Muslims</td>
<td>Others</td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>Illiterate</td>
<td>Secondary High School</td>
<td>Intermediate</td>
</tr>
<tr>
<td>Females</td>
<td>1</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Marital Status</td>
<td>Married</td>
<td>Unmarried</td>
<td>Window</td>
</tr>
<tr>
<td>Females</td>
<td>6</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Positions</td>
<td>Social worker</td>
<td>Social Mobilizer</td>
<td>Master trainee</td>
</tr>
<tr>
<td>Females</td>
<td>1</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Ethnicity/language</td>
<td>Balochi/Lashi</td>
<td>Punjabi</td>
<td>Sindhi</td>
</tr>
</tbody>
</table>

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4.1. Data Analysis: The data analysis of this research uses the techniques of grounded theory that is based on inductive data analysis that “begins not with theories or hypotheses but with the data themselves, from which theoretical categories and relational propositions may be arrived at by inductive reasoning processes” (Lincoln and Guba, 1985: p. 333). Within this method, “data collection, analysis, and theory stand in reciprocal relationship with each other” (Strauss and Corbin, 1994: p. 23). Once the interview of a participant is recorded, I transcribe and analyse it immediately prior to the next interview. The accuracy and correctness of transcription is checked and confirmed against the interview tapes, and the necessary changes to the transcripts are made it needed from information obtained from the interview transcripts.

During the field research and interaction with the females NGOs workers I find that women who work with NGOs are more steadfast, confident, feel more empowered as compared to those who either working in public sector or are searching for employment, not to mention those women who are not in workforce but served as housewives.

However, it is important to mention that in District Lasbela women are not able to get access to similar opportunities as men counterpart, due mainly to the deep rooted socio-cultural values, traditions and customs. Those restrictions are often found in the very structural and institutional support mechanisms that exist to assist such fledgling approach as the women working in development sector. The inherent attitudes of a patriarchal society, where the men are superior to women, the latter to a large extent prefer to stay at home and confine themselves in family and community matters. Moreover, I find that the women face the formidable challenges coupled with a lack of encouragement from male family members, and therefore, have limited social mobility and lacked social capital.

However, I notice that the economic needs and social norms have been changing because of education provisions, particularly to females, awareness about political and social rights and the role of the media – although the media is not as vibrant in highlighting social problems related particularly to women as it do to other issues. Nevertheless, while a small change is also observed in Baluchistan and particularly in District Lasbela because of the small social mobility that women have gained, working women in NGOs still encounter a deep-rooted social behavior of their male counterparts, who prefer not to allow them to work, particularly in development sector, and to participate in other social and communal issues.

During the interviews, many participants unveil that a large number of the local population does not encourage women to work with development sector. However, some respondents are of the view that families have started encouraging their females’ mobility and participation in labour force including NGOs.

The conversations with NGOs workers reveal that the community attitude towards the women and for the larger role they can play in the society to an extent is changing. However, there are still ample societal and cultural impediments making it difficult for the women to exercise their rights to change their economic and social status. The social and cultural norms albeit pushed the women back in economic field, however, the biggest cost that women have burden is in terms of the dearth of political participation that is the spirit to leading them in emancipating from traditional norms and cultural stereotypes, and bring them forth at par to their men counterparts.

Another important finding comes across during the course of this research is the importance to education. Hub is better in terms of education in general and female education in particular as compared to other parts of Lasbela District. Better facilities and exposure to rest of the country although has changed the attitude of the community towards their female’s education in Hub tehsil, however, the cultural and social values that often are thought to be the major causes of women underdevelopment and illiteracy, are still strong enough to make hurdle, if not completely dilute, any attempt towards female education.

The field research also reveals that the women of Hub are getting awareness about the role of their participation in productive process. They are becoming mindful of their capabilities that they can make their lives better within their families to earn and enhance their status in the society. Similarly, it is also observed that the working women often are considered as a motivation factor for those women who are involved in economic activities to support their families. The living standard and status of the women working with NGOs or in public sector is far better as compared to those who are out of working. The economic participation not only makes the women empowered, with
the same token it changes the people opinions in favour of women for their participation in workforce. During the field work I observe that those females who work in NGOs are also the big source of finance for their families.

Another issue related to the main research question of this paper is the women empowerment. Women’s empowerment is defined as process whereby ‘they become able to organise themselves to increase their own-self-reliance, to assert their independent right to make choices and to control resources which will assist in challenging and eliminating their own subordination’ (Keller and Mbewewe, 1991). During the course of this research I observe from the participants’ responses that they understand women’s empowerment as a way of changing women’s status, providing women help, creating a platform and making an encouraging environment for the development of women, and enabling them to augment their social and economic status. Most of the participants recognise women’s empowerment as the way of helping women to improve their lives.

In comparing men’s and women’s understanding of women’s empowerment, the findings reveal that there is no substantial difference in the way both gender respond. The participants understand that for women to be empowered there has to be a favourable social context where women can exercise their social and political rights equally and therefore prove themselves as productive economically as their men counterparts are.

Ahmed (2008) contends that women in Balochistan, particularly those who live in coastal belt, have survival skills. Therefore, women in Balochistan including in Lasbela District are more resilient even in the face of oppression. On the question of women status in the society, the participants, both men and women are asked to express their views on the issue. All respondents understand that the change in women empowerment would bring changes in their social status.

To the participants, the empowerment of women involves moving women from one stage of social life to another but a higher level. The “level” might be the poor economical, political, or social conditions in which the women would be suffering from. According to Baloch and Tank (2007), women in Balochistan are affected by patriarchal policies and are faced with economic crisis and marginal representation in politics. Women in Lasbela experience economic hardship and are also struggling in terms of political representation. Less than 10 % of women are in government political positions (Gazdar, 2005).

In response to the larger question of women empowerment about the experience of participating in women’s empowerment, the respondents are of the view that the women should be empowered within the household as well as outside. The participants reveal their participation in women’s empowerment outside the home in various ways, including supporting other women in the market palace, counseling women and their families, and educating women in schools and NGOs organised seminars and workshops. Participation through NGOs towards women empowerment is one of the core questions floated to the participants in order to obtain their views. Many of female participants disclose that they participate in empowering women through the activities of NGOs and provide their support to the women in different ways.

5. Summary and Conclusion: The main goal of the study was to gain an understanding of community views regarding working women in development sector, in other words in NGO sector. As an exploratory study, part of the investigation of this research was aimed to lay a ground work for further research. For a long time, researchers and social scientists have continued to identify the social problems affecting women in Balochistan in general and District Lasbela and Hub in particular due to men’s dominant control of the socio-political and economic institutions. Women encountered various problems, such as lack of access to land and resources, high maternal mortality, discrimination in the education, particularly the girls’ education, gender-based violence, discrimination in positions of decision-making and various other socio-cultural constraints. As a result, this paper drew and utilised the social dominance theory that considers gender as a significant factor in understanding hierarchy and dominance of one group on another in a social context (Sidanius and Pratto, 2004). The theory further suggests that gender-based hierarchy gives birth to some forms of social oppression and economic repression. In the light of social dominance theory this paper also highlighted the operation of gender inequality in creating a system that oppressed women in Lasbela District.

I looked at the behaviour of the community that was constructed to view the women who worked for NGOs. From the evidences shown in previous section, it is plausible to conclude partially that people in Lasbela still perceive that jobs in NGOs sector are not suitable for the women, and therefore, they prefer them not to work with the
development sector. Having stated this, however, the evidences also suggested that because of the social and cultural
decomposition taking place, though very slowly, the views and perceptions of the people in the District have been
changing in the favour of a more constructive and productive role for women. The changing attitude implicitly
supports the notion of a greater involvement for women in NGOs sector.

Women in Lasbela may be empowered by challenging gender ideologies that constrain them. This may happen by
gaining control of core social and economic affairs, such as decision about joining labour force, educating their kids,
particularly girls and participation in community affairs without any control from their men.

The paper intended to contribute to scholarly literature and research that sought to understand the changing nature of
the people of Pakistan in general and in Balochistan in particular, regarding the role of NGOs as a platform for
women to avail as an opportunity for jobs and groom them up for the greater challenges of the society. The paper
also aimed to contribute to the academic literature that explores the role of NGOs for the greater development of
people in Balochistan by providing them small scale social and economic services and giving them social, economic
and political empowerment.

6.1. Findings and Theoretical Implications

Several themes emerged from the participants’ opinion of women working in NGOs and empowerment of women
including changing women’s status. The first and perhaps the core emerging theme related to the research, was the
social challenges and obstacles to those women in terms of their work with NGOs - though from the interviews it
was also apparent that the majority of them were confident that the social trend has been changing - which would
reshape the views of local people towards their working with NGOs. One of the biggest obstacles was the general
belief that women should adopt that kinds of jobs that did not disturb their femininity, while the NGOs jobs require
extensive traveling and long hours working at office, therefore, were not viewed by community suitable for women.

Several responses corroborated to the fact that the unquestioning beliefs and idealism in women’s roles as nurturers
and caretakers in Balochistan was prevalent. An emphasis on traditional notion of femininity and masculinity was
prominent in the conversation with the research participants. However, a noticeable shift that was realised to be
taking place from the traditional notions of boundaries consigned to men and women was also realised. In fact,
working women were more vocal about finding the concepts of separate spheres as unjust and redundant. This
implied the discursive voices that were already existed among them with the potential to challenge the existing
boundaries of spheres or provide alternative strategies for expanding the women social and economic role.

Overall, female respondents perceived NGOs more positively than male respondents. Many female respondents
were happy with NGOs for the social services provisions, empowerment and microfinance programmes. According
to them, NGOs gave them new ideas and raised awareness about women rights. However, some of them were
concerned with the effectiveness of NGO programmes and believe that these programmes were more theoretical
than practical. One reason for the overwhelming positive attitude towards NGOs among female respondents could
be their limited access to resources outside the community. Likewise, those families who have their female members
with NGOs were less critical of the working of the working of women with NGOs compare to others.

The role of women in development sector and people opinions to their work has a strong correlation with the
women’s overall empowerment in the society. Hence, ignoring the empowerment may leave the question of women
role in development sector and community perception to them half-answered. SDT, which is concerned with men’s
dominance and control of the social system, suggests that inequality in institutions caused by hierarchy-enhancing
legitimising myths such as sexism, tribalism and hierarchy. The theory also described the attenuating legitimising
myths and idealism such as socialism and religious doctrines (Pratto and Walker, 2004). For example, men occupy
hierarchy-enhancing roles such as decision-making positions in civil and military bureaucracy and other top official
positions, while women occupy hierarchy-attenuating roles like teaching, nursing and home making.

The implication of men’s control of the social, economic and political system is that women’s interests and needs
are grossly ignored and not represented. In a traditional society like that of Balochistan with multiple stereotypical
cultural norms, men’s dominant role invariably comes at the expense of women disempowerment and oppression.
This assertion is supported by the SDT assumption, which exhibits that privileged groups support the group-
differentiating ideologies more than what disadvantaged groups would do (Sidanius and Pratto, 2004). This is
largely because men control the economic resources that perhaps support those organisations working in areas which best suit men’s interests.

According to SDT, men’s yearn and aspire for dominant social control and inequality is higher than their women counterparts. The findings of this paper also revealed that both men and women participants did not support men’s control over a woman’s decision to be empowered. The participants contended that women should be the ones making decisions to advance their social status, and men and women should cooperate in making decisions. However, women having control over their lives were not usually feasible because of socio-cultural, economic and religious stipulations that gave men domination over women. The evidence of this study also pointed towards those systems such as cultural traditions and religion that were often used by men to keep women from advancing.

To summarise, a thematic analysis of the findings showed that women’s working with development still has multiple of hurdles from the community. The traditional norms and social values were still the obstacles for the women to work with development sector easily and without community negative opinions in Lasbela. Though things are changing in urban centres like Hub town, where more and more females were getting educated so is the social trend in the favour of females working in development sector, but in rural areas the stereotypical social and cultural norms still prevailed, which kept the social participations at back in all social and economic spheres including their working with NGOs.

The findings further uncovered that there was no significant difference in male and female participants responded, particularly to questions of male control over women. Both genders perceived men to have dominant control over women, thus compatible with SDT which establishes that men control the social system, and desire dominant control and inequality (Sidanius and Pratto, 2004).

6.2. Limitations of the Study

A major limitation of the study is the sample selection, the research participants are selected using a strategic sampling technique. In strategic sampling, participants are selected on the basis of specific characteristics. Several criteria are taken into account during the sample selection, including age, ethnicity, their affiliation to certain organisations, and male participants having to be professionals. However, the findings of the study might be different if the sample were selected based on different criteria. Also, all the participants are selected from three union councils of Hub. None of the participants reside in the rural areas. That poses a limitation to the study because the experiences of people in remote rural areas of Lasbela might be different. However, as a small-scale exploratory study, this paper focuses on laying a foundation for future research rather than solving issues.

6.3. Directions for Future Research

There are number of ways to strengthen the qualitative study of this kind in future research. Several elements continued to occur throughout the research, highlighting its significance in answering the research questions. Although some of the findings are studied in other contexts, a handful of the findings remained to be studied in the context of Pakistan and particularly Balochistan.

I suggest that the areas identified for future research are broad, and so recommend a narrower examination. Another recommendation for future research is to investigate the assumption that women have the power to make decisions, and the extent or circumstances to which they posses and exercise that power. Also, the selection of samples may have influenced the findings because educated men and both educated and non-educated women were interviewed. As a result, I also recommend that the study be replicated using a different population such as rural men and women, and men and women who are not educated. Additionally, a replication of the study using a focus group could also produce varying results because men and women may engage in the discussion differently than they did in a one-on-one interview.
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THE ROLE OF ACCOUNTABILITY IN GOOD GOVERNANCE

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ABSTRACT: No civilization can be developed until its followers lead their lives under a discipline. Accountability is the name of that discipline which keeps citizens of a state and followers of a specific civilization in a circle of rights and duties. The administrative accountability only guarantees establishment of ‘Adle’ (justice), enhancement of Good Governance, abolition of injustice and exploitation, maintenance of law and order, social and political stability, reforms in rules and regulation, check on officials and elites. If it questions about corruption and misdeed of common men and crimes on one hand, so it also take appropriate measures to stop corruption and misuse of powers by administration. Hence through a system of accountability the state can reform misdeeds of common men and different segments of society. Whereas, the masses would correct the rulers, officials and government signatories. Therefore the individual, society and the state should play active role on their part.

Keywords: Good Governance, accountability, maintenance of Law and order,
بہتر نظام مملکت (Good Governance) کا تصور پانے میں مفہوم کے اعتبار سے نہیں۔ حکمران حاضر مین سول سوسائٹی ، پانیادار ترقوی، شفافیت، طاقت اور جمہوریت کی منطقی جیسے اصطلاحات کے ساتھ اس کا استعمال بھی کثرت سے بورہا ہے۔ قرآن کریم میں بہتر نظام مملکت ایک ایسے عادلانہ نظام حکومت کو کہلاتے ہیں جس کی بندیداد، وائس اور اپنی اخلاقیات اور معاشرت کی حقوق اور دیونوں کو پرکھے گی۔

'یہ لوگ انسان کے آپ کے بغیر منہن پر حکومت دینے ہوتے ہیں۔ لوگ نماز کے چاپندی کرین۔ اور زکوہ دینے اور نیک کامون کے کرین کو کہہ اور ہر کامون سے منع کرین۔ اور سب کامون کانجام تو ابھی کے اختیار مین ہے۔'

انتظام کا احتساب

ریاست کی فلاح کا راز انتظامیہ کی بہتر احتساب سے مشروط ہے۔ اس ضمن میں خواجہ نظام الملك طوسی لکھتے ہیں:

"وزراء کے بارے میں پوچھے گچھ کا سلسلہ جاری رہتا چانے اور معلوم ہونا چاہتا کہ ہم اپنے فیض میں پر اس کے اخلاقی اور مملکتی کی فلاح کا راز اس میں پوشیدہ ہے کہ مملکت کو چلانے والا وزیر اچھی کردار اور اچھی نظر ہے مالک بہ، اور دیاں دار بہے ہو اور مدد کے اسی صورت میں مملکت بھی آباد، رعایا اور نوعجیبی تجربہ کریں گی اور بہتر کردہ سکون حاصل رہے گا۔ اگر وزیر کا کردار بلند ہوگا تو ان کے اس کے بھی بوگا کے ایک طرف بادشاہ پرشان اور گھمگین ربا کرے گا اور دوسرا طرف ملک میں پہی بہائے کا غلبہ رہے گا۔\(^2\)

کوتلہ جاں کی "ارہت شاہستر" میں وزراء کے احتساب کے بارے میں کہتے ہیں: "بادشاہ وزیر بنوں کو مختلف شعبہ مین مقرر کرئے کے بعد مشورہ، بڑے پروپٹ اور دیگر خفیہ ذرائع سے ان کی وفاداری اور حاکم کی ازماش کرے۔\(^3\)"

ان آزمائش میں سے کامیاب بونے والوں کے تحقیق کار کہ بانتکوئی کہتے ہیں: "ہو لوگ جن کو پرپیگارے کے حوالے سے آزماگیا گیا ورفدار ثابت بوئے ان کو متعلقہ مین متعین کیا گیا گا اور مجرموں کو دبانے کا فریضہ اس کو سپرد کر دیا گیا۔ جان کی آزمائش مالی مفاد کے دنیا کی بونے ان کو مالی محدود اور محدود مقرر کیا گیا گا اور جو امتحان کریں گے۔ ان کے محدود مقرر کیا گیا گا اور جو امتحان کریں گے۔ وفادار ثابت بوئے وہ راجع کے قرب مین مقرر ہوں گے جو امتحان کریں مین۔ دیواندار ثابت بوئے مشیر بنائے جانے گے اور جو امتحان کریں مین دیواندار ثابت۔ بوئے ہو کہ کی، جنگلات اور کارخانوں وغيرہ کے شعبہ جات مین مقرر ہونے۔\(^4\)"

اسلام یہ چاہتا ہے کہ تمام اراکین حکومت اپنے اپنے فیض میں کہ اپنی افراط اور تفتیق سے اپنی دامن کو بچانے۔ اس سلسلہ میں اسلام تمام مسلمان رہے ہو بیاا وہ کہ جو عہدے اور ذمہ داریاں انبین سپرد ہیں۔ اسے اصول و قواعد کے مطابق ادا کریں اور کبھی ایک اور قسم کے افراط اور تفتیق سے اپنی دامن کو بچانے۔ اس سلسلہ میں اسلام تمام مسلمان رہے ہو بیا اور دنیا انبین سپرد ہیں۔ اسے اصول و قواعد کے مطابق ادا کریں اور کبھی اپنی دامن کو بچانے۔
انَّ مَن كَسِّمَ قَسْمَ كَمْ كَمَي بِيِّشٍ خَيْانَتَ بَيْ: ِّا أنَّهَا الَّذِينَ آمَنُوا لَا يَخْلُفُوا اللَّهَ وَرَسُولَهُ وَيَعْبُدُونَ
أَمَّا ﺗَفْلَكُواْ وَأَنْفُسَهُمْ ۖ فَإِذَا إِمَاءَ وَالَّذِينَ كَفَرُوا، نَكَوْنَا إِنَّهُمْ سَأَوْ رَسُولُ وَقَسْمَ عَرْقَانَتَ نَكَوْنَا
أَوْ إِنَّ كَيْسَةَ مَن ُوُلِدَ كَرَمًا/، أَسْلَمَتْ مَنِ تَعْلُمَاتُهَا، يَبِينٌ: مِنْ كَانَ لَنَا عَمَلًا فِي لَكِنْ رِوْنَةَ، فَإِنَّ لَمْ يَكْنِ لَهُ خَالِدًا فِي جَهَنَّ مَنْ لَمْ يَكْنِ لَهُ مِسْكِنً
فلِكَبِسُ مَسَاءًُ

(جو) بِمَارَا عَامِلٌ بِنَ جَانِي وَهَا شَايِدُ كَرَمُ سَكِنَا، أَمْر خَادِمُ. بوُّ مْ نَ بُوَّوَ مْ كَا اِنْتَظَامٍ كَرَمُ سَكِنَاً بِيَّ
جَنَّ كَّا مُطَّلِبٌ بِيَّ بِكَ عَالِمٌ وَحَكَمُ أَوْرَ مَلاْزِمٌ كَيْ نَبِيَّةَ بِضْرَوَاتٍ كَوْ وُرَأْ كَرَمْنَيْ كَا اِنْتَظَامٍ

جَنَّ بِسْ مْ نَيْ بِكَ أَخْتِرَاتٍ كَيْ تَقْصِيْلُ بُوْنَيْ تُمِيْ. جَنَّ وَهُوَ مَفْرَقٌ هُوَ بُوْرَأَ جَانَيْ وَبُرَاءَ وُ بُوْرَأَهُ
ُؤُهْكَ كَرَمْيُيْتَ جَانَا تَأْكَ وَهَا أَنْ ذَوَّ طَ لَكَمْ نُكْرُنَيْ بَيْ. بُرَاءَ دَهْدَوْ مْ نَ تَجْزَأَ نَ كَرَمْنَيْ بَيْ.

كَيَّهَا كَوْ هَوَّيْنَيْ يُوْرَأَ نَ بُوْوُا، بُارَيْكَ بَيْرَ. نَ حِينَيْنَ وَا نَ كَرَمْنَيْ بَيْ، كَوْ هَوَّيْنَيْ يُوْرَأَ نَ نُكْرُنَيْ بَيْ.

كَيَّهَا كَوْ هَوَّيْنَيْ يُوْرَأَ نَ نُكْرُنَيْ بَيْ. كَوْ هَوَّيْنَيْ يُوْرَأَ نَ قَرْنَيْ بَيْ.

كَيَّهَا كَوْ هَوَّيْنَيْ يُوْرَأَ نَ نُكْرُنَيْ بَيْ.

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كَيَّهَا كَوْ هَوَّيْنَيْ يُوْرَأَ نَ كَرُمْنَيْ بَيْ. كَوْ هَوَّيْنَيْ يُوْرَأَ نَ نُكْرُنَيْ بَيْ.

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كَيَّهَا كَوْ هَوَّيْنَيْ يُوْرَأَ نَ نُكْرُنَيْ بَيْ. كَوْ هَوَّيْنَيْ يُوْرَأَ نَ نُكْرُنَيْ بَيْ.

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كَيَّهَا كَوْ هَوَّيْنَيْ يُوْرَأَ نَ نُكْرُنَيْ بَيْ. كَوْ هَوَّيْنَيْ يُوْرَأَ نَ نُكْرُنَيْ بَيْ.
حضور اکرم ﷺ نے اپنی ذات کو حکومت خاودانی سے مستثنی قرار دیدا۔ آپ نے اس قاعدے کو یہ بیان کیا ہے:

"سے بالا جو امتیز گریزیں بیں وہاں نے بلکہ بونیں کہ وہ لوگ کم درجے کے مجرمون کو قانون کے مطابق سزا دیتے تھے اور اونچے درجے والوں کو چھوڑ دیتے تھے، قسم دیے اس ذات کی جنس کے قبضہ قدرت میں مبری جان ہے۔ اگر محمد ﷺ کی بھی فاطمہ ﷺ بھی چوری کرئی تو مین فوراً اس کا بانٹ کاہدیت۔"

احتساب کے ذریعے لوگوں کے درمیان عمل تب قائم بوسکتا ہے جب کونی دوبارہ سفارش آزے ہو۔ آنے، اسلام نے اچھی بات کے لئے سفارش کو جائز قرار دیا ہے اور اس پر اجر و ثواب کا وہود نہیں ہیں۔ بہا کام کے لئے سفارش کرنا کو مفعول ہیں ہیں اور اسے عذاب کا سبب قرار دیا ہے۔ 15۔ بہی فرمایا:

"جو شخص اپنی سفارش کے ذریعے اللہ تعالیٰ کی حدود میں سے کسی حد کے نافذ کو روک دیتا ہے وہ گوگداً اللہ تعالیٰ کے قانون کیخلاف کرتا ہے۔ 16۔ نبی کریم ﷺ نے خود اپنی زندگی میں اپنے کردار، گفتار اور عمل میں سے اپنے متعلقین کو بے لاغ احتساب کا نمونہ پیش کیا حضرت ﷺ نے حاضریاً قبائل کا قول ہے: حاضریاً قبائل کا قول ہے: اور اسے جماعت بونے سے بالا نہ احتساب کیا۔

رسول اللہ ﷺ نے جوابی بی کے تصویر کو اتنا عام کیا کی معاشرت کا بر فرد اپنے منصب، عبدہ اور ذمہ داری کی متعلق جوابیہ قرار پايا۔ چنانچہ ایک حديث مین بون فرمایا: اس کے اعتبار سے کہ حکومت نہیں ہے۔

"ابو ایوب ﷺ کی اپنی امت کے لئے احتساب اور عوام الناس کی اخلاقی تعلیم کی ایک جهلو ہے۔ 2872۔ آپ ﷺ نے اخلاقی طور پر صرف تعلیم بی نہیں دی بلکہ عمل کرکے بی نہیں ہے۔ آپ ﷺ کسی شخص کو اسی علاقوں کا گورنر ہوا بلکہ پہچاننے تو سب سے پہلے اسے نصیحت کرتے کہ عوام کے ساتھ اچھا سلوک کرنا ایک پر ظلم و زیادتی نہ کرنا ایک پر ساتھ اچھا سلوک کرنا اگر کسی
سے کونی محض وصول کرنا بو تو ان کی اچھی اور عمده مال لینے سے اجتناب کرنا اور مظوم کی بدعہ سے طاقت رہندا، پہر آپ کسی گرگونے، وہی سے کسی بھی قسم کی غلطی یا خیانت کا ارکام دیکھتے تو فوراً اسی احاطہ کرے اور سختی کے ساتھ اس کی تدریک فرمایا۔

چنانچہ بخاری شریف میں ہے: 

ابو حمید ساعد سے روایت ہے کہ نبی کرم ص اللہ علیہ وسلم کی زکوۃ وصول کرنا کی لینے تحصیلدار بیناہا، جب وہ زکوۃ وصول کرکے رسول اللہ صلی اللہ علیہ وسلم ایک ہمہ نے اس سے حساب لیا وہ کہے تو تہمارا (بعنی زکوۃ کا) مال ہے اور پھر مجھے تحقیف اور بدھا کے طور پر ملا ہے۔ رسول اللہ صلی اللہ علیہ وسلم نے فرمایا: اگر تو سچی ہے تو اپنے باب پاں مال کی گھر کیوں بہتی نہیں ربا کہ پھر پھر تحقیف تم کو ملنی رہیکھتے اس کے بعد اب ہی ہوئے اور لوگوں کو حفظ، سنیا اللہ تعالیٰ کے حمدو ثانہ کے بعد فرمایا: میں تم لوگوں میں سے بہتر کو ان امور اور معاملات کی ذمہ داری پر مقرر کرنا پوں جن کو اللہ تعالیٰ نے مجھے عطا کیا ہے اور ان کو علم بہت باور پہر وہ آگے کوئی بن پر مال تہمہارا نے اور پھر میں نے تحقیف میں مال ہے، بلکہ اگر ہے میں نے اپنے باب پاں مال کی گھر میں بہتی رہتا پھر پھر تحقیف، اس کے پاس آتا پھر دیکھتا۔ اللہ تعالیٰ میں سے مال اگر میرے شخص کونی چھی لگ رہا ہے، (بیشمار راوا نے زیادہ ہی۔) ناہحق طور پر تو قیامت کے دن اس کو اثناءے بھونے ہوں گا) خبردار سن لوا میں اس کو پہچان لونا گا جو اللہ تعالیٰ کے پاس (اس کی ذرائع میں) ایک اونچی لے بونے رہی گا وہ بڑا ربا زبانی یا ایک گانے لے بونے اگے گا وہ بہت بیہ میں کر رہی بھوک یا ایک بکری لے کر آگے گا وہ میں میرے کر رہی بھوک اس کے بعد اپنے انسان باتی اثناءاتی ہے میں نے اپنے کے سفیدی دیکھی اور فرمایا خبردار سن رہو میں نے (اللہ کا حکم) تم کو پہچانا ہی۔

اس حدث میں آپ ص اللہ علیہ وسلم اس کے ابھی عمل کا بیان ہے جو تمام قسم کی مالیات اور اخلاقی خرابیوں کی جہاں کافی دیکھے اور احتجاب کا عمل پر مالی پر فاعلیت بندی، بدعنصوانگی، رشوت ستانی، فرائض کی انجام دہی میں لابرپول برتنی، ثبوتیں صحیح طور پر انجام نہ دینا، کریشن غرض پر طرح کی بیماری اور خرابی کی اصل نیاز جوابی کا عمدہ احساس اور احتجاب کا فقدان

بہس۔

امام بخاری نے اس حدث کو کتاب الاحکام میں لکار اس کا عنوان ہے بہ رکھا ہے: "حکمران یا بادشاہ کا اپنے عمل کا محاسبہ کرنا جس سے معلوم ہوا کہ اسلامی اصول سیاست میں سے ایک ہی بھی ہے کہ عمل اور حکمران کا مبین محاسبہ کی جاتی ہے تاکہ وہ راه راست پر رہ سکے۔

عوام الناس اور رعایا کی حقوق کی پاسداری نہ کر کرے وہلی اور ان کے ساتھ خیر خوابی کا سلوک نہ کریں وہلی حکمران کے بارے میں رسول اللہ صلی اللہ علیہ وسلم نے بہت سخت الفاظ میں مذموع کرتے بھونے جبہ ہو آگے کی وکلاء سناتی ہے۔ جانچھا حضرت معقل بن بسار کہے ہے: 

"سعید رسول اللہ تعالیٰ پوچ: ما ان امر پلی امر المسلمین تم لاجھہ متمکن اور مبتلا کمیلاں نہیں، لیکن یاد میں دیکھے کہ ہم نے

اس حدث میں نبی کرم ص اللہ علیہ وسلم کے طرف منوج کہنا ہے کہ جو شخص عوام الناس کے کسی بھی معاملے 

کا نام دار بن جانے تو اس کے نے لازمی ہے کہ وہ اپنے نام داریم احسن طریقے سے انجام دے۔
نتائج

آج مختلف محكومون مین یونس دؤ بے نے روزگار اور لائن تعلیم یافتہ نوجوانون مین ماوسی بے وہ اسی وجو سے بے کی تعلقات رشتون اور سفارشون کی وجو سے ملازمتیں اور عہدے تقمیس کے جانے بے جنس کے نتیجے مین غیر اب کلا نا لائق لوق حکومتی عیدون پر قابض بو کر خلق یا کو پریشان کرتنے بین اور بون ساری حکومتی مشنیں کو تیاہ کر کے رکھ دیے بیں۔

ایسے طرح ایک موتر اور بے لائق احتساب تب بی بوسکتا بے جب قانون کی عملدار کر اور قانون سب کے لئے برابر بو اسلامی قانون مین کسی کے لئے کوئی امتیاز نہیں پرنا جاتا۔ ایسے برکات چھوٹے بھی اور امیر و غرب کے لئے الگ الگ حقوق نہیں بین جو حق پر وہ سب کے لئے حق پر یا اور جو گیا پر وہ سب کے لئے جو ہوا پر، جو حرام پر وہ سب کے لئے حرام پر، جو حلال پر وہ سب کے لئے حلال پر۔

اگر بر شخص اسلامی تعلیمات کی روشی مین اینے کردار کا جانے لی، اینا محاسبہ کریں جس لئے اور صالح امور کے انجام دینے مین کوشش رہے تو یقینا ایسا معاملہ وجود مین آنے گا۔ چنان کسی قسم کی بھی اس کی انتباہ نہ ہوگی۔ ایک یہ جب کہ اور نظام احتساب کے کے ذریعہ عوام او اور عوام کے مختلف طبقات مین پانی جانے والی خرابیون کی اصلاح حکومت کریں گی اور حکومت و عمال حکومت اور امراء حکومت مین پانی جانے والی خرابیون کی اصلاح احتساب کے ذریعہ ممکن ہے۔ اس سلسلے مین فرد، معاعشرہ اور ریاست تینو کو اینے اپنی جگہ متحرک اور فعال کردار ادا کرنا بھیگا۔

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ANTIOXIDANT ACTIVITIES AND PHYTOCHEMICALS OF TAGETES ERECTA FLOWERS AS AFFECTED BY DRYING METHODS

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ABSTRACT: The flowers extracts of Tagetes erecta Linn. have extensive usages in industries like food, beverages, cosmetics, feed, fragrances and dyeing. In this study, the influence of four different drying techniques namely spray drying, shade drying, oven drying and sun drying on the levels of selected phytochemicals and scavenging activity of the flowers was studied. The data showed significant effect of drying treatments on the concentrations of the phytochemicals. Ascorbic acid, total phenolic and total flavonoid contents ranged from 57.3 to 91.0 mg/100 g, 487.0 to 634.0 mg/100 g and 137.0 to 161.3 mg/g, respectively. Highest concentration of ascorbic acid was found for shade dried sample, while lowest for sun dried sample. Similarly, the shade dried sample showed the highest phenolic content. The shade, oven and spray dried samples showed statistically similar values for flavonoid contents, whereas lowest value was observed for sun dried sample. The spray dried sample showed the highest values for both DPPH and hydrogen peroxide scavenging activities.

Keywords. Tagetes erecta; Drying Methods; Scavenging Activities; Phytochemicals

Introduction: Tagetes species belong to family Asteraceae and are of high demand in dyeing, fragrances, cosmetics, beverages, food, feed and pharmaceutical industries. These plants have been widely used as folk medicine for treating various ailments and exploited as natural insecticides, insect repellents, herbicides, bactericides and fungicides (Batish et al., 2007; Faizi et al., 2008; Vasudevan et al., 1997). The flower pigments are commercially consumed as natural colouring agents in food, feed and beverage industries (Vasudevan et al., 1997).

Tagetes erecta Linn. is very popular in Pakistan as an ornamental plant. It is locally known as Genda Phul. The English name of the plant is African marigold. Different parts of this plant are used in folk medicines to cure several diseases. The whole herb is used for medicinal properties such as anthelmintic, astringent, aromatic, diuretic, sedative and antiseptic. Leaves are used to treat kidney troubles, muscular pain, ulcers, piles and applied externally to boils, wounds and carbuncles (Gopi et al., 2012; Kumar et al., 2006). The flowers also have numerous uses. These are used in salads, currys, tea, condiments and as flavoring and coloring agents (Kaisoon et al., 2011). Medicinally, the flowers are useful for the treatment of fevers, epileptic fits, sore throats, indigestion, coughs, dysentery, scabies, liver complaints and eye diseases (Kirtikar and Basu, 1987; Ghani, 1998). Externally, the flowers are utilized to treat carbuncles, eczema, sore eyes, earaches and rheumatism. The flowers produce aromatic oil that is largely used in superior quality perfumes (Jothi, 2008; Prasad et al., 2010). The flower pigments are extensively used in food industry, textile colouration and to colour egg yolks (Jothi, 2008; Vankar et al., 2009).

Numerous scientific investigations showed that the plant have nematocidal, antifungal, insecticidal, herbicidal, antimalarial, antioxidant, antimutagenic, anthelmintic, antinociceptive, hepatoprotective and anti-inflammatory activities (Giri et al., 2011; Gopi et al., 2012; Gupta and Vasudeva, 2010; Li-Wei et al., 2012; Shinde et al., 2009). Phytochemical analysis of different parts of the plant have resulted in the findings of various chemical constituents such as phenolics, alkaloids, thiophenes, steroids, terpenoids, flavonoids and carotenoids (Faizi and
Naz, 2004; Li-Wei et al., 2012). The plant has been shown to contain lutein, quercetin, syringic acid, quercetin, thienyl gallate, ethyl gallate and methyl 3,5-dihydroxy-4-methoxy-benzoate (Ghani, 1998; Jothi, 2008). The petals extracts prepared by using different solvents lead to the isolation of dodecanoic acid, myristic acid, palmitic acid, stearic acid, octaeicosane-8-one and triacontane-1-ol (Prasad et al., 2010). Recent worldwide penchant for the use of natural compounds has extremely augmented the importance of plant materials for usage in industries like pharmaceutical, nutraceutical, food, cosmetic and pesticides etc. Correspondingly, there is an increasing interest in the assurance of quality, safety and efficacy of raw materials and plant based products (WHO, 2000, 2003). Plant materials are now abundantly available in raw, semi-processed and product forms all over the world markets. Though, plant extract powders and dried materials (barks, roots, stems, seeds, flowers and leaves) show a number of advantages over the conventional fluids and unprocessed forms because they have higher amounts of active compounds which increase the therapeutic efficacy and product value (Calixto, 2000; Rocha et al., 2011; Runha et al., 2001). Raw plant materials are also difficult to transport because of their bulkiness and high transportation charges. Drying reduces the moisture contents and therefore virtuous for reducing storage and transportation costs (Calixto, 2000). It also decreases the chances of microbial contamination (Hassanain, 2011). Drying can affect both the quantity and quality of the active constituents, therefore the selection of the appropriate drying method for plant materials and their extracts remains a serious criterion (Rocha et al., 2011).

The present study was intended to assess the effect of different methods of drying (sun, shade, oven and spray drying) on the phenolic, flavonoid and ascorbic acid contents as well as scavenging activities of Tagetes erecta flowers.

Materials and Methods

Collection of plant samples: Tagetes erecta flowers were collected from NIFA Tarnab, Peshawar, in the month of December and immediately transferred to the laboratory. The plant material was authenticated by PCSIR Labs., Peshawar, Pakistan.

Sample preparation: The flowers were cleaned from foreign particles, cut into small pieces and divided into three equal parts. One part was shade dried with natural air circulation. The average room temperature was 19 °C. The second portion was sun dried in a clean place. The third part was dried in a laboratory oven at 45 °C. Afterward, the dried plant materials were ground in a grinder (Retch Muhle-Germany) and passed through the sieves of mesh size 30. The powdered samples were packed in clear polyethylene pouches and sealed with electric Sealer PFS 300, Japan.

For spray drying, about 500 g of fresh flowers of Tagetes erecta were properly washed with tap water and then rinsed with distilled water. The flowers were mixed with 1.5 litre of distilled water and homogenized in a blender. Later, the solution was filtered through Whatman No. 1 filter paper. The filtrate was concentrated to 50 % in a rotary evaporator at 45 °C. The sample was then dried using a spray-drier model Pamico Lab. 01/08 (Pamico Technologies, Faisalabad, Pakistan) containing a co-current nozzle and cyclone with powder collecting bottle. The dryer has the capacity of drying up to 10 litres per hour. The operational conditions employed during spray-drying are shown as follows:

- Inlet temperature: 175 ± 10 °C
- Outlet temperature: 65 ± 5 °C
- Atomization pressure: 1.5 bars

Preparation of extracts: The dried flower samples (50 g, each) were extracted separately using distilled water. The mixtures were kept in an orbital shaker at room temperature for 8 hours. The extracts were separated from the residues by filtering through Whatman No. 1 filter paper. The residues were extracted thrice with fresh distilled water and finally the extracts were combined. The pooled extracts were concentrated under reduced pressure at 45 °C using a rotary evaporator and stored at 4 °C until further processing.

Estimation of ascorbic acid: Ascorbic acid was measured by titration method (AOAC, 1984). Four grams of the dried samples of Tagetes erecta flowers were extracted in 3% metaphosphoric acid (50 ml), filtered and the extracts were titrated with dye solution (2,6-dichlorophenol indophenol). The end point is the appearance of light pink colour, which persists for a few minutes. Ascorbic acid content was then calculated based on the following formula:

\[ \text{Ascorbic acid (mg/100 g)} = \frac{(\text{titre} \times \text{dye factor} \times \text{volume made up} \times 100)}{(\text{aliquot of extract} \times \text{volume of sample})} \]

Estimation of phenolic content: The total phenolic contents of plant samples were estimated by the Folin-Ciocalteau colorimetric method (Khattak, 2012). The filtered extracts of different concentrations were taken in
10 ml glass tubes and total volumes were made to 2 ml with distilled water. 4 ml of 2% aqueous sodium carbonate solution was added to these and mixed thoroughly. Then 500 µl of Folin-Ciocalteau reagent was added to the mixtures. The mixtures were allowed to stand for 1 hour with intermittent shaking and the absorbance of the green-blue complexes were measured at 750 nm in a spectrophotometer against blank. The standard curve was prepared using known concentrations of gallic acid. The total phenol content in the test samples were calculated from the standard curve and the results were expressed as milligram of gallic acid equivalents per 100 grams (mg/100 g) of the dry extract.

**Estimation of total flavonoids:** Flavonoids contents were determined by following the method of Aiyeogroro and Okoh (2010). One ml of the different extracts of the plant were mixed with 3ml of methanol, 0.2 ml of 10% aluminum chloride, 0.2 ml of 1 M potassium acetate and 5.6 ml of distilled water. The mixtures were kept at room temperature for 30 minutes. The absorbance of the mixtures was measured at 420 nm with UV visible spectrophotometer. Quercetin was used as standard (0–1 mg/ml). Flavonoid contents were determined from the standard curve and expressed as quercetin equivalent (mg/g).

**Determination of DPPH radical scavenging activity:** The antioxidant activity of the samples was assessed using 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical (Khattak, 2012). Various concentrations of the dried extracts were added to 2 ml of DPPH in methanol solution (100 µM) in a test tube and shaken vigorously. After incubation at 37 °C for 50 minutes in the dark, the absorbance of each solution was estimated at 517 nm. The percentage of free radical scavenging effect was calculated as follows:

\[
\text{Scavenging effect (\%) } = \frac{(A_{517\,\text{control}} - A_{517\,\text{test sample}})}{A_{517\,\text{control}}} \times 100
\]

Where \(A_{517\,\text{control}}\) = Absorbance of the control at 517 nm

\(A_{517\,\text{test sample}}\) = Absorbance of the test sample at 517 nm.

The results obtained from the radical scavenging experiments were expressed as EC\(_{50}\) values. EC\(_{50}\) value is the extract concentration at which DPPH radicals were reduced by 50% and calculated from the linear regression analysis.

**Hydrogen peroxide assay:** The ability of plant extracts to scavenge hydrogen peroxide was determined according to the method of Ruch et al. (1989). A solution of hydrogen peroxide (40 mM) is prepared in phosphate buffer (50 mM, pH 7.4). The concentration of hydrogen peroxide is determined by using a spectrophotometer. Extracts (20–100 µg/ml) was added to hydrogen peroxide and mixed. After 10 minutes the absorbance was determined at 230 nm against a blank solution containing phosphate buffer without hydrogen peroxide. Alpha tocopherol was used as a positive control. The percentage of hydrogen peroxide scavenging is calculated as follows:

\[
\% \text{ Scavenged (H}_2\text{O}_2\text{) } = \frac{(A_0 - A_i)}{A_0} \times 100
\]

Where; \(A_0\) is the absorbance of control and \(A_i\) is the absorbance of test sample.

**Data analysis:** All determinations were obtained from triplicate measurements and results were expressed as means ± standard deviations. The data were analyzed using one-way ANOVA and least significant difference tests for the mean differences. Statistical significance was declared at p < 0.05.

**Results and Discussion:** The effect of four drying treatments namely, sun drying, shade drying, oven drying and spray drying was checked on the concentrations of flavonoids, ascorbic acid and total phenolics as well as scavenging activity using DPPH radical and hydrogen peroxide of *Tagetes erecta* flowers.

Vitamin C takes part in numerous biological functions such as collagen formation, absorption of inorganic iron, reduction of plasma cholesterol level, inhibition of nitrosoamine formation, boosting of immune system and scavenging of free radicals, and thus plays a vital role in the maintenance of healthy skin, gums and blood vessels (Lee and Kader, 2000). The ascorbic acid contents of the flowers of *Tagetes erecta* were determined on dry weight basis and results are presented in Figure 1. The content of the tested samples ranged from 57.3 to 91.0 mg/100 g. The results showed that drying treatments significantly affected (p < 0.05) the contents of ascorbic acid in *Tagetes erecta* flowers. The shade dried sample showed the highest value (91.0 mg/100 g), followed by spray dried (90.0 mg/100 g) and oven dried (84.3 mg/100 g). The sun dried (57.3 mg/100 g) sample showed the minimum concentration of ascorbic acid. The reason might be the comparatively high rate of oxidation in the presence of direct sunlight. No information is available on the effect of drying conditions on vitamin C content of the plant. In comparison to our findings, a study conducted by Mishra et al. (2009) on different dehydration techniques (freeze drying, sun drying, spray drying, hot air drying and vacuum drying)
showed the lowest concentration of ascorbic acid in the sun dried powder of Amla (*Emblica officinalis*). Similarly, a scientific investigation carried out by Sohail *et al.* (2011) on the physicochemical and microbiological properties of sun dried tomatoes revealed that the nutrient which is highly affected by sun drying was vitamin C. In fresh tomatoes, the ascorbic acid content was 32.5 mg/100 g which was reduced to 24.6 mg/100 g after sun drying. Joshi and Mehta (2010) reported that after dehydration the maximum amount of vitamin C was noted in shade dried sample, as in this technique the leaves were not exposed to direct heat and air.

Plant derived phenolic compounds have received considerable attention due to their antioxidant activities and free radical scavenging abilities, which have beneficial implications in human health and usages in food and cosmetic industries (Oksana *et al.*, 2012). The total phenolic content of the flower extracts were determined by Folin-Ciocalteu colorimetric method and the results are expressed as milligrams of gallic acid equivalents (GAE) per gram of dry weight of the extracts (Figure 2). The phenolic contents ranged from 487.0 to 634.0 mg/100 g. Previously, a study conducted by Kaisoon *et al.* (2012) on selected edible flowers showed 1107.5 mg/100 g of phenolic compounds in the dry weight of the extracts of Tagetes erecta. Gong *et al.* (2012) worked on the optimization of extraction parameters of bioactive components in the petals of Tagetes erecta and reported 70.01 mg GAE/g of total phenolics. It was observed that drying methods significantly (p < 0.05) affected the total phenolics in the aqueous extracts of the flowers. The shade dried powder had the highest phenolic content, followed by sun dried powder while spray dried sample exhibited the lowest concentration of phenolics. Earlier research studies showed diverse results. Comparable findings were reported by Ramamoorthy and Bono (2007). Their investigations revealed lowest phenolic content in spray dried while highest in vacuum dried samples of the fruit extracts of Morinda citrifolia. Hussain *et al.* (2010) checked the effect of effect of drying methods (shade, freeze and oven drying) on the total phenolic content of rosemary, oregano, marjoram, sage, basil and thyme. They reported that the shade dried samples had significantly higher phenolics contents than freeze- and oven-dried samples throughout the storage period of 60 days. Chaovanalikit *et al.* (2012) revealed that spray drying can preserve total phenolic in mangosteen powder better than vacuum drying. Novakovic *et al.* (2011) investigated the influence of different drying treatments (convective, osmotic and freeze) on the antioxidant activity and phenolic content of raspberry fruits. The convective and osmotic drying showed a significant decrease in phenolic content of the fruit samples, when compared with freeze drying treatment. Hung and Duy (2012) compared the effect of freeze and oven drying on the phytochemicals of carrot, taro, tomato, red beetroot and eggplant, grown in Vietnam. Their results indicated that rise of temperature in heat-drying method significantly reduced the total phenolics.

Flavonoids are low molecular weight compounds that have a wide range of biological activities including anti-inflammatory, antibacterial, antiviral, antioxidant, antiallergic, cytotoxic, antitumour and vasodilatory etc. (Sandhar *et al.*, 2011). The flavonoid contents of the powdered samples of Tagetes erecta were determined and presented in Figure 3. The levels of flavonoids ranged between 137.0 to 161.0 mg/g. Previously, Kaisoon *et al.* (2011) discovered that the flowers of Tagetes erecta had 68.9 mg/g of flavonoid content. Comparable results were described by Gong *et al.* (2012). They revealed that fermented petals of defatted Tagetes erecta had 109.38 mg RE/g of total flavonoid content. The present study showed that the flavonoid contents observed for shade dried (161.3 mg/g), oven dried (155.7 mg/g) and spray dried (158.0 mg/g) are statistically same (p > 0.05). While, significant decrease (p < 0.05) in flavonoid content was observed for sun dried sample (137.0 mg/g). Earlier, Ramamoorthy and Bono (2007) reported highest flavonoid content in the ethyl acetate extract of spray dried samples of Morinda citrifolia fruit. A scientific investigation conducted by Hung and Duy (2012) showed significantly reduced flavonoid contents in carrot, taro, tomato, red beetroot and eggplant after heat-drying method. Novakovic *et al.* (2011) reported that convective and osmotic drying resulted in significant decreases in the concentration levels of flavonoids in raspberry fruits when compared with freeze drying.

The free radical scavenging activity of the extracts of the plant was analyzed by using DPPH radical. The results obtained from these experiments are expressed as EC50 values (μg/ml) and presented in Figure 4. A low EC50 value is the sign of high DPPH scavenging activity. The EC50 value of Tagetes erecta samples ranged between 13.9 to 25.3 μg/ml. Previously, Chivde *et al.* (2011) reported that the IC50 values was 3.4 μg/ml for the ethanolic extract of flowers of Tagetes erecta. Whereas, Gutierrez *et al.* (2011) worked on the oil content of Tagetes erecta and reported Lower DPPH scavenging activity as EC50 value was 71.5 μg/ml. The current data showed a strong correlation (p < 0.05) of drying treatments with DPPH scavenging activity. Highest DPPH scavenging activity was recorded for spray dried flowers, while lowest for sun dried samples. Exposure to direct sunlight may lead to initiation of accelerated oxidation. The results of the present study came in consistence with the findings of Ramamoorthy and Bono (2007). They noted the highest DPPH scavenging activity in spray dried extracts of Morinda citrifolia fruit. Likewise, Hussain *et al.* (2010) reported significantly higher antioxidant activity for shade-dried samples of rosemary, oregano, marjoram, sage, basil and thyme, when
compared with freeze-dried and oven-dried samples. Conversely, Annamalai et al. (2011) reported higher DPPH scavenging activity for microwave dried sample of *Cardiospermum halicacabum* as compared to that of the shade and sun dried samples. Hung and Duy (2012) compared the effect of freeze drying and oven drying on DPPH scavenging activity of carrot, taro, tomato, red beetroot and eggplant. Their results indicated significant losses in the antioxidant capacity of oven dried samples.

The Figure 5. showed the effect of sun, shade, oven and spray drying treatments on the hydrogen peroxide scavenging assay of the flowers of *Tagetes erecta*. It was clear from the data that drying treatment has significantly (p < 0.05) affected the hydrogen peroxide scavenging activity of *Tagetes erecta* flowers extracts. The exhibited EC$_{50}$ values were 94.9, 96.8, 85.4 and 79.9 µg/ml for sun dried, shade dried, oven dried, and spray dried samples, respectively. There is no information available in the literature on the effect of drying methods on the scavenging activity of the plant. However, earlier Novakovic et al. (2011) investigated the influence of different drying treatments (convective, osmotic and freeze) on the antioxidant activity of raspberry fruits and reported that the convective and osmotic drying showed significant reductions in hydrogen peroxide scavenging activity, when compared with freeze drying.

**Conclusion:** With the increased consumer interest in plant based value-added products, there is a growing scientific emphasis in processing technologies and consequent evaluation of the influence of these techniques on the chemical constituents, biological activities and physical characteristics of the plant materials. Processing and value addition activities are imperative for getting concentrated and quality products. The present study showed that spray drying is the best technique to have maximum scavenging activity and better retention of beneficial phytochemicals in the dried extracts of *Tagetes erecta*, followed by shade drying.

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Figure 1. Effect of drying methods on the ascorbic acid content of *Tagetes erecta* flower. Values are means of triplicate determinations (n=3) ± standard deviations. The vertical bars represent the standard deviation for each data point. Values with different superscript letters are significantly different (p < 0.05).
Figure 2. Effect of drying methods on the phenolic content yields of *Tagetes erecta* flower. Values are means of triplicate determinations (n=3) ± standard deviations. The vertical bars represent the standard deviation for each data point. Values with different superscript letters are significantly different (p < 0.05).
Figure 3. Effect of drying methods on the flavonoid content yields of *Tagetes erecta* flower. Values are means of triplicate determinations (n=3) ± standard deviations. The vertical bars represent the standard deviation for each data point. Values with different superscript letters are significantly different (p < 0.05).

Figure 4. Effect of drying methods on the EC$_{50}$ value (µg/ml) of the DPPH scavenging activity of *Tagetes erecta* flower. Values are means of triplicate determinations (n=3) ± standard deviations. The vertical bars represent the standard deviation for each data point. Values with different superscript letters are significantly different (p < 0.05).
Figure 5. Effect of drying methods on the EC$_{50}$ value (µg/ml) of the hydrogen peroxide scavenging activity of *Tagetes erecta* flower. Values are means of triplicate determinations (n=3) ± standard deviations. The vertical bars represent the standard deviation for each data point. Values with different superscript letters are significantly different (p < 0.05).

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CLASSROOM INTERACTION AS ACTIVITY TYPE: A STUDY OF SOCIAL INTERACTION AT ABDUL W ALI KHAN UNIVERSITY MARDAN

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ABSTRACT: The main aim of the study was to investigate Activity Type (AT) as an approach towards classroom interaction and highlight its limitations and delimitations. For this purpose, a formal teacher-student interaction in academic setting of about 30 minutes was recorded, transcribed and then coded. The interaction was qualitatively analysed. The study revealed that the interaction has outlined the main features of AT including goals orientation, activity specific context, inferencing system, constraints on participants' contributions and most obviously the overriding role of setting, over-shadowing all the other features.

1. Introduction: The study of language as social activity/interaction is not something new but has been studied since decades under different names such as social situation, social episode, social occasion, social events, speech events, language game etc. (Yueguo 2010, pp.75-76). Different researchers/scholars have approached these social interactive activities from different perspectives. Levinson (1979) has approached it from institutional perspective and introduced an approach for its study and analysis known as Activity Type (AT). He has outlined some common features, which are shared by most of these institutional interactive activities i.e. activity specific context, goals oriented, socially constituted, constraints on participants’ contributions and setting etc. (1979:368). However, in all of these features the role of context is of prime importance. He further elaborated that in order to understand and analyse social interaction it has to be studied in its activity specific context, which in a way is an attempt of combining interactional sociolinguistics with pragmatics. In other words, the role of context (embedded within the activity specific culture) is central to unlocking the true meaning potential of social interaction. Although Levinson in his approach of AT in general and context in particular is influenced by a number of scholars/researchers including Wittgenstein (1958), Hymes (1964) and Goffman (1974) but it can be distinguished from other approaches by its vast range, flexibility and openness to accommodate a number of concepts and ideas. He has categorised institutional interactions/activities by placing it on a continuum ranging from formal-informal, pre-packaged-unscripted, verbal- non-verbal and so on.

The current essay is an attempt to analyse a formal institutional activity (teacher student interaction) in an academic setting from the perspective of AT approach with a focus on the role of context and setting along with its advantages and disadvantages. First AT has been compared and contrasted with other approaches, where emphasis has been made on the role of context, which is followed by advantages and disadvantages of the approach and a short review of classroom interaction. Then after having a few words on methodology, the interaction has been analysed and discussed in details from AT perspective. Here emphasis has been made on the role of academic setting with an eye on the advantages and disadvantages of AT. At the end the essay is rounded on a short conclusion.

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2.1 Activity type in relation to other approaches: Levinson (1979) in his AT has taken language as a social activity and divided these interactive activities into different categories on the basis of level of formality, structure, function etc. He elaborated that each activity is governed by activity specific context/norms, which is essential to be taken into consideration for proper comprehension and analysis of the activity. Moreover, each activity has specific goals, constraints on participation, setting and so forth but it is the context, which links all the other features on a central point. Various scholars/philosophers/researchers have investigated social interactions and characterized it differently depended upon his/her intellectual background.

Wittgenstein (1958) who has been frequently referred and drawn upon by Levinson in connection with his concept of language game, compared social interaction (language) with a game emphasising that as each game is governed by certain norms, which need to be understood in order to follow the game properly, similarly, an interactional activity can only be properly understood when it is studied/seen in its activity specific context. Levinson has elaborated Wittgenstein's concept of language game but in comparison to him Levinson remained a bit more spacious and flexible in his approach. Then, Hymes (1964), who has not only influenced Levinson in his AT but has been a regular source of reference for writers/researchers working in the area of social interactions; his model Ethnography of speaking, specifically his concepts of speech event, speech situation, goals, setting etc. have been widely cited/quoted all around. Although Hymes' model is comparatively more elaborate and comprehensive but it happened to be more stable and tended openly towards the cultural and social paradigm in general and in the case of context in particular. Levinson on the other hand believes in a dynamic/fluid context with an orientation towards activity specific inferencing scheme, where the participants sometime can go beyond the Allowable contributions. The difference between AT and Sarangi's model can be that the former sees the context as shaping the events while the latter takes it as a constraining factor checking the performance of the participants (Thomas 1995).

Similarly, Levinson shared a good deal of common ground with Goffman (1974, 1981) and Gumperz (1982) on both the fronts: context and inference making. Goffman’s dynamic concept of frame, referring to participant's understanding of situation and his notion of footing; participants' alignment with situation, are to a greater extent converging with Levinson's concept of dynamic context and activity specific inferencing system. Similarly, Gumperz (1982) has shown somewhat similar approach to context and inference making. He emphasises on the dynamic aspect of social context and the importance of linguistics details in evoking them but at the same time shows a bit more inclination towards the social and structural side of social interaction (Drew and Heritage, 1992). Besides, Sarangi (2000) while acknowledging the fluidity of social interaction in general and institutional interaction in particular has added a new element to the current debate by bringing into notice hybridity, which exists between activity types and discourse types. He elaborated that sometime we observe a mixture of discourse types in a single activity (e.g. in a classroom the teacher quite often resort to the telling of a joke/anecdote etc.) or one activity is embedded in another activity etc. In other words, Sarangi (2000) has not only endorsed the dynamic aspect of context but has also highlighted the overall fluid nature of social interaction.

Then the conversationalists specifically mentioned be made of Harvey Sacks et al (1974) the pioneer of conversation analysis (CA), share a good deal of common ground with AT. Both the approaches emphasis on the exploration of interaction from internal dimension but differences between the two have also been observed as CA emphasises on mundane conversation with its sequential organization and treats context both as the project and product of participants own actions, while AT is marked by its focus on activity specific context, goals’ orientation, constraints on participation, setting and so on (Drew and Heritage 1992; Levinson 1979; Sinclair and Coulthard 1975 etc.)

2.3 Advantages and disadvantages: AT like any approach has both advantages and disadvantages. But its advantages outweigh its disadvantages. The most favourable aspect of AT is its broad range, openness and flexibility (Sarangi 2000). Comparatively AT is broader in range and focus, while other approaches such as speech act theory etc. are limited in one way or the other in its range and focus (Drew and Heritage 1992, p.10). Another point which can be taken both as an advantage and disadvantage is the hybridity, which exists between discourse types and ATs (Sarangi 2000). It has been observed that sometime during the course of an activity we come across different discourse types or within one AT we see another activity, which quite often happened to be untypical of the activity and its setting. Now the question is how to see that activity within an activity. Similarly, some of the studies specifically in reference with formal institutional interactions have raised the point that in AT there is a feel of over emphasis on constraints on the contributions of the participants. (e.g. Yueguo 2010). But approaching this constraining factor from another dimension, it may be taken as an advantage in situations where there are a large number of participants and there are no such
restrictions/constraints (e.g. turn taking etc.), it will be difficult to achieve the desired goals of the interaction. Another reservation about AT is that it mostly remains vague and obscure, several aspects such as relation between activity types, their physical milieu, complexity of multiple goals, goal attaining scheme, relation between activities and its participants have not been fully explained (Yueguo 2010, p.78). To be realistic, social interactions have a vast range and it seems impossible to cover its different dimensions in a single framework, only an attempt can be made to address it broadly and that is what Levinson has done and remained successful to a greater extent.

2.4 Classroom interaction as an Activity type: Classroom interaction is one among the formal institutional interactions/ATs, which has been investigated by different researchers from different perspectives. Most of the studies have tried to accommodate classroom interaction within the broader paradigm of CA and did not place much emphasis on its distinct institutional character. They have made focus on the structural and sequential organization of conversation/interaction (e.g. Kruiningen 2012; Kok 2008; Schegloff 1984; Sack et al. 1974; Schegloff and Sacks 1973 etc.). There are research studies, which have focused on classroom interaction in institutional setting and have shown that there exist a relationship between the aims and goals of institutions and the organization of interactions. In other words the institutionality of interactions is reflected by its structure and organization (Hester and Francis 2001; Johnson 1995; Levinson 1992 etc.). Some of the studies have investigated the specific turn taking pattern of classroom interaction and found it to be asymmetrically dominated by the teacher (e.g. McHoul 1978). Sinclair and Coulthard (1975) moved a step further and have come up with a structural model comprising five stages: Lesson, Transaction, Exchange, Move and Act. They elaborated that classroom interaction follow a specific turn sequence: initiation, response and feedback/initiation response and evaluation (IRF/IRE), which have been endorsed by other studies as well (e.g. Mehan 1979 and Drew 1981). Margutti (2000) explored classroom interaction in connection with problem solving tasks to pin point the co-relation between language use and the structure of the activities. He has emphasised on the constraints that academic setting imposes on the participants. Yeng (2009) conducted another very relevant study where he has outlined some basic strategies used by the participants in institutional interaction.

Keeping in view the fact that institutional interaction, particularly classroom interaction, has been widely studied from different perspectives, but, unfortunately, in Pakistan in reference with Khyber Pakhtunkhwa, AT approach has yet to be properly tried in academic setting. Therefore, the researcher being interested in the area intends to explore it further in his studies a head) deemed it appropriate to investigate it in the current essay.

3. Methodology: In order to conduct a qualitative analysis of classroom interaction, an interaction between a teacher and student of about 7 minutes was recorded and then by following Seedhouse (2004) transcription's conventions, transcribed. An observational analysis of the transcription informed by the basic principles of AT approach (Levinson 1979) and the framework of CA (Sack et al.1974) has been conducted. The interaction was recorded in a BS classroom, Department of English, Abdul Wali Khan University Mardan, Pakistan.

4. Analysis and Discussion: In the current essay a classroom interaction has been investigated from the perspective of AT with emphasis on the role of academic setting. Moreover, attention has also been paid to the limitations and delimitations of the approach. An observational analysis of the data informed by the framework of AT has been carried out, which reveals that the interaction has clearly outlined the main features of AT. The academic setting and institutional character of interaction restrict the interaction to academic sphere, which is reflected by the structure and organization of the interaction as well.

4.1. The role of setting in formal interaction (teacher-student interaction) : Although setting in the sense of a physical designated place is not an essential requirement in all types of institutional interactions, however, in formal institutional interaction setting plays a very important role (Drew and Heritage 1992, p.3). For example, on a dining table the people quite often switch to interactions, which are institutional in character but taking place around a dining table. On the other hand, in formal institutional interactions such as classroom interaction, courtroom interaction etc., setting plays a pivotal role. Here a lot can be predicted about the nature of interaction from its setting even before the commencement of actual interactive process. For example, certain features are associated with academic setting such as students, teachers, classroom and learning, which enable ones to foresee a lot before seeing the actual interactive activity. This lack of consistency regarding the role of setting in all types of interaction can be an advantage in the sense that it refers to the fluidity and flexibility of AT and the uniqueness of each activity in itself but can be a disadvantage as well as it stands in the way of generalisation of the approach as a whole. Analysis of the current data reveals that the academic setting steers and guides the overall interactive process. It restricts the teacher-student interaction in terms of goals, range, tone, structure, jargon etc. The taste of academic setting is almost there in every component of interaction.
including its formal academic goals, specific turn sequence (IRE/IRF), academic jargon, inferencing system and so on.

4.2. Goals orientation and the focus of the interaction: Institutional interactions are goals oriented, which have been endorsed by many research studies (e.g., Sarangi 2011, 2000; Drew and Heritage 1992, etc.). The analysis of data shows that the interaction is fully guided by its institutional goals. The interaction being academic has specific academic goals and the teacher and student have shown a strict adherence to those goals, more evidently brought forth by their formal behaviours, contributions and the overall interactive process. The interaction opens in a formal manner with an adjacency pairs (greeting). The teacher uses an Arabic greeting phrase Asalam-o-Alaikum (line 1) normally used by all the Muslims whenever they come across each other, equivalent to English greeting hello, which is responded by the student with good afternoon.

1. T: (Asalam-o-Alaikum) (you may be safe and sound) everybody (.)
2.  to give you some time for answering your question
3. S: good after noon: how are you sir?

Then in the next turn (line 6) the teacher immediately turns to the main goals of interaction i.e. answering questions and update about assignments. The student being unable to submit the assignment in time offers apology (line 7).

6. T: have you done the work Yasir?
7. S: I am sorry sir but I returned late as you know.

This is followed by a discussion revolves around the same topic till the point (line 14 and 16) when a conflict develops between the personal goal of the student (to get a day extension) and the goal of the activity (to make the student to submit assignment in time) both linked to submission of assignment.

14 S: can i submit it tomorrow morning:
16 T: why don't you do it by now (.) it is 6 o'clock and still (.) have

The interaction from lines 1-44 is strictly oriented to the above mentioned goals. Then from line 45-56, the teacher moves to the inquiry about the second assigned task of reading a book. The student replies positively and then the discussion switches back to assignment submission (line 57). Finally, the student makes the teacher agreed to help him in requesting the head of the department for extension. The analysis shows that the interaction strictly oriented to the main goals of the activity. The Institutionality of the goals and the manner of interaction under the umbrella of academic setting guide the participants/analysts in their reading and analysis of the activity. Although Yueguo (2010, pp. 78) points out that in AT there is a lack of clarity, complexity and multiplicity of goals and over emphasis on constraints etc. but the analysis of the current interaction reveals that the activity has very definite and clear goals, however, one gets an impression of over emphasis on formality and constraints.

4.3. Lexical Choice: It has also been observed that the participants in their interaction have used a specific form of vocabulary items quite different from common conversation. The participants specific roles as teacher and student in an academic context restrict them to the use of academic register (Drew and Heritage 1992, p. 28). The use of lexical items such as question, student, teacher, faculty, read, book, studied, good, application, talented, punctual department, approve, write, strict, policy, guide, authorised, senior, term, seniority, etc. enact an academic world, guiding and taking the analysts to academic setting, where such lexical items are frequently used. This is a very clear illustration of the activity specific constraints manifested through the use of specific vocabulary items. Besides, the teacher choice of using descriptive terms such as personal pronouns like I and we is governed by the institutional roles fitted in academic setting. The analysis reveals that whenever the teacher refers to himself, he uses I but when he talks as representative of the institution, then he invokes his institutional identity by using we.

15. T: no, I am not sure(,) we have policy strictly (.) going by the outline
39. T: it’s not the question of seniority (.) we rotate the office on term basis

The use of I and we also refer to teacher's change of footing driven by the context. It represents the change in frame of the teacher manifests through his change of footing, alignment with the situation, which is a reminiscent of Coffman's concepts of framing and footing (1974, 1981).

4.4. Activity specific context and inference making: The data shows that the participants make remarks, which can only be properly understood when one sees it within the activity specific context and setting. If these
remarks/sentences/phrases are taken out of context, they are likely to be misinterpreted (Sarangi 2000). For instance the teacher in lines 6-7 says:

6. T: have you done the work Yasir?
7. S: I am sorry sir but I returned late as you know.
17. S: that’s too late sir, and you know that we cannot stay out of home

Now, if we take these lines out of context/activity, it can be interpreted in a number of ways. Work is a word that stands for so many things and it can be any kind of work but seeing it in academic context/classroom setting, obviously, it refers to some academic work assigned by the teacher. Moreover, now what is exactly assigned and why the student returns late, is a part of the shared knowledge of the participants. Again in line 7, 10, 17 and 18 there are references to the shared knowledge of the participants. Besides, the analysis also reveals that the participants use some cultural specific phrases, which needs to be seen against the background of activity specific culture for proper understanding and interpretation.

1. T (Asalam-o-Alaikum) (you may be sound and safe) everybody (0.2)
4. S good after noon: how are you sir?
12. S: I swear: by God

The use of phrases like Asalam-O-Alaikum and Swear by God are very commonly used in Pakistani culture in particular and in the Muslim world in general. The former serves as greeting while the latter as endorsement. These inferences evoke the cultural background of the activity and can be termed as contextualization cues (Gumperz 1982). Keeping in view the importance of the activity specific cultural knowledge for understanding/comprehension purposes, a number of scholars/researchers have emphasised that social interaction should be studied along the lines of activity specific culture (e.g. Sarangi 2000; Gumperz 1982; Hymes 1964 etc.).

4.6. Member categorisation/constraints on participants/asymmetry and turn sequence: The analysis reveals that the academic setting and institutional character of the interaction (classroom interaction) restrict the contributions and choice of lexical items of the participants to the academic sphere. The use of academic jargon and the nature of formal discussion takes us to the heart of the activity and make the process of categorisation easy and predictable, e.g. question, student, teacher, faculty, read, book, studied, good, application, talented, punctual department, approve, write, strict, policy, guide, authorised, senior, term, seniority, etc. From the very beginning till the end of the activity both the teacher and student remain very formal and the interaction proceeds in a formal way, which is quite typical of most of the classroom interactions (Sinclair and Coulthard 1975). The student use of the word sir time and again and the teacher calling the student by the first name Yasir, the teacher’s feedbacks, evaluative remarks (e.g. you are lazy, no, good etc.), tone, topic introduction/change (lines: 3 and 45), opening and closing of the interaction (lines: 3.61-56) and the student submissive role (e.g. ok sir etc.) throughout the interaction are indicative of the asymmetry that exists in the roles of teacher and student, quite typical of most of the classroom interactions (McHoul 1978). The analysis also shows that mostly the sequence of interaction has been IRE/IRF and adjacency pairs (question/answer format). But, the dominant pattern remains IRE/IRF (e.g. lines: 45-54), which has also been reported by other studies to be dominantly used in classroom interaction (e.g. Mehan 1979; Sinclair and Coulthard 1975 etc.). The IRE/IRF pattern in itself is asymmetrical. The teacher in most of the cases initiates a move and then after the reply of student gives feedback/evaluation indicative of the typical asymmetrical relationship between teacher and student. In short, the formal institutional character of the activity is predictable and it facilitates both the participants and analysts in categorization of the situation and activity.

The analysis of the current interaction reveals that the formal nature of the activity gives a feel of over formality and over emphasis on constraints and probably it is this formal tone and constraints, which make some of the researchers to call AT an approach emphasising too much on constraints (e.g. Yueguo 2010 etc.).

5. Conclusion: As discussed before, language as social activity or interaction is studied from different perspectives and thus addressed with different names such as social situation, social episode, social occasion, social events, speech events, language game etc. (Yueguo 2010, pp.75-76). The most favourable aspect of the approach i.e. Activity Type, is its flexibility and openness. It is not fully tended either towards the ethnographic paradigm or conversation analysis or any other framework but instead taking certain elements from different frameworks and combining them into its fabric. The ethnographic elements are shown in its partial orientation towards cultural specific activity concept, which necessitate familiarity with the activity specific culture for
understanding and analysis of the activity as brought forth by the current study as well. Similarly, CA’s inclination is shown as its emphasis on the exploration of interaction from internal dimension and activity specific context/inferencing system etc., which is endorsed by the current study as well. Hybridity, which exists between ATs and discourse types, is another element, which can be taken both as an advantage and disadvantage. On the one hand, it refers to the dynamic and flexible aspect of social interaction but on the other hand creates complexity and confusion regarding the placement of discourse types in activity types and vice versa.

In short ATs approach has both advantages and disadvantages but its advantages including openness, durability/dynamism, flexibility etc. outweigh its disadvantages including its lack of explanation regarding different feature and over-emphasis on constraints etc.

REFERENCES

A STUDY ON MIXTURE OF LOMAX AND EXPONENTIATED EXPONENTIAL DISTRIBUTIONS

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ABSTRACT. In this paper an alternative of the commonly used failure/survival distributions is used, i.e., we consider the mixture of Lomax and Exponentiated Exponential distributions. The mixture model occurs when two different causes of failure are present, each with the same parametric form of life time distributions. This new model has decreasing probability distribution and increasing, decreasing, bathtub hazard rate function. Our objectives in this paper are finding some statistical properties of the model and estimating the parameters of the model. First some basic properties of the model are discussed. Then the maximum likelihood method of estimation is used for estimating the parameters of the model. Fisher information matrix of the estimators is also found.

Keywords: Mixture model; Lomax distribution; Exponentiated Exponential distribution; Hazard function; Fisher Information Matrix.

1. Introduction: Failure analysis is concerned with statistical models and methods for analyzing data of times to occurrence of some events. Failure times, measure the time to an event such as failure, death, or some other response. The assumption of normality is not valid in failure analysis, as failure data are generally skewed. The commonly used distributions in failure analysis are exponential, weibull, lognormal, gamma, log-logistic etc. These distributions are based on the assumption of failure due to a single case, in case of more than one reason or competing risk these are useless. In such cases we use the mixture model concept. There are many practical problems in which finite mixtures of probability distributions arise as models of life lengths. Although role of failure rate and mean residual life in modeling life lengths are well established. Finite mixture of distribution has proved to be of considerable interest and importance in recent years. These are used as models in a variety of important situations when we study a non-homogeneous population, when it is not possible to distinguish between units of each type, may be considered as comprising two or more component subpopulation mixed in varying proportion. Mixture of distributions frequently use in life testing, reliability, biological and physical sciences. Some of the most important references that discuses different type of mixture of distributions are by Everitt and Hand (1981) and two survey book by Tittring, Smith and Makov (1985) and Al-Hussani and Sultan (2001). The Lomax distribution can be represented in a number of ways. For example, BalkemaandHaan (1974) show that it arises as the limit distribution of residual life time at great age. The exponentiated exponential family has two parameters (scale and shape) similar to a Weibull or a Gamma family of distribution (D-GUPTA.2001). Therefore the distribution can be used as possible alternative to a Weibull or a Gamma distribution.

2. Mixture Model of Lomax and Exponentiated Exponential Distributions

The mixture of Lomax and Exponentiated Exponential distribution has its p.d.f (probability density function) as;
\[ f(x; a, b, q, l) = p_1 f_1(x; a, b) + p_2 f_2(x; q, l) \]  

(1)

Where \( X > 0, 0 \leq p_1, p_2 \leq 1, p_1 + p_2 = 1 \). \( p_1 \) and \( p_2 \) are the mixing proportions,

\[ f_1(x; a, b) = \frac{ab^a}{(b + x)^{a+1}}, \quad (x > 0, a, b > 0) \]

is the p.d.f of Lomax distribution and

\[ f_2(x; \lambda, \theta) = \theta \lambda e^{-\lambda x} (1 - e^{-\lambda x})^{\theta - 1}, \quad (x > 0, \lambda, \theta > 0) \]

is the p.d.f of Exponentiated Exponential distribution.

By setting \( f_1(x; a, b) \) and \( f_2(x; \lambda, \theta) \) in (1) we get the mixture model of (L) and (EE) distribution;

\[ f(x) = p_1 \frac{ab^a}{(b + x)^{a+1}} + p_2 \theta \lambda e^{-\lambda x} (1 - e^{-\lambda x})^{\theta - 1} \]  

(2)

where \( x > 0 \) and \( a, b, \lambda, \theta > 0, 0 \leq p_1, p_2 \leq 1, p_1 + p_2 = 1 \).

The cumulative distribution function of the mixture of Lomax and Exponentiated Exponential distributions is given by;

\[ F(x; a, b, \theta, \lambda) = p_1 F_1(x; a, b) + p_2 F_2(x; \theta, \lambda) \]  

(3)

\[ F(x) = p_1 b^a \left( \frac{1}{b^a} - \frac{1}{(b + x)^a} \right) + p_2 (1 - e^{-\lambda x})^\theta \]  

(4)

Where \( x > 0, a, b, \lambda, \theta > 0, 0 \leq p_1, p_2 \leq 1, p_1 + p_2 = 1 \)

\( F_1(x, a, b) \) is the c.d.f of Lomax distribution and \( F_2(x, a, b) \) is the c.d.f of Exponentiated Exponential distribution.

Reliability properties

\[ S(x) = 1 - \left\{ p_1 b^a \left( \frac{1}{b^a} - \frac{1}{(b + x)^a} \right) + p_2 (1 - e^{-\lambda x})^\theta \right\} \]  

(5)
Fig. 2 Hazard function of mix model

\[
h(x) = \left[ p_1 \frac{ab^a}{(b + x)^{a+1}} + p_2 \lambda e^{-\lambda x} (1 - e^{-\lambda x})^{\theta - 1} \right] \\
1 - \left\{ p_1 \frac{b^a}{(b + x)^a} - \frac{1}{(b + x)^a} + p_2 (1 - e^{-\lambda x})^\theta \right\} 
\]

(6)

3. Statistical Properties

3.1. rth order Moments

The rth moments about the origin of the mixture of Lomax and Exponentiated Exponential distributions with p.d.f equation (1) is in the form

\[
\mu_r = E(x^r) = \int_0^\infty x^r f(x) \, dx
\]

\[
\mu_r = \int_0^\infty x^r \left[ p_1 \frac{ab^a}{(b + x)^{a+1}} + p_2 \lambda e^{-\lambda x} (1 - e^{-\lambda x})^{\theta - 1} \right] \, dx
\]

From the equation (7) we can find the first four moments and it also allows deriving the following form of statistical measures for the mixture of Lomax and Exponentiated Exponential distributions.

\[
Mean = p_1ab \left( \frac{\Gamma a - 1}{\Gamma a + 1} \right) + p_2\lambda \theta \sum_{i=1}^{\infty} (-1)^i \left( \frac{\theta - 1}{i} \right) \left( \frac{1}{\lambda (i+1)} \right)^2
\]

(5)

\[
Variance = \frac{\sum_{i=1}^{\infty} (-1)^i \left( \frac{\theta - 1}{i} \right)^2}{\sum_{i=1}^{\infty} (-1)^i \left( \frac{\theta - 1}{i} \right)^3} \left( \frac{1}{\lambda (i+1)} \right)^3
\]

(6)

\[
C.V = \sqrt{\left( \frac{2p_1ab \left( \frac{\Gamma a - 2}{\Gamma a + 1} \right) + 2p_2\lambda \theta \sum_{i=1}^{\infty} (-1)^i \left( \frac{\theta - 1}{i} \right) \left( \frac{1}{\lambda (i+1)} \right)^2}{\sum_{i=1}^{\infty} (-1)^i \left( \frac{\theta - 1}{i} \right)^2 \left( \frac{1}{\lambda (i+1)} \right)^2} \right)^2} \times 100
\]

(7)
For Skewness we used $\beta_1 = \frac{\mu_3^2}{\mu_2^3}$, and Kurtosis we used $\beta_2 = \frac{\mu_4}{(\mu_2)^2}$.

### 3.2 Mean Deviation from Mean

The mean deviation from mean is given as:

$$\delta_1(x) = \int_0^\infty |x - \mu| f(x) \, dx$$

$$\delta_1(x) = 2 \left( \mu F(x) - p_{ab} \beta (2, a + 1) + p_2 (1 - e^{-\lambda x})^\theta \right)$$

Where $\mu$ is the mean of the mixture of Lomax and Exponentiated Exponential distributions.

### 3.3 Mean Deviation from Median

$$\delta_2(x) = \int_0^\infty |x - M| f(x) \, dx$$

$$\delta_2(x) = E(x) + 2MF(M) - M - 2 \left( p_{ab} \beta (2, a + 1) + p_2 (1 - e^{-\lambda x})^\theta \right)$$

Where $M$ is the median of the mixture of Lomax and Exponentiated Exponential distributions.

### 3.4 Quantile Function

The quantile function is given by

$$F(x) = q$$

Where $F(x)$ is the c.d.f of the mixture of Lomax and Exponentiated Exponential distributions

$$p_1 - p_b x^a (b + x)^{-a} - (1 - e^{-\lambda x})^\theta = q$$

Its solution for the variable $x$ is not in closed form, which can be obtained by using some suitable software.

If $q=0.5$, then $x$ gives the median.

### 4. Rényi Entropy

Entropy has been used in various situations in science and engineering. The entropy of a random variable $x$ with density function $f(x)$ is a measure of variation of the uncertainty. The Rényi entropy is defined by R.R. Pescin et al (2012)

$$I_{R(\gamma)} = \frac{1}{1-\gamma} \log \left\{ \int f^\gamma(x) \, dx \right\}$$

$$I_{R(\gamma)} = \frac{1}{(\gamma - 1)(\gamma + 1)} \left[ \begin{array}{c} (\gamma + 1) \log \left\{ \frac{p_{ab} x^a (b + x)^{-a}}{p_\lambda (1 + e^{-\lambda x})^\theta} \right\} + p_\lambda (1 + e^{-\lambda x})^\theta \end{array} \right]$$

### 5. The maximum likelihood estimates

The log likelihood function is given as:

$$\log L = \sum_{i=1}^n \log \left\{ p_1 \frac{ab^*}{(b + x)^{a^*}} + p_2 \lambda \theta e^{-\lambda x} \left( 1 - e^{-\lambda x} \right)^{\theta - 1} \right\}$$

To find the parameters, we differentiate eq. (11) with respect to $(a, b, \lambda, \theta)$. 

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\[
\begin{align*}
\frac{\partial \log L}{\partial a} &= \sum_{i=1}^{n} p_i \left[ \frac{ab^x (b + x)^{x+1} \ln (b + x) - (b + x)^{x+1} (ab^x \ln b + b^x)}{(b + x)^{x+1}} \right] \\
\frac{\partial \ln L}{\partial b} &= \sum_{i=1}^{n} p_i \left[ \frac{p_i(a+1)b^y (b + x)^{x} - p_i a^2 b^{x-1} (b + x)^{x+1}}{(b + x)^{x+1}} \right] \\
\frac{\partial \log L}{\partial \lambda} &= \sum_{i=1}^{n} p_i \lambda e^{-\lambda x} \left( \theta - 1 \right) \left( 1 - e^{-\lambda x} \right)^{x-2} + 1 - \lambda \\
\frac{\partial \log L}{\partial \theta} &= \sum_{i=1}^{n} p_i \lambda e^{-\lambda x} \left( \theta - 1 \right) \left( 1 - e^{-\lambda x} \right)^{x-2} \ln \left( 1 - e^{-\lambda x} \right) + \left( 1 - e^{-\lambda x} \right)^{x-3}
\end{align*}
\]

The solution of the four likelihood equations (12), (13), (14), (15) yields the maximum likelihood estimates (MLE) of the four parameters. These equations are in implicit form, so they cannot be solved analytically, statistical software can be used to solve them numerically via iterative method, to obtain the estimates.

6. **Variance covariance matrix:** The variances and covariance of the Maximum Likelihood Estimates \(a, b, \lambda, \theta\) derived by Information Matrix by using expectation of the inverted Information Matrix as;

\[
I_{(a,b,\lambda,\theta)} = -E \begin{bmatrix} I_{11} & I_{12} & I_{13} & I_{14} \\ I_{21} & I_{22} & I_{23} & I_{24} \\ I_{31} & I_{32} & I_{33} & I_{34} \\ I_{41} & I_{42} & I_{43} & I_{44} \end{bmatrix}
\]

\[
I_{(a,\lambda,\theta)} = -E \begin{bmatrix} \frac{\partial^2 \log L}{\partial a^2} & \frac{\partial^2 \log L}{\partial a \partial b} & \frac{\partial^2 \log L}{\partial a \partial \lambda} & \frac{\partial^2 \log L}{\partial a \partial \theta} \\ \frac{\partial^2 \log L}{\partial b \partial a} & \frac{\partial^2 \log L}{\partial b^2} & \frac{\partial^2 \log L}{\partial b \partial \lambda} & \frac{\partial^2 \log L}{\partial b \partial \theta} \\ \frac{\partial^2 \log L}{\partial \lambda \partial a} & \frac{\partial^2 \log L}{\partial \lambda \partial b} & \frac{\partial^2 \log L}{\partial \lambda^2} & \frac{\partial^2 \log L}{\partial \lambda \partial \theta} \\ \frac{\partial^2 \log L}{\partial \theta \partial a} & \frac{\partial^2 \log L}{\partial \theta \partial b} & \frac{\partial^2 \log L}{\partial \theta^2} & \frac{\partial^2 \log L}{\partial \theta \partial \lambda} \end{bmatrix}
\]

The variance is on the main diagonal and covariances are on the off diagonal of the Inverted Information Matrix.

\[
\begin{align*}
\frac{\partial^2 \ln L}{\partial a^2} &= \sum_{i=1}^{d} \frac{d}{d a^2} \left[ \frac{ab^y (b + x)^{x+1} \ln (b + x) - (ab^y \ln b + b^y)}{(b + x)^{x+1}} \right] \\
\frac{\partial^2 \ln L}{\partial b^2} &= \sum_{i=1}^{d} \frac{d}{d b^2} \left[ \frac{p_i(a+1)b^y (b + x)^{x} - p_i a^2 b^{x-1} (b + x)^{x+1}}{(b + x)^{x+1}} \right]
\end{align*}
\]
\[
\frac{\partial^2 \ln L}{\partial \theta \partial \lambda} = \sum_{i=1}^{n} \frac{d}{d \lambda} \left[ p_i \lambda e^{-\lambda x} \left( \ln(1 - e^{-\lambda x}) \right)^{y_i - 1} + 1 - \lambda \right] \left( \frac{\partial^2}{\partial \theta^2} \right)
\]

(19)

\[
\frac{\partial^2 \log L}{\partial \lambda \partial \lambda} = \sum_{i=1}^{n} \frac{d}{d \lambda} \left[ p_i \lambda e^{-\lambda x} \left( \ln(1 - e^{-\lambda x}) \right)^{y_i - 1} + 1 - \lambda \right] \left( \frac{\partial^2}{\partial \theta^2} \right)
\]

(20)

\[
\frac{\partial^2 \log L}{\partial \theta \partial \lambda} = \sum_{i=1}^{n} \frac{d}{d \lambda} \left[ p_i \lambda e^{-\lambda x} \left( \ln(1 - e^{-\lambda x}) \right)^{y_i - 1} + 1 - \lambda \right] \left( \frac{\partial^2}{\partial \theta^2} \right)
\]

(21)

\[
\frac{\partial^2 \log L}{\partial \theta \partial \theta} = \sum_{i=1}^{n} \frac{d}{d \lambda} \left[ p_i \lambda e^{-\lambda x} \left( \ln(1 - e^{-\lambda x}) \right)^{y_i - 1} + 1 - \lambda \right] \left( \frac{\partial^2}{\partial \theta^2} \right)
\]

(22)

\[
\frac{\partial^2 \ln L}{\partial \theta \partial \lambda} = \sum_{i=1}^{n} \frac{d}{d \lambda} \left[ p_i \lambda e^{-\lambda x} \left( \ln(1 - e^{-\lambda x}) \right)^{y_i - 1} + 1 - \lambda \right] \left( \frac{\partial^2}{\partial \theta^2} \right)
\]

(23)

\[
\frac{\partial^2 \ln L}{\partial \theta \partial \theta} = \sum_{i=1}^{n} \frac{d}{d \lambda} \left[ p_i \lambda e^{-\lambda x} \left( \ln(1 - e^{-\lambda x}) \right)^{y_i - 1} + 1 - \lambda \right] \left( \frac{\partial^2}{\partial \theta^2} \right)
\]

(24)

\[
\frac{\partial^2 \ln L}{\partial \theta \partial \theta} = \sum_{i=1}^{n} \frac{d}{d \lambda} \left[ p_i \lambda e^{-\lambda x} \left( \ln(1 - e^{-\lambda x}) \right)^{y_i - 1} + 1 - \lambda \right] \left( \frac{\partial^2}{\partial \theta^2} \right)
\]

(25)

\[
\frac{\partial^2 \log L}{\partial \theta \partial \theta} = \sum_{i=1}^{n} \frac{d}{d \lambda} \left[ p_i \lambda e^{-\lambda x} \left( \ln(1 - e^{-\lambda x}) \right)^{y_i - 1} + 1 - \lambda \right] \left( \frac{\partial^2}{\partial \theta^2} \right)
\]

(26)

\[
\frac{\partial^2 \log L}{\partial \theta \partial \theta} = \sum_{i=1}^{n} \frac{d}{d \lambda} \left[ p_i \lambda e^{-\lambda x} \left( \ln(1 - e^{-\lambda x}) \right)^{y_i - 1} + 1 - \lambda \right] \left( \frac{\partial^2}{\partial \theta^2} \right)
\]

(27)

\[
\frac{\partial^2 \log L}{\partial \theta \partial \theta} = \sum_{i=1}^{n} \frac{d}{d \lambda} \left[ p_i \lambda e^{-\lambda x} \left( \ln(1 - e^{-\lambda x}) \right)^{y_i - 1} + 1 - \lambda \right] \left( \frac{\partial^2}{\partial \theta^2} \right)
\]

(28)

\[
\frac{\partial^2 \log L}{\partial \theta \partial \theta} = \sum_{i=1}^{n} \frac{d}{d \lambda} \left[ p_i \lambda e^{-\lambda x} \left( \ln(1 - e^{-\lambda x}) \right)^{y_i - 1} + 1 - \lambda \right] \left( \frac{\partial^2}{\partial \theta^2} \right)
\]

(29)

\[
\frac{\partial^2 \log L}{\partial \theta \partial \theta} = \sum_{i=1}^{n} \frac{d}{d \lambda} \left[ p_i \lambda e^{-\lambda x} \left( \ln(1 - e^{-\lambda x}) \right)^{y_i - 1} + 1 - \lambda \right] \left( \frac{\partial^2}{\partial \theta^2} \right)
\]

(30)

\[
\frac{\partial^2 \log L}{\partial \theta \partial \theta} = \sum_{i=1}^{n} \frac{d}{d \lambda} \left[ p_i \lambda e^{-\lambda x} \left( \ln(1 - e^{-\lambda x}) \right)^{y_i - 1} + 1 - \lambda \right] \left( \frac{\partial^2}{\partial \theta^2} \right)
\]

(31)

The 100(1-\alpha)\% confidence interval for the parameters a, b, \lambda, and \theta given respectively as; see; Flaih et al (2012).
\[ \hat{a} + Z_a S.E(\hat{a}), \hat{a} - Z_a S.E(\hat{a}) \]  
\[ \hat{b} + Z_a S.E(\hat{b}), \hat{b} - Z_a S.E(\hat{b}) \]  
\[ \hat{\theta} + Z_a S.E(\hat{\theta}), \hat{\theta} - Z_a S.E(\hat{\theta}) \]  
\[ \hat{\lambda} + Z_a S.E(\hat{\lambda}), \hat{\lambda} - Z_a S.E(\hat{\lambda}) \]  

**Conclusion:** Mixture of Lomax and Exponentiated Exponential distributions is used for multiple cause’s failure. Some statistical properties of the model and estimating the parameters of the model are discussed. Maximum likelihood method of estimation is used for estimating the parameters of the model. Fisher information matrix of the estimators is also founded.

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PEDAGOGICALLY EFFECTIVE SUBSET OF C++

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ABSTRACT. Programming languages normally grow in size due to feature multiplicity and backward compatibility. This is the main reason behind the usual practice of teaching a subset of an easy and useful language to the students in an introductory course in computer programming. In this research, we propose a subset of C++ which is based on a conceptual framework to evaluate a First Programming Language (FPL), proposed in our earlier work. We believe that the proposed subset results into a pedagogically more effective C++, and can help improving the teaching and learning experience for a first course in computer programming.

Keywords: First Programming Language, Language Subsetting, computer programming.

1. Introduction. The Programming languages continuously evolve and the size of a language increases by adding new features, and by ensuring the backward compatibility of constructs. This results into feature multiplicity problem\cite{2}, and due to this problem the languages offer a longer learning curve to the students, while at the same time, the instructor is unable to teach whole language. Consequently, the instructor teaches the subset of language in tight schedule of one semester course. These subsets may be used to code every type of problems, but in order to understand the program written by others, a student should learn whole language\cite{1}\cite{4}\cite{6}. There exist no special guidelines which help the course instructors in creating such proper subsets of a programming language. Alternatively, there is another approach usually termed as \textit{pseudo language approach} defined by educators in CS Community. A pseudo language is typically a subsets of an existing mainstream programming language with some extra features, in order to teach the basic programming concepts\cite{8}\cite{7}\cite{9}. The idea of a pseudo language is to create code with as simple syntax as possible. So a student can pay more attention to learning programming concepts, and may focus more on problem solving skills instead of learning typical syntax. This approach has not been so popular, mainly for the reason that it involves some extra features which do not belong to core language. Furthermore, due to these new features it requires a new compiler implementation.

2. Usage of framework to make a language a better FPL. Farooq at el.\cite{1} proposed a comprehensive framework for the assessment of first programing language. This framework consist of technical and environmental features, using these features we can evaluate conformance of programming language toward a healthy first programming language. In order to consolidate an existing language, the proposed framework approach ensures that a language should not be modified so as to add new features in it, which are demanded by the framework, but are not a part of the language. Therefore, no new features should be added to a
language, so as to increase its conformance to the proposed framework. As an example, if a language does not support generic programming, then it should not be modified in such a way that new constructs are added to it, so that it starts supporting generic programming. Certainly, such a change in the language is a considered a major change in existing language and, in general, these types of changes are introduced to the languages in newer versions. So, such improvements in a language are the responsibility of the language designers.

Secondly, improve the language in the following two possible ways: (i) if possible, apply constraints on the usage of existing constructs so as to improve their compliance to the requirements of the proposed framework; (ii) eliminate the constructs which are problematic, and with their elimination the capabilities of a language are not affected. Generally, such constructs are redundant, and cause the problems like safety, readability, reliability, maintainability etc.

Now, the elimination of constructs means that such constructs are no more available to the programmer, and this elimination can be enforced with the help of a stricter pre-processor. Similarly, a smarter pre-processors along with more sophisticated IDEs should be used to apply the constraints on the usage of the language constructs so as to align their usage according to the considerations put forth by the framework [1]. The framework is composed of two main feature sets, namely, technical and environmental features.

Above all, the proposed method for the improvement of an existing language does not add any new features to it, and restricts the usage of conflicting, unsafe, and redundant constructs so as to increase the suitability score of a language based on the proposed framework. It is pertinent to mention here, that the improved version of the language would produce valid code, which can be run by using any compiler of the language. The reason is fairly simple, i.e. the improved language will have fewer constructs than the existing language by applying subsetting and thus, removing the unwanted constructs. Secondly, by applying restrictions on the usage of constructs again allows subsets of the ways a construct can be used in the coding of a language. Therefore, all programs written in the improved language must be valid programs according to the original language as well.

3. Constructs Selection/Rejection of C++ based on Conceptual Framework. This section presents the discussion on the improvement of C++, which is a widely used FPL, so as to increase its conformance to the defined framework. Firstly, this section considers subsetting of C++, where the problematic constructs are eliminated from the targeted newer C++. To this end, we focus on the C++ constructs which are used in an introductory course in computer programming, which include, data type, modifiers, life time, operators, conditional structures, loops, arrays, and functions. As a result in Table 1, all constructs related to the aforementioned topics of the language have been presented under specific construct types, and each for each rejected construct the conflicting feature/sub-features have been mentioned. Resultantly, this section provides us with a cleaner subset of C++ which eliminates some language constructs, and hence, increases its conformance to the proposed framework.

Table 1: Subset of C++
<table>
<thead>
<tr>
<th></th>
<th>short</th>
<th>No</th>
<th>Feature multiplicity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Long</td>
<td>No</td>
<td>Feature multiplicity/Learning Overhead required</td>
</tr>
<tr>
<td>register</td>
<td>No</td>
<td>Feature multiplicity/Learning Overhead required</td>
<td></td>
</tr>
<tr>
<td>const</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life Time</td>
<td>auto (Stack Dynamic)</td>
<td>No</td>
<td>Orthogonality/Consistent Rule</td>
</tr>
<tr>
<td></td>
<td>static local variable</td>
<td>No</td>
<td>Orthogonality/Consistent Rule</td>
</tr>
<tr>
<td>Operators</td>
<td>Arithmetic Binary Operators</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Arithmetic unary Operators (-,+</td>
<td>No</td>
<td>Enforceability of Good Habits</td>
</tr>
<tr>
<td></td>
<td>Arithmetic pre and post increment operators (++,--)</td>
<td>No</td>
<td>Enforceability of Good Habits/No Side Effects</td>
</tr>
<tr>
<td></td>
<td>Relational Operators</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Logical Operators</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assignment Operator (=)</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Compound Assignment Operators (+=,*=/=,%=)</td>
<td>No</td>
<td>Enforceability of Good Habits/No Side Effects</td>
</tr>
<tr>
<td></td>
<td>Bitwise Operators (&lt;&lt;,&gt;&gt;,^,</td>
<td>,&amp;</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>sizeof</td>
<td>No</td>
<td>Enforceability of Good Habits/Side Effects</td>
</tr>
<tr>
<td>Language Constructs (condition)</td>
<td>If-else</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>switch</td>
<td>No</td>
<td>Feature Uniformity/Feature Multiplicity</td>
<td></td>
</tr>
<tr>
<td>Ternary Operators (: ?)</td>
<td>No</td>
<td>Feature Uniformity/Feature Multiplicity Enforceability of Good Habits</td>
<td></td>
</tr>
<tr>
<td>Language Constructs (Loops)</td>
<td>For loop</td>
<td>No</td>
<td>Feature Uniformity/Feature Multiplicity</td>
</tr>
<tr>
<td>While loop</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do-while loop</td>
<td>No</td>
<td>Feature Uniformity/Feature Multiplicity</td>
<td></td>
</tr>
<tr>
<td>Language Constructs (Control jump)</td>
<td>break</td>
<td>No</td>
<td>Feature Uniformity/Feature Exclusiveness Quality Coding Standard</td>
</tr>
<tr>
<td>continue</td>
<td>No</td>
<td>Feature Uniformity/Feature Exclusiveness Quality Coding Standard</td>
<td></td>
</tr>
<tr>
<td>goto</td>
<td>No</td>
<td>Feature Uniformity/Feature Exclusiveness Quality Coding Standard</td>
<td></td>
</tr>
<tr>
<td>return</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arrays</td>
<td>C-Style Array</td>
<td>No</td>
<td>Security/Control over Array Index out of Bounds</td>
</tr>
<tr>
<td></td>
<td>Vector</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>String</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Type Conversion</td>
<td>C Style Explicit Type Casting</td>
<td>No</td>
<td>Security Strongly Typed</td>
</tr>
<tr>
<td></td>
<td>Static_cast</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cont_cast</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>dynamic_cast</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>reinterpt_cast</td>
<td>No</td>
<td>Strongly Typed</td>
</tr>
<tr>
<td>Functions</td>
<td>Parameter passing by reference using pointer</td>
<td>No</td>
<td>Security</td>
</tr>
</tbody>
</table>
Parameter passing by reference using reference variables | Yes |
---|---|
Default value of function arguments | Yes |
Command Line Arguments | Yes |
C Style unspecified number of arguments | No |
Readable Syntax |
Function Overloading | Yes |
Passing Array to functions using Pointers | No |
Security/Array index out of bounds |
Comments
Mega Comment #if
…….#endif | No |
Quality Coding Standard/Comments |
Block Comment /*…………....*/ | No |
Quality Coding Standard/Comments |
End of Line Comment // | Yes |

3. Conclusion. In this work we propose a proper subset of C++ programming language to make it pedagogically effective, easy to learn language. The language improvement process mainly involves i) preprocessing, and ii) subsetting. We propose preprocessing, where certain types of restriction can be applied through rewriting language lexical, syntax and semantic preprocessor. Whereas, we propose the usage of subsetting where we can easily eliminate redundant feature from language due to feature multiplicity. These new constraints employed in the preprocessor shall improve its ability to perform lexical, syntax, and semantic analyses. Therefore, the conformance of C++ to the proposed framework can be improved in many ways using a more sophisticated preprocessor. After that we use these guidelines on C++ for creating proper subset. Every program written using this subset is a valid program of C++.

REFERENCES
WHAT SHOULD BE TAUGHT ABOUT ARRAYS IN CS2?

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ABSTRACT. In this article we have presented a thorough discussion on an important topic, the array which is taught in the fundamental courses in computer programming. To this end, we have presented a taxonomy of arrays based on the following four main topics: i) Memory representations; ii) Mapping Functions; iii) Subscript type; and iv) Abstract data types. We also suggest a flow of teaching these topics to the students. We believe that this effort will be useful for the instructors to plan their courses, and will be a good source of learning in general.

Keywords: Array implementation; teach array; arrays mapping; teaching array; abstract data type; teach array CS1; CS2

1. Introduction. The array is a collection of consecutive elements of the same data type [1] [2] [3] [4] [5] [19]. It is a basic data structure which is introduced to the students in CS1 course, where the idea is to impart the major concepts pertaining to this topic to the students of CS1. The importance of this data structure can be highlighted by the fact that it is used to solve many problems in computer science. Therefore, strong concepts of arrays should be taught by instructors in CS1, whereas detailed implementation and advanced concepts related to the topic should be covered in the CS2 course. The array is a data structure in which a mapping from one finite set (Array indices) to another finite set (array locations) [1] [2] [3] [4] [5]. Every element of the array can be accessed by its index. For example an array of 5 integer variables 10, 20, 30, 40, 50, with indexes 0 through 4, as shown in Figure 1.

<table>
<thead>
<tr>
<th>Index</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data</td>
<td>10</td>
<td>20</td>
<td>30</td>
<td>40</td>
<td>50</td>
</tr>
</tbody>
</table>

Figure 1: Mapping of integer variables onto the indexes of array.

Traditionally, concepts of array are introduced in the computer science undergraduate program curricula in the first course related to the computer programming, generally known as, CS1 [6]. At this stage basic functionality of arrays is introduced to the students such as array declaration, array initialization, getting the contents of the array from console, access any location of an array, assigning some value to an index of the array. The most common types of problems solved in CS1 course are: searching an element in the array, sort the data in an array, sum, and average of the contents of an array etc. The major focus of the instructor is on problem solving through arrays, but technical issues of arrays are not covered in CS1 due to time constraint, course outline and course learning outcomes. Although, these contents give the student a general idea about the data structure and its usage, yet, they are not enough for students to grasp deeper technical concepts of arrays in a comprehensive manner. Therefore, this topic is usually carried forward in CS2 course, and more relevant and advanced concepts related to arrays are recommended to be covered in the CS2 course [6].

In this research, we present a taxonomy of arrays as shown in the Figure 2, based on four major perspectives,
including: i) Memory representations; ii) Mapping Functions; iii) Subscript type; and iv) Abstract data types. We have further explained these high level topics into specialized sub-topics so as to make it convenient for the course instructor to define her course outline while adding the topics related to concepts of array in CS2. These contents should be covered in CS2 by instructors because these are essential concepts for a computer science student in order to solve many computing problems.

The rest of the paper is organized as follows: we present the related work in Section 2. In Section 3, we have discussed and elaborated each major perspective, and its relevant sub-topics. At the end of this section, we have suggested a sequence in which these topics should be covered. Finally, conclusion and future directions have been discussed in Section 4.

2. Related Work. First time array introduced by Konrad Zuse’s Plankalkül in 1945[1][10][11]. The concrete implementation of array found in FORTRAN I compiler developed by Backus [5] and ALGOL 60 compiler. All mainstream programming languages follow the same concept introduced by FORTRAN I and ALGOL. Ventura et al [6] proposes that CS2 is an ideal place for introducing array. They focus on developing abstract data type using an array and also highlights the importance of library collection based on arrays. ACM curriculum 2001, 2008 and 2013[14][15][16] proposes to focus array topics in CS1 and CS2 course. Kent [9] introduces general array implementation of association list (i.e. associative arrays). Lang at el. [8] discussed the importance of ADTs and proposes that it should be introduced in CS2 course at the beginning. Farooq at el. [17] proposes comprehensive framework for the evaluation of the first programming languages and reports safety issues of arrays.

3. Classification of arrays. In following figure taxonomy of arrays is described. There are five classifications of arrays based on subscript binding and array categories.

![Figure 2 Array topics covered in CS2](image)

3.1 Memory. This section describes the classification of arrays according to memory, mapping function, subscript, abstract data types (ADT). There are five types of memory classified as static, stack dynamic, fixed stack dynamic, heap dynamic, and fixed heap dynamic. In mapping function one dimensional and two dimensional arrays i) row major ii) column major and their representation (i.e. jagged and symmetric) were described with examples. In subscript there are two types scalar and associative arrays, scalar further divided into four types i) char, ii) enumeration iii) Boolean iv) integer. In ADT ArrayList, vector and generic ArrayList were presented.

3.1.1 Static arrays. Static arrays are those arrays whose sizes are known or defined at compile time and should not be deallocated until the whole program expires [1][2][3][4][5]. Due to fix the size of the array there is no need for allocation and deallocation required at run time, and also enhances program performance. Consequently, static arrays monopolies memory during processing of program life time, it’s a matter of time/space tradeoff.
For example, C++ supports these type of arrays using syntax, \textit{static int a[10]}. Here Array declared as static occupies memory before execution of the program.

3.1.2 Fixed Stack Dynamic arrays. A fixed dynamic array is one in which size of the array or subscript ranges are fixed (bounded at compile time) and allocation of memory is done on elaboration of declaration statement at execution time Error! Reference source not found.\cite{2} Error! Reference source not found.\cite{4} \cite{5}. Life time exists between block and both subscript range and allocated size remain fixed during life time of array. Size must be known at compile time is a major disadvantage of these types of array and on the other hand, space efficiency is a major advantage (Code Listing 1 line 2). Here (Code Listing 1) array \textit{a} created in memory upon elaboration of declaration statement at line 2 and resides in memory up to line 4 and deallocated from memory after expiry of function block at line 5.

\begin{verbatim}
<table>
<thead>
<tr>
<th>Code Listing 1: Fixed Stack Dynamic arrays in C++</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. void array_function(){</td>
</tr>
<tr>
<td>2.   int a[10];</td>
</tr>
<tr>
<td>3.   for (int i=0;i&lt;10;i++)</td>
</tr>
<tr>
<td>4.     a[i]=i;</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
</tr>
</tbody>
</table>
\end{verbatim}

3.1.3 Stack Dynamic arrays. A stack dynamic array is one in which the size and allocation of memory storage done at execution time Error! Reference source not found.\cite{2} \cite{3} Error! Reference source not found.\cite{4} \cite{5}. Life time exists between block and both subscript range and allocated size remain fixed during the life time of the array. So we have no need to know about the size of array at compile time, but it should be known before use at execution time. Flexibility of programming is a major advantage of these types of arrays. C/C++, C#, Java do not support these types of arrays. ADA support stack dynamic array in a local procedure or block. Here (Code Listing 2) user’s input at line 1 and deallocation of memory at line 5.

\begin{verbatim}
<table>
<thead>
<tr>
<th>Code Listing 2: Stack Dynamic arrays in ADA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. get(index);</td>
</tr>
<tr>
<td>2. declare</td>
</tr>
<tr>
<td>3. myarray:array(1..index) of integer;</td>
</tr>
<tr>
<td>4. begin</td>
</tr>
<tr>
<td>5. end;</td>
</tr>
<tr>
<td>---------------------------------------------</td>
</tr>
</tbody>
</table>
\end{verbatim}

3.1.4 Fixed heap dynamic arrays. A fixed heap dynamic array is similar to fixed stack dynamic arrays except the memory used is heap and both the subscript range and allocation is done at execution time \cite{1} \cite{2} \cite{3} \cite{4} \cite{5}. After allocation at execution time subscript range and allocation is fixed during the life time of the program (Code Listing 3). Here (Code Listing 3) \textit{a}'s range is statically bound & its storage bounding is dynamic. C/C++, C#, Java support these types of arrays. C use malloc and free library functions, while C++ use \textit{new} and \textit{delete} keywords. C# and Java (Code Listing 4) use \textit{new} keyword and deallocation is a responsibility of the programmer.

\begin{verbatim}
<table>
<thead>
<tr>
<th>Code Listing 3: Fixed heap dynamic arrays in C++</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. int *a;</td>
</tr>
<tr>
<td>2. a=new int[20];</td>
</tr>
<tr>
<td>3. a[1]=13;</td>
</tr>
<tr>
<td>4. delete []a;</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>Code Listing 4: Fixed heap dynamic arrays in JAVA</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>1. int size = 10;</td>
</tr>
<tr>
<td>2. int a[ ] = new int [size];</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
</tr>
</tbody>
</table>
\end{verbatim}

3.1.5 Heap dynamic arrays. In heap dynamic arrays, allocation and deallocation of storage can grow or shrink and size can be changed many numbers of times during the whole lifetime of the array \cite{1} \cite{2} \cite{3} \cite{4} \cite{5}. Flexibility of programming is a major advantage of these types of arrays. Perl, Java, C# support these types of arrays. Here (Code listing 5) create an array of five numbers at line 1 and add more elements at line 2. At the end array empty list assigned to array at line 3.

\begin{verbatim}
<table>
<thead>
<tr>
<th>Code Listing 5: Heap Dynamic arrays in Perl</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. @list = (1,2,5,7,9);</td>
</tr>
<tr>
<td>2. Push(@list, 13, 15);</td>
</tr>
<tr>
<td>3. @list= ();</td>
</tr>
<tr>
<td>---------------------------------------------</td>
</tr>
</tbody>
</table>
\end{verbatim}
3.2 Mapping Functions. Arrays are linear data structures either one or many dimensions. In order to access a specific location in the array a mapping function is used [1] [2] [3] [4] [5] [12]. Mapping function can be one dimensional, two dimensional and N-dimensional. There are two types of mapping functions for two to N dimensional array i) row major and ii) column major, support two views (i.e. logical and physical). Physically all arrays are mapped as flattened and mapping function is used to support logically transparent access for multidimensional arrays. Multidimensional arrays are flattened arrays based on row and column major ordering. Most the main stream programming languages support either row major or column major.

3.2.1 One dimensional. To calculate the index of one dimensional array, add the base address with index and multiply size of the data type. E.g. a[2] =10; here base address is a (which is starting index of array) and 2 is index. Baseaddress + index*Sizeoftype

3.2.2 Two dimensional:

Column Major. Column major is a method of flattening array column wise [1] [2] [3] [4] [5] [7]. Column major supported by Pascal, FORTRAN and COBOL. To calculate an index of two dimensional array indexes, formula of column major is:

$$ \text{BaseAddress} + (j*n+i) \times \text{sizeofType} $$

i=row index
j=col index
n= size of total rows in matrix

Example. Suppose an array a consist of two rows and three columns declared in C++. Here we assume baseAddress is 100.

```c
int a[2][3];
```

Array a can be seen as a two dimensional matrix (Logical view) but actually in the memory array is flattened (Physical view) as shown in Figure 2, and Figure 3.

```
10 20 30
40 50 60
```

Figure 1 Logical view

```
10 20 30
40 50 60
```

Figure 2 Physical view

In a typical assignment statement a[0][0]=10 , value 10 will be assigned at 100 address in memory using mapping function 100+(0*2+0)* 4=100.

In another typical assignment statement a[1][0]=40, value 40 will be assigned 104 address in memory using mapping function 104+(0*2+1)*4= 108.

Row Major. Row major is a method of flattening array row wise. Row major supported by C, C++, Java and other mainstream programming languages [1] [2] [3] [4] [5]. To calculate the address of two dimensional array indexes, formula of row major is:

$$ \text{BaseAddress} + (i*n+j) \times \text{sizeofType} $$

i=row index
j=col index
n= size of total columns in matrix

Example. Suppose an array a consist of two rows and three columns declared in C++. Here we assume baseAddress is 100.

```c
int a[2][3];
```

Array a can be seen as a two dimensional matrix (Logical view) but actually in the memory array is flattened (Physical view) as shown in Figure 4 and Figure 5:
In a typical assignment statement \( a[0][0]=10 \), the value 10 will be assigned at 100 address in memory using mapping function \( 100+(0*3+0)*4=100 \).

In another typical assignment statement \( a[1][0]=\), value 40 will be assigned 112 address in memory using mapping function \( 100+(1*3+0)*4=112 \).

### 3.2.3 Three-to-N dimensional array

The Three-to-N dimensional array are also called cube, they represents multi-arrays an array of arrays. Mapping function of these array based on recursively define two-dimensional mapping function. Generic formula for three-to-N dimensional array are given below:

\[
A[D_0][D_1]...[D_{n-1}]
\]

Here \( A \) is an array of \( n \) dimensions. For row major representation, slice along the 1\(^{st}\) dimension to get an array of \( N-1 \) dimensions, continue until you are left with one dimension only. For offset of \( a[D_0][D_1]...[D_{n-1}] \) generic mapping function is written as:

\[
\text{BaseAddress} + ((D_0*D_1+D_1)*D_2+D_2)*D_3+...+D_{n-1})*\text{sizeof}\text{type}
\]

**Example 1.** Suppose a three dimensional array \( a \) consist of 2,3,4 dimensions declared in C++. Here we assume base address is 100 and size of \( int \) data type is 4.

\[
\begin{array}{ccc}
D_0 & D_1 & D_2 \\
\hline
1 & 2 & 3 \\
\end{array}
\]

\[
a[1][2][1]=10;
\]

Formula : \( \text{BaseAddress} + ((1*3+2)*6+3)*7+2) = 184 \)

According to formula: \( 100+((1*3+2)*6+3)*7+2) = 184 \)

**Four dimensional.** We can also calculate the address of four dimensional array indexes, formula is:

\[
\text{BaseAddress} + ((d_0*D_1+d_1)*D_2+d_2)*D_3+...+d_{n-1})*\text{sizeof}\text{type}
\]

**Example 2.** Suppose a four dimensional array \( a \) consist of 2,3,4,5 dimensions declared in C++. Here we assume base address is 100 and size of \( int \) data type is 4.

\[
\begin{array}{cccc}
D_0 & D_1 & D_2 & D_3 \\
\hline
2 & 1 & 3 & 2 \\
\end{array}
\]

\[
a[2][1][3][2]=20;
\]

Formula : \( \text{BaseAddress} + ((d_0*D_1+d_1)*D_2+d_2)*D_3+d_3) =2040 \)

According to formula: \( 100+((2*5+1)*6+3)*7+2) = 2040 \)

It is pertinent to mention here that the representation of arrays can be generalized to any dimensions.

### 3.2.4 Two Dimensional representations

Two Dimensional array represented in two forms i) jagged and ii)
Symmetric. It is a multi-dimensioned array in which all rows and columns have the same number of elements.

Jagged. Jagged (irregular) array has rows with varying number of elements (i.e. columns). Java supports these types of array as shown in code listing 6. The code listing 6 generates a jagged array as shown in fig 6 and code listing 7 generated jagged array in C++.

<table>
<thead>
<tr>
<th>Code Listing 6: Jagged Array</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. int jagged[][]=new int[3][]</td>
</tr>
<tr>
<td>2. jagged[0]=new int[2]</td>
</tr>
<tr>
<td>5. int k=0;</td>
</tr>
<tr>
<td>6. for(int i=0;i&lt;3;i++)</td>
</tr>
<tr>
<td>7. for(int j=0;j&lt;i+1;j++)</td>
</tr>
<tr>
<td>8. jagged[i][j]=k;</td>
</tr>
<tr>
<td>9. k++;</td>
</tr>
<tr>
<td>10. }</td>
</tr>
</tbody>
</table>

![Figure 5: Jagged Matrix]

<table>
<thead>
<tr>
<th>Code Listing 7: Jagged Array in C++</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. int *a[3]</td>
</tr>
<tr>
<td>2. jagged[0]=new int[2]</td>
</tr>
<tr>
<td>5. int k=0;</td>
</tr>
<tr>
<td>6. for(int i=0;i&lt;3;i++)</td>
</tr>
<tr>
<td>7. for(int j=0;j&lt;i+1;j++)</td>
</tr>
<tr>
<td>8. jagged[i][j]=k;</td>
</tr>
<tr>
<td>9. k++;</td>
</tr>
<tr>
<td>10. }</td>
</tr>
</tbody>
</table>

![Figure 6: Symmetric Matrix]

3.3 Classification using Subscript type. Normally access of arrays can be written as arrayName[index] in most of the languages and subscript(index) type is integer, but in general, basically there are three kinds of subscript types i.e. Scalar and associative.

3.3.1 Scalar Type
Any type that has predictable predecessor and successor [1] [2] [3] [4] [5]. For example: integer is scalar type, predecessor of 4 is 3 and successor is 5. Primitive data types except real, float and double are belongs to scalar. For example: In C++, short, int, unsigned int, long, char, Boolean are scalar types. Indexes never are a float value, because if we take range from 2 to 3 then there are many infinite numbers between these two numbers.

Integer. Most common subscript type supported by many mainstream programming languages. C/C++, Java, C# support only integer subscript.

Character. Character data type can also be used for array subscripts.
For example: Pascal support character as subscript data type (Code Listing 8).

```
<table>
<thead>
<tr>
<th>Code Listing 8: Charter type array subscript in Pascal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Program myArray;</td>
</tr>
<tr>
<td>2. var</td>
</tr>
<tr>
<td>3. a:array[‘a’..'d'] of integer;</td>
</tr>
<tr>
<td>4. begin</td>
</tr>
<tr>
<td>5. a[‘a’]=10;</td>
</tr>
<tr>
<td>6. a[‘b’]=20;</td>
</tr>
<tr>
<td>7. a[‘c’]=30;</td>
</tr>
<tr>
<td>8. a[‘d’]=40;</td>
</tr>
<tr>
<td>9. end</td>
</tr>
</tbody>
</table>
```

**Boolean.** Boolean is also a scalar type and hence can be used as array subscript. For example: Pascal support character as subscript data type (Code Listing 9).

```
<table>
<thead>
<tr>
<th>Code Listing 9: Charter type array subscript in Pascal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. program myarray;</td>
</tr>
<tr>
<td>2. var</td>
</tr>
<tr>
<td>3. a:array[false..true] of integer;</td>
</tr>
<tr>
<td>4. begin</td>
</tr>
<tr>
<td>5. a[false]=10;</td>
</tr>
<tr>
<td>6. a[true]=20;</td>
</tr>
<tr>
<td>7. end</td>
</tr>
</tbody>
</table>
```

**Enumeration.** Enumeration are user defined named constants [1] [2] [3] [4] [5] . It is used to enhance the readability of programs. For example enumeration of days declared as:

```
enum day= {Sun, mon, tue, wed, thr, fri, sat};
```

Compiler implicitly assigned the integer value for each enumeration starting from 0 to 6. Code Listing 10 shows access of array with defined enumerations.

```
<table>
<thead>
<tr>
<th>Code Listing 10: Enumeration in C++</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. enum day={sun, mon, tue, wed, thr, fri, sat};</td>
</tr>
<tr>
<td>2. void main() {</td>
</tr>
<tr>
<td>3.   int a[7];</td>
</tr>
<tr>
<td>4.   a[sun]=10;  // assign 10 at location a[0]</td>
</tr>
<tr>
<td>5.   a[mon]=20; //assign 20 at location a[1]</td>
</tr>
<tr>
<td>6.   cout&lt;&lt;a[sun]&lt;&lt;a[mon]; // 10 20</td>
</tr>
<tr>
<td>7. }</td>
</tr>
</tbody>
</table>
```

### 3.3.2 Associative arrays

Associative arrays are collection of unordered locations that are indexed on keys also called hashes [1] [2] [3] [4] [5] . Index for this array is called key, and its type called keytype. The keytype of these arrays can be scalar or string; first time introduced in Perl and shows an implementation of hash table. These arrays are declared by placing keytype within array subscript brackets. E.g. b [“hiiii”] =3. In this assignment statement, 3 placed at value associated with key “hiiii”. PHP, Python and Rubi support these types of arrays. Java, C++ and C# support associative arrays with library classes.

### 3.4 ADT (Abstract data types)

ADT is an abstract data type in which data and related operations are black boxed [1] [2] [3] [4] [5] . Array can be implemented as ADT with name ArrayList. The ArrayList is a collection of elements with all related functions such as sort, copy, clone, search, traverse etc.

#### 3.4.1 Matrix

A two dimensional ADT with row and columns defined by user. Major operations are add, multiply, subtract, inverse, transpose etc. Matrix logically shows two dimensional array but are based on one dimensional array. For Example, Matrix ADT in two dimensional array in C++ with get, print, multiply shown in Code Listing 11.
### Code Listing 11: Matrix ADT in C++

```cpp
#include <iostream>
#include <string>
using namespace std;

class Matrix{
public:
    Matrix() { }
    Matrix(int r, int c){
        row=r;
        col=c;
        p=new int[row*col];
        for (int i=0;i<row*col;i++) p[i]=0;
    }
    void get(){
        for (int i=0;i<row;i++)
            for (int j=0;j<col;j++)
                cin>>(*p+i*col+j);
    }
    void print(){
        for (int i=0;i<row;i++)
            for (int j=0;j<col;j++)
                cout<<(*p+i*col+j)<<" ";
        cout<<endl;
    }
private:
    int *p;
    int row;
    int col;
};

Matrix multiply(Matrix b){
    Matrix temp(row,b.col);
    for (int i=0;i<row;i++)
        for (int j=0;j<b.col;j++)
            for (int k=0;k<col;k++)
                temp.p[i*b.col+j]=temp.p[i*b.col+j]+
                    p[i*col+k]* b.p[k*b.col+j];
    return temp;
}

void main(){
    Matrix a(2,3);
    a.get();
    Matrix b(3,2);
    b.get();
    Matrix c(2,2);
    c=a.multiply(b);
    c.print();
}
```

### 3.4.2 Vector

The vector is an abstract data type implemented with array as data structure. Bjarne Stroustrup Inventor of C++ propose vector instead of using C-style array [13]. The vector is an ADT defined in C++ STL (Standard Template Library) is type safe with array bound checking. C-style array are not type safe with no bound checking [17][18]. The elements of a vector are stored contiguously. Like all dynamic array implementations, vectors have low memory usage and good locality of reference and data cache utilization. Size of a vector can change dynamically, while arrays have fixed size. In java Vectors are synchronized; any method that touches the Vector's contents is thread safe. The reserve space can also be created in vector. Here (code listing 12) of vector in C++ assign 20 at 0 to 9 locations and then print “20” ten times.

```cpp
vector <int> v;
v.assign(10,20);
for(i=0;i<v.size();i++)
    cout<<v[i];
```

### 3.4.3 ArrayList

ArrayList is an abstract data type implemented with array as data structure. Major function supported by ArrayList is add(), get(), isEmpty(), remove(), size(), sort() etc. C++ defines list in its STL (standard template library). Java also supports ArrayList in java.lang package. C# also support array List as predefined ADT. Students can develop their own ADTs in Object oriented languages.e.g in c++ we can create ADT as shown in code listing 13.

```cpp
Code Listing 12: Vectors in C++
1. vector <int> v;
2. v.assign(10,20);
3. for(i=0;i<v.size();i++)
   cout<<v[i];
```
3.4.3.1 Generic ArrayList. The ArrayList is type depended abstract data type and can be used only for types that are hardcoded in ArrayList class. For example in code listing 9, we can use this array list for only integer data type declared at line no 11.

Generic arrayList is type independent ADT. There is no type in class definition, but type should be mentioned by programmer explicitly at declaration time. Compiler generates appropriate code for each given type before execution. Code listing 14 shows generic ArrayList in C++.

<table>
<thead>
<tr>
<th>Code Listing 14: Generic ArrayList in C++</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. template &lt;class T&gt;</td>
</tr>
<tr>
<td>2. class List {</td>
</tr>
<tr>
<td>3. public :</td>
</tr>
<tr>
<td>4. List () {</td>
</tr>
<tr>
<td>5.   bool isEmpty();</td>
</tr>
<tr>
<td>6.   bool isFull();</td>
</tr>
<tr>
<td>7.   int getUse();</td>
</tr>
<tr>
<td>8.   int size();</td>
</tr>
<tr>
<td>9.   bool add(T value, int index);</td>
</tr>
<tr>
<td>10.  bool remove(T &amp;value, int index);</td>
</tr>
<tr>
<td>11.  private:</td>
</tr>
<tr>
<td>12.   T *p;</td>
</tr>
<tr>
<td>13.   int size;</td>
</tr>
<tr>
<td>14.   int use;</td>
</tr>
<tr>
<td>15. }</td>
</tr>
</tbody>
</table>

3.5 Sequence of Instructions

These topics should be taught in the sequence and proposed class hours shown in Table 1. The proposed sequence suggests to teach the topic of arrays by starting with the basic concept of memory representation which should be followed by discussion on the mapping function and its different variants. This should be followed by a discussion of possible subscript types. Lastly, the practical implementation of arrays in the form of various ADTs should be discussed which may include Array Lists, Generic List, Vector, Generic Vector, and Matrix.

<table>
<thead>
<tr>
<th>Table 1: Suggested sequence for teaching the topics related to arrays.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topic</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>Memory Representation</td>
</tr>
<tr>
<td>Mapping Function</td>
</tr>
<tr>
<td>Subscript Type</td>
</tr>
</tbody>
</table>
# Abstract Data Type

| Array List, Generic List, Vector, Generic Vector, Matrix | 3 hours |

## 4. Conclusion and Future directions

In this work, we have presented a taxonomy of arrays which is based on four major heads that include: i) Memory representations; ii) Mapping Functions; iii) Subscript type; and iv) Abstract data types. We have discussed the main topic of arrays under the aforementioned heads with thorough details with the help of theoretical concepts and code listing. We strongly believe that this will be helpful for the course instructors to design and plan their course, whereas, it will be helpful for the students in the learning of this topic. In future, we intend to work on the other data structures in a similar fashion.

## REFERENCES

SURVEY OF DIFFERENT ROUTING PROTOCOLS FOR MOBILE AD HOC NETWORKS

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ABSTRACT. Communication between nodes in Mobile Ad-hoc Networks (MANETs) is one of the challenging tasks because there are no fixed routes among different nodes in mobile ad-hoc network. Routes change continuously due to node mobility in MANET. Communication process is achieved through routing algorithms. Routing algorithms perform best path selection among the available paths in MANET. There are two routing algorithms used for communication which are called flooding and broadcasting. Flooding and broadcasting are the only options available for route discovery between unknown nodes in MANET which create network congestion, delay and reliability problems. Routing algorithms use different approaches to perform efficient communication in MANET which include Proactive Approach, Reactive Approach and Hybrid Approach. In this paper, all those Proactive, Reactive and Hybrid routing protocols that contribute towards the route discovery among different nodes of ad hoc network will be reviewed and critically analyzed to evaluate the performance of different routing protocols that could enable the researchers to keep them under consideration when conducting research.

Keywords: MANET, Routing, Flooding, Broadcasting, Proactive, Reactive, Hybrid

1. Introduction. Information and communication technologies play a vital role in our society and the world becomes a global village in which people are connected from all over the world for sharing different valuable information and other services through different communication devices and equipment including cell phones, laptops, handheld devices and PDA (Personal Digital Assistants). People don’t like to be restricted or bounded to some limited area for its use. Their desire is to use these services everywhere without any pre-existing infrastructure limitations. Mobile ad hoc network is one of the best solutions to all these services. Mobile ad hoc network facilitates users on different platforms for different types of communication like internet surfing, checking emails, guidance maps for tourists, ticket reservation and confirmation without the need of physical infrastructure (Imrich Chlamtac, 2003). Mobile ad hoc network offers several advantages over fixed and cellular networks. First of all mobile means something in motion, means node in mobility; ad hoc means temporary and network means collection of two or more than two devices connected through some physical medium so that they can send and receive messages or share information with each other. It is a self-organizing network where nodes communicate with each other by storing and forwarding the packet by itself in a dynamic fashion. In mobile ad hoc networks, nodes have the ability to forward packets to other nodes because they act as routers and routers have a very clear objective to route the packets in a network. There is no central administration in mobile ad hoc network because it is a temporary network where each node acts independently from other nodes. Nodes in mobile ad hoc networks use RF transceivers as a network interface for communication with each other. Mobile ad hoc network is a temporary communication network in which nodes are connected through wireless links without any pre-existing infrastructure. One of the advantages of mobile ad hoc network over traditional wired networks is the easier setup, installation and deployment. These networks are specifically useful and have high impact in special circumstances like search and rescue operation, hostile operation, recovery during disaster (earth quack, flood), automated battlefield in which tanks and other devices need communication, and during national crises. In all of these situations we don’t need and may have no time to build an infrastructure first and then connect nodes within that
infrastructure because it can happen in such areas where we don’t have the facility of already available infrastructure. Therefore mobile ad hoc network is ideal for such type of environment and saves our time and resources. Mobile ad hoc network is equally important in such an environment where people want to connect with each other despite of constant movement like to get connected with conference rooms, attending classes in electronic classrooms, and to control home appliances while traveling (Giordano, 2002). When nodes in mobile ad hoc networks are connected with each other, the next step is the communication among them. Routing is the process of best path selection in a network from source node to destination node among available routes. Routing is one of the challenging tasks in mobile ad hoc networks because of the dynamic topology, limited bandwidth of the links, energy consumption of nodes and node mobility. Several nodes are entering and leaving the network continuously due to which routes among nodes are changing accordingly and becomes invalid most of the time.

There are two types of protocols on a network layer one is called routing protocols and the other is called routed protocols. Routing protocols perform best path selection among the available paths in the network while routed protocols deliver the packets on that selected bet path. Routing in wired networks is performed by two types of protocols in which one is called distance vector protocols and other is called link state protocol. Distance means the distance of the source node from destination node and vector means the direction. In distance vector protocols nodes only know about its neighbors and communicated with each other on regular intervals that create routing overhead in wired networks. Nodes using distance vector protocols are sending their routing information to each other after specific amount of time whether change occurred or not in that duration. Link state routing protocols perform best routing than distance vector because in this category a node knows about the complete routes in a network. In link state protocols first neighbors table is created after this topology table is constructed and at the end routing table is created.

Link state protocols use a shortest path algorithm for maintaining up to date routes between nodes. The convergence time of link state protocols is lower than distance vector protocols. These protocols do not suit well in mobile ad hoc networks. Limitations of these routing protocols are tried to overcome in mobile ad hoc networks. In mobile ad hoc network for efficient communication between nodes in a dynamic topology routing protocols are divided into three main categories. First category is called reactive routing protocols, second category is called proactive routing protocols and third category is called hybrid routing protocols (Anuj, 2009).
Protocols’ efficiency is measured by using different parameters like energy consumption of nodes, delay, and bandwidth utilization of links, throughput and controlling routing traffic between nodes. Mobile ad hoc networks have limited resources and best utilization of these resources is only possible in the presence of efficient routing protocols. Reactive protocols are also called on demand protocols because they only perform route searching process for destination node when there is a need for the route means when node requests for that route. It starts a discovery request for the route and finishes its job when either it finds the required route or fails when there is no route exists. Proactive protocols are also called table driven or pre-calculated protocols that contain route information of all nodes and maintains that routes all the time through regular periodic intervals. Hybrid routing protocols is dual in nature because it is the composite of both reactive and proactive routing protocols. It combines best features of reactive and proactive protocols. Challenging task for these routing protocols is that when a node tries to send packets for unknown destination. For route discovery process every protocol has its own mechanism, some protocols using flooding, some using broadcasting and some using bordercasting algorithms. Routing protocols must have the capability to respond quickly in timely fashion and adopt efficiently according to the changes in the topology and converge the network in less amount of time (Anuj, 2009) (Conti, 2014).

2. Literature Review. Study has shown that routing protocols for Mobile Ad Hoc Networks are divided into different categories in which most of them are discussed by researchers in (Ayash & Yim, 2012)(Deepadasarathan, 2013) (Malarkodi & Venkataramani, 2009) (Bellur, 1999) and (Lee, Hong, Breyer & Gerla) as

- Proactive routing protocols
- Reactive routing protocols
- Hybrid routing protocols

2.1. Pro-active Routing Protocols. These protocols are also called table driven protocols. Proactive or table driven routing protocols maintain consistent and up to date routes information in their routing table on each node through regular periodic updates (Shah, 2002). It is also called pre-calculated routing protocols because routes to different destinations are already calculated using link state algorithm whether a node requested that route or not. Nodes in mobile ad hoc networks using proactive protocols floods link states information of their all outgoing links to their neighbors periodically. Upon receiving this latest information neighbor nodes update route information in their routing tables. When a sudden change occurs in the routes due to the joining or leaving of node from the network then this change is propagated and every node receives consistent route information. When the size of the mobile ad hoc network is small then it is an efficient method for finding out paths in advance but it has some limitations when
the size of the network is large and node mobility is high. The following protocols belong to the proactive routing scheme.

2.1.1. **Destination-Sequenced Distance-Vector Routing Protocol (DSDV)** (Charles E. Perkins, 1994). It is highly dynamic proactive table driven routing protocol in which every node has a labeled sequence number for each entry that is originated by destination node. Every node has the ability to distribute its distance vector by using broadcast method but broadcast for route discovery is restricted to only one hop in this protocol. New sequence number for each entry in the sender is represented by +1. DSDV consider those paths more preferable that have most recent sequence number.

2.1.2. **Optimized Link-State Routing (OLSR)** (Jacquet, Clausen, & Laouiti, 2001) (Bow-Nan Cheng, 2012). It is a proactive routing protocol which broadcasts its routing table after regular periodic intervals to its neighbors so that neighbors can list up to date routes in their routing tables but this creates a large overhead on a network. Therefore this protocol uses a technique which is called multi point relay (MPRs) for reducing overhead of routing and flooding in the network. In MPRs technique only selected nodes have the permission to perform packet forwarding and flooding. OLSR does not immediately broken links information to the source rather they come to know this in next periodic updates. OLSR gives best results in dense networks and perform routing in minimum delay. Bandwidth utilization of OLSR is high but it is reduced up to some extent by MPRs.

2.1.3. **Wireless Routing Protocols (WRS)** (Zygmunt, 2001). Wireless routing protocol uses proactive approach for finding shortest path from source to destination with minimum delay. WRP convergence time is low and has solved the problem of count to infinity. WRP only forward routing information to its neighbors when it detects a change in the topology or receives an update packet from its neighbor. Each node maintains link cost table, distance table and routing table

2.2. **Reactive Routing Protocols.** Reactive routing protocols (S. R. Biradar, 2008) (Park, 1997) (Jing Feng, 2006) are also called on demand routing protocols which have the benefit of reducing traffic overhead. It performs route discovery on the same time when requested which means that it does not maintain routes in advance to request. Reactive routing protocols perform best utilization of the network bandwidth where links have limited bandwidth and nodes have limited energy. Reactive Protocols take some time by finding the path from source node to destination node upon request before forwarding the packet which is referred to as high latency. Paths are not already available to nodes for immediate transmission. Following are some of the well known reactive protocols

2.2.1. **Ad-hoc On-Demand Distance Vector Routing (AODV)** (Thabotharan Kathiravelu, 2011) (Perkins, 1999). AODV performs next hop routing which is pure on demand reactive routing protocol. Every node maintains a routing table in which only next hop information is stored. It uses flooding for route discovery and route maintenance. AODV does not need to keep the information about neighbor nodes until it is communicated with him. Discovery packets are broadcasted on demand only. It maintains a very clear identification of the local connectivity, neighborhood detection and maintenance of the general topology. AODV has the capability to unicast as well as multicast routing. Sequence numbers are used by AODV for keeping fresh list of routes in the routing table. AODV uses Route Request (RREQ) message for route discovery, Route Reply (RREP) message for sending route response to the source and Route Error (RERR) message for route maintenance. In large network AODV faces some problems due to decrease in some characteristics.

2.2.2. **Dynamic Source Routing (DSR)** (kumar, 2013) (Yingii Zhong, 2003) (David B. Johnson, 1996) (Josh Broch, 1998). DSR is on demand routing protocol of Mobile Ad hoc network in which routes of the source is constructed in the header of the packet. There is a concept of cache which is maintained by each host. Route cache is updated when there is a change in the routes information. When a node wants to communicate with some other nodes then source node first checks destination route in its cache if it is available then send the packet on that path and if it is not available then it broadcast the route discovery request along with source node address, destination node address and a unique number for identification in a network. DSR has access to more routing information as compared to AODV. DSR does not have any mechanism for deleting stale route as compared to AODV. There is no load balancing in DSR and it has less routing load than AODV.
2.2.3. Associativity-Based Routing (ABR) (Toh, 1996) (S. R. Biradar, 2008). ABR is also on demand reactive protocol which considers the link stability by measuring received number of beacons from the other side link which is in general referred to as degree of association stability. When ABR detects that the degree of the link stability is high on one end then on the other end of the link node mobility is lower. ABR discovers the route in the same manner as DSR but it also gets information about association stability in route request packet. It is the responsibility of the destination node to choose best path in the form of association stability. ABR performs local search on receiving route error packet in order to perform repairing. But it sends a route error message to the source if the local search is not successful.

2.3. Hybrid Routing Protocols. Hybrid routing protocol is the composite of proactive and reactive protocols (Huda, 2013). Hybrid protocol combines best features of both proactive protocols and reactive protocols. In hybrid routing protocols each node creates a neighborhood individually for itself which is called routing zone of the node. Hybrid protocol uses proactive part for communication within the neighborhood zone of the nodes and reactive part is used for communication across the zone. Zone actually specifies the premises of nodes within which they can communicate by using proactive part of the hybrid protocols. Proactive part of the hybrid protocols is restricted for communication within the zone. Nodes can only maintain list of routes consistently of the zone to which it belongs. It does not keep route information of the node which is outside of the node zone. Reactive part of the hybrid protocol is responsible for routing outside of node zone when it is required. These two approaches in one protocol gives outstanding benefits in routing process. It reduces the latency of route discovery process and also minimizes the control messages overhead and gives best utilization of the link bandwidth. Hybrid routing protocols provide up to date route information within zone and also provide scalability with minimum searching cost. Hybrid routing protocol form the basis of most common protocol which is called zone routing protocol (ZRP) (Haas, Pearlman & Samar, 2002).

2.3.1. Zone Routing Protocol (ZRP). Zone routing protocol is a hybrid routing protocol which acts in proactive manner in the local neighborhood (node routing zone) maintaining consistent and up to date fresh route information on each node while behave reactively when the destination requested by the node is outside the routing zone of the node (Rave Nayak, 2010) (Natasha Dhiman, 2013). ZRP is invented at Cornell University by Zygmun Haas in 1997 for mobile ad hoc networks. Structure of the ZRP is flat rather than hierarchical because flat structure reduces congestion localization. Neighbor nodes are those nodes which lie inside the area of the routing zone of the source node. Neighbor nodes are at a distance of one hop from the source node. Hope count of the neighbor nodes is normally less than the radius of the routing zone. When the distance of the neighbor nodes is equal to the radius of the source node routing zone then it means that they are lying on the border of this routing node. Zone Routing Protocol first of all performs network division into different sizes of overlapping zones. ZRP provides table driven as well as on demand services to the routing process. Table driven services is applied to the nodes which belongs to routing zone of the node while on demand services is used when the destination node lies outside the routing zone of the requested node. ZRP gives loop free routing to the destination and its structure in flat not hierarchical. In zone routing protocol first a node defines zone size which is specified as number of hops reachable to the node. Actually routing zone is the local neighborhood of the node. For routing zone creation first a node is required to know or find out neighbor nodes in its locality. A node in ZRP (Shafiq, Khan, Sayyed, & Al-Raweshidy, 2012) (Hass, 2001) is said to be the neighbor node if it is one hop away from the zone creating node and direct communication is possible with it. ZRP protocol has divided the routing process into the following two parts.

2.3.1.1 Intrazone routing (IARP) (Sulaiman, 2006). Intrazone routing protocol is that part of the ZRP which is used by nodes for local communication within the zone. It has the capability of supporting unidirectional links without symmetric links because it happens most often when one node X sends data to other node Y but node Y due to low transmission power and interference cannot reach to node X. Responsibility of IARP protocol is only limited to the routing zone size. To limit the route discovery packet to within the zone IARP uses TTL (Time to Live) field set which is decremented by each node for forwarding the packet and the field value reaches to 0 then it is discarded. In IARP each node in the zone has complete route information in their routing table of the zone. There are two methods used for finding out neighbors of the zone first one is by MAC protocol and the second one is by Neighbor Discovery Protocol (NDP). Zone notification message is the broadcast message of every node inside the routing
zone. Zone notification message reaches to every neighbors inside the zone and it is terminated after specific hop count \( K \) where \( K > 1 \). Each node decrements the hop counts by one after receiving and before forwarding to other neighbors. Forwarding of zone notification message is stopped by each node when the value of hop count reaches to zero. Each node stores routes information in the link state table. Each node broadcast this information after specific periodic intervals to its neighbors and they update their routing table accordingly. IARP gives proactive services of ZRP inside the zone which reduces the latency for finding paths because it always maintains paths inside the zone and when a route is requested by any node then it is immediately provided without delay. It uses same mechanism used by DSDV.

### 2.3.1.2 Inter-zone Routing Protocol (IERP) (Loutfi, 2011)

Inter-zone routing protocol is that part of the ZRP which performs routing when the distances of nodes are greater than zone radius. When the destination node lies outside the routing zone of the source node then IARP is unable to route the packet; for this purpose IERP performs on demand routing and can route packets outside the routing zone of the source node. Route discovery is enhanced using IERP which uses the benefits of local connectivity provided by IARP. Routes are discovered by IERP using a technique which is called bordercasting. When node knows that the destination lies outside its routing zone then it forwards the broadcast discovery packet to the border nodes. For bordercasting, IERP uses bordercast resolution protocol (BRP) (Jaiswal, 2010). Bordercast routing protocols only sends route request messages to the peripheral nodes flooded by IERP. BRP constructs bordercast tree from topological information obtained from IARP. Route Request message is sent to the peripheral nodes by IERP using bordercasting techniques. Route Reply is forwarded by the node which contains complete path of the destination to the source node. Route request process of IERP is similar to DSR. There is also an alternate technique available for route reply which is similar to AODV in which information about forward and backward links are stored on each node routing table.

### 2.4. Query control mechanism in ZRP

When routing zone node does not find the destination node in its zone then it broadcasts query to the peripheral nodes, these peripheral nodes set their own routing zone and broadcast the same query message to some of those nodes which already have received the same query and usually every node receives the same query message so many time, this creates big problem in network, to eliminate such problems ZRP used three different mechanisms (Zygmunt, 2001).

#### 2.4.1. Query detection

In MANETs every node broadcasts the query massage. There are two methods i.e. direct scheme which is called Query Detection 1 (QD1) and indirect scheme which is known as Query Detection 2 (QD2) for detection. The direct scheme QD1 is used for broadcast relay, these nodes have the ability to discard the duplicate query while the indirect scheme QD2 is used for Eavesdropping in which existing query node listen the query and discard the duplicate copy of queries which prevents it from reappearing in the existing zone (Zygmunt, 2001).

#### 2.4.2. Early termination

The nodes which already have received the requested query massage see that same message again then it terminates such query or ignores because this request already exists in the routing table of this node (Zygmunt, 2001).

#### 2.4.3. Random query-processing delay

In MANETs there are number of nodes which broadcast the same request query massage to their respective nodes. If two nodes send the same message at the same time then they create problems in the network. In order to reduce this probability of problem a Random Query Processing Delay (RQPD) mechanism is used in which each node waits for a random time to construct the broadcasting tree and early termination in the node. It avoids the additional route discovery delay (Zygmunt, 2001)

### 3. Conclusion and Future Work

Mobile Ad Hoc network performance is mainly dependent on routing. Delay, overhead of the control messages, traffic overhead, utilization of the link’s bandwidth, energy consumption of nodes, delivery ratio of packets and convergence time in Mobile Ad hoc networks are those parameters on which it strongly relies. Ups and downs in these parameters increase and decrease network performance. Routing is one the key factor for efficient communication in Mobile Ad Hoc Networks. Different routing algorithms (Proactive, Reactive and Hybrid) have been used by different researchers to achieve this goal which is discussed in this review paper. Hybrid approach can be considered efficient approach as compared to other traditional routing approaches.
Hybrid approach combines best characteristics of proactive approach and reactive routing approach in one place. Best characteristic of proactive routing approach is minimum latency in routing while reactive routing approach has the advantage of minimizing control messages overhead which is combined by hybrid routing in one protocol called zone routing protocol (ZRP). ZRP restricts the scope of proactive routing protocols to the local neighborhood of the node which has tremendously reduced cost. Proactive task of routing is achieved through IARP (Intra Zone Routing Protocol) of the ZRP and reactive task of routing is accomplished through IERP (Inter Zone Routing Protocol). Hybrid routing algorithms brought enhancement in routing for efficient communication in MANET’s but still needs special attention of the research community for perfection. Main objectives of this review are to evaluate three routing approaches in MANETs and to select best one approach which is efficient in communication. There are still some open problems that needs to be addressed in future for best routing in Mobile Ad hoc networks that includes: Removing of unwanted flooding in the overlapping routing zones of ZRP, maintenance of the routes by using IARP & IERP of zone routing protocol with best convergence time, improved Query – control mechanisms to remove or reduce broadcasting and enhancement in detection query method of BRP such as (DQ1 & DQ2) and avoid same query message by using early termination and random query-processing delay in MANET.

REFERENCES


COMPARATIVE PHYSIOCHEMICAL ANALYSIS OF SEED OIL FROM Silybum marianum, A MEDICINAL PLANT

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2Department of Chemistry, Islamia College University, Peshawar, Pakistan, iqbalh70@yahoo.com
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ABSTRACT. Silybum marianum is an important medicinal plant, belonging to family Composite. This plant is an annual or biennial herb that has been widely used in traditional system of medicine, particularly in treatment of various liver and bile related diseases. Due to its high potency, its use as natural hepatoprotective herbal tonic, and its high pharmaceutical and health demand throughout the world, the present study was aimed to carry out the analysis of different physiochemical parameters including saponification value, ester value, acid value, iodine value, and peroxide value of S. marianum seed oil collected from different areas of Khyber Pakhtunkhwa province of Pakistan and compared with those of sunflower oil.

Keywords: Silybum marianum; hepatoprotective; physicochemical properties; seed oil; Khyber Pakhtunkhwa province.

1. Introduction. The use of medicinal plants for treatment of various diseases is known from ancient times. For instance, Leprosy was treated for the first time with the help of chaulmoogra oil obtained from Hydnocarpus gartn [1]. Now a day’s medicinal plants play a significant role in the field of medicine, therefore they are more focused [2]. A report by World Health Organization showed that 80% population of developing countries depends upon the use of traditional medicines for health care. Modern pharmacopeia proposed that 25% drugs have been derived from plants. Similarly, synthetic drugs are also built on prototype compounds isolated from plants [3].

Silybum marianum commonly known as milk thistle is an annual or biennial herb, belonging to belonging to family Asteraceae (Compsisittae) with stem (20 to 150 cm high), leaves (25 to 50 cm long, 12 to 25 cm wide) and fruit (15 to 20 mm long). The stem branches at the top and reaches a height of 4 to 10 ft. The leaves are wide blotches with veins. The flowers are red purple. The small, hard skinned fruit is brown spotted and shiny. Milk thistle is easy to grow and it matures in less than a year. It is indigenous to North America, Asia minor, Southern Europe and Russian Federation, while it is naturalized to South and North America, Australia, China,
Central Europe and is also found as wild plant in Khyber Pakhtunkhwa and Punjab areas of Pakistan [3,4]. *S. marianum* have two varities on the basis of flower colour, one with white and the other with blue flowering Capitulum. Similar to other vegetable oil seeds, almost 20-30% of *S. marianum* is composed of lipids, the major source of energy in oil [5]. Lipids have two broad categories i.e. fats and oil. Fats and oil are complex triglycerides. They have nutritional as well as industrial importance. They are best solvent for fats soluble vitamin and add flavour to food. Fats/oil provides essential fatty acid such as lenolic acid, lenolenic acid and arachidonic acid not prepared by body. In therapeutics fat/oil are used as drug dispersants. The oil extracted from *S. marianum* contains phospholipids and vitamin E, so it is a good natural source of vitamin E [6-7].

The study was carried out to analyse the physiochemical properties of *S. marianum* seeds oil including saponification value, iodine value, acid value, peroxide value, and ester value with a comparison of blue and white flowering capitulum seeds oil of different areas on the basis of these parameters as well as comparison with those for sunflower oil. Therefore, the aim of this study is to (i) first compare the seed oil of different areas on the basis of these parameters, (ii) comparison between two varieties i.e blue and white flowering capitulum and (iii) and comparison with edible oil (sun flower oil ) to check whether this oil is edible or not.


2.1 Sample collection: The mature seeds of blue and white flowering Capitulum were separately collected from 7 different areas of the Khyber Pakhtunkhwa Province of Pakistan including Karak, Kohat, Peshawar, Swabi, Mardan, Khyber agency, and Nowshehra.

2.2 Extraction of oil: Extraction of oil is explained by the following flow chart.

The acid value, iodine value, peroxide value, ester value and saponification were determined by standard methods of the Association of official analytical chemist.
3. Results and Discussion: The analytical parameters including saponification value, acid value, ester, peroxide and iodine values are depicted in Table 1 and Figure 1 below.

Table 1. Different parameters of *S. marianum* seed oil.

<table>
<thead>
<tr>
<th>Area</th>
<th>Saponification value (mg KOH/g)</th>
<th>Acid value (mg KOH/g)</th>
<th>Ester value (mg KOH/g)</th>
<th>Peroxide value (mg O$_2$/g)</th>
<th>Iodine value (mg I/100g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kohat. B</td>
<td>192</td>
<td>1.4</td>
<td>190.6</td>
<td>16.2</td>
<td>122</td>
</tr>
<tr>
<td>Kohat. W</td>
<td>188.1</td>
<td>1.2</td>
<td>186.9</td>
<td>18</td>
<td>118</td>
</tr>
<tr>
<td>Peshawar. B</td>
<td>198.2</td>
<td>1.1</td>
<td>197.1</td>
<td>14.4</td>
<td>110</td>
</tr>
<tr>
<td>Peshawar. W</td>
<td>196.6</td>
<td>1</td>
<td>195.6</td>
<td>16.2</td>
<td>107.2</td>
</tr>
<tr>
<td>Mardan. B</td>
<td>188</td>
<td>1.3</td>
<td>186.7</td>
<td>18.2</td>
<td>118.4</td>
</tr>
<tr>
<td>Mardan. W</td>
<td>186</td>
<td>1.03</td>
<td>184.9</td>
<td>20.1</td>
<td>114.4</td>
</tr>
<tr>
<td>Nowshera. B</td>
<td>178</td>
<td>1.03</td>
<td>176.5</td>
<td>16.3</td>
<td>116</td>
</tr>
<tr>
<td>Nowshera. W</td>
<td>174</td>
<td>1.4</td>
<td>172</td>
<td>18.2</td>
<td>114.2</td>
</tr>
<tr>
<td>Sawabi. B</td>
<td>196</td>
<td>1.2</td>
<td>194.8</td>
<td>14</td>
<td>110.5</td>
</tr>
<tr>
<td>Sawabi. W</td>
<td>195</td>
<td>1.1</td>
<td>193.9</td>
<td>16.4</td>
<td>109.4</td>
</tr>
<tr>
<td>Karak. B</td>
<td>182</td>
<td>1.6</td>
<td>180.4</td>
<td>12.6</td>
<td>109.4</td>
</tr>
<tr>
<td>Karak. W</td>
<td>178</td>
<td>1.4</td>
<td>176.6</td>
<td>14.4</td>
<td>118.6</td>
</tr>
</tbody>
</table>

Figure 1. Saponification, Ester, Iodine, Acid and Peroxide values of *S. marianum* seed oil of different locality of Khyber Pakhtunkhwa Province in comparison to Sunflower oil.

Table 1 and Figure 1 shows the different parameters of *S. marianum* seed oil. Saponification value of blue flowering Capitulum is different from the white flowering Capitulum as Kohat blue Saponification value is 192 mg KOH/g and Kohat white is 188.1 mg KOH/g, Peshawar blue is 198.2 mg KOH/g and Peshawar white is 196.6 mg KOH/g. Similarly, for all the others parameters (acid value, ester value, peroxide value, and iodine value) there is a difference between the blue and white flowering Capitulum.
Table 1 also shows a difference in all parameters for the different areas. In case of saponification value, the plants seeds collected from Peshawar area have highest saponification value, while those collected from Nowshera have lowest value.

In case of acid value the seeds collected from Karak area have 1.6 mg KOH/g highest acid value while those collected from Peshawar have 1.0 mg KOH/g which was lowest. In case of ester values, plants seeds collected from Peshawar have highest value while those of Nowshera have lowest. Peroxide values of the samples collected from Mardan were highest and Karak were lowest. Likewise, iodine values of the seeds collected from Mardan were highest while those of Peshawar were lowest.

Table 2. Different parameters of the Sunflower oil [8]

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saponification</td>
<td>182.0 (mg KOH/g)</td>
</tr>
<tr>
<td>Acid value</td>
<td>0.092 (mg KOH/g)</td>
</tr>
<tr>
<td>Ester value</td>
<td>182.0 (mg KOH/g)</td>
</tr>
<tr>
<td>Peroxide value</td>
<td>6.0 (mg O/g)</td>
</tr>
<tr>
<td>Iodine value</td>
<td>119.0 (mg I/100g)</td>
</tr>
</tbody>
</table>

A comparison of Table 1 and Table 2 reveals that the three values out of these five i.e. saponification, iodine and ester value were approximately the same, however the acid and peroxide value exhibited a difference.

Figure 2. Comparative % yield of S Marianum seed oil in different localities of KPK

As lipid are the major source of energy, the lipid content of the S. marianum is also different with respect to the different area which may be due to different environmental condition.

3. Conclusion. The present study was an attempt to use the oil of S. marianum as edible oil for domestic purposes. The analysis of the seeds oil of S. marianum collected from different regions in Pakistan was carried out following standard methods. The results showed that physiochemical parameters of the seeds oil exhibited marked difference for the different regions. In addition, the values obtained were compared with the sunflower oil and a significant difference in acid and peroxide value was found. Thus based on these results, it is concluded that the oil cannot be used for edible purpose due to variable physiochemical parameters.
REFERENCES

PROBABILITY COMPUTATION FOR RANK JOINS USING WEIBULL DISTRIBUTION

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ABSTRACT. Ranking queries produce results that are ranked on some pre-computed score. Typically, these queries involve joins, where users are usually interested only in the top-K join results. Current relational query processors handle ranking queries efficiently, however, in case of top-k join queries involving distributed or web based data sources which have a non negligible response time for data extraction, the existing algorithms do not perform well in terms of time taken. Focus of this paper is to compute the join results efficiently, while minimizing the time to compute top-k join results, as well as reducing the number of data extractions from these data sources. As a principal contribution, we present a probabilistic method to compute the top-k join results efficiently, and we have found the initial results of this research promising.

Keywords: Rank Joins, Top-K, Deterministic Reporting, Provisional Reporting, Score Aggregation, Threshold

1. Introduction: People who are using internet for their source of information are used to thinking of web as source of answering their questions. WebPages presenting the information like weather of some certain city or place, a rout to some destination or result of a sports match can be obtained through a keyword search. The simplest solution of a question on internet is that the target webpage which has the answer to our query may be linked by the search engine and showed on the first page of search engine results. A survey of top-k techniques has been presented by Ilyas et. al. (2008) [8] Searching becomes a bit complex when user renders a query whose required information is spanned over multiple WebPages and cannot be obtained from single type of websites.

Example: Which is the best restaurant offering Italian Pizza in nearby locations.

It can be solved by surfing the web multiple times and by collecting the partial results. First of all website containing the best restaurants will be identified and some number of top restaurants will be kept in mind. Secondly we will go for website containing best Italian Pizza and store its top results too on some place. Then finally we will determine which of the results of both searches belong to our nearby locations. While doing so we are performing information integration in our mind specifically, we are applying ranking while extracting restaurants and Italian Pizzas then matching based on nearby locations. The main question is how to get desired results efficiently and produce a specific number of top joined results against a query during the process of getting information from different web sources. This involves various data sources that generally store the data in relational databases, and are accessible through the Web. We go through the existing rank join algorithms, which are also known as top-K join algorithms. Main concern of this research is to compute the join results efficiently, while minimizing the number of data extracts to these data sources.
In addition to this, how to improve the efficiency of the ranking process to report a top join results to the users. In order to accomplish this we use probabilistic method to provisionally report a join result.

Rank joins have a well-known applicability in many domains. As a result several algorithms have been introduced in the literature to process top-K queries efficiently (Bruno et al. 2002 a, b) [5, 6]; Fagin and Wimmers 1997 [7]; Ilyas et al. 2004 [9]; Marian et al. 2004 [10]; Theobald et al. 2004 [11]. A majority of such algorithms involves deterministic measures for processing the data, that is, the algorithm stops when there is an absolute certainty that correct top-K results have been identified. The HRJN is one of these algorithms [9] which is presented by Ilyas et al in 2004. This algorithm has been used as baseline to provisionally report the join result.

2. Problem Settings: This algorithm produces top-K joins from data sources of different set of objects, combined on the join attribute value. The objects in all lists are sorted in descending order of scores. Sequential data access to these objects has been used, here we can say an object at depth d will be retrieved before the object at depth greater than this i.e. d+1. During execution, this algorithm calculates join results and stores them in an output buffer $S_{buff}$. The results are stored in output buffer $S_{buff}$ in descending order of their aggregate score. The size of this output buffer is bounded by the value K, which are the number of required top join results by user. Just like remaining rank join algorithms, HRJN algorithm also asserts an upper bound on the scores of join results that can be created by using score aggregation function with the unseen data. Generally, we call this upper bound as threshold value, and this threshold value decreases with every iteration of extraction of data. The algorithm reveals those join results to the user which have combined score greater than or equal to the threshold.

3. Methodology: Figure 1 shows a snapshot taken during the execution of HRJN on two data sources S1 and S2, for K = 5. Let us assume that the rows with grey background have been extracted, and the rest are yet to be extracted. The score aggregation function in this case is the sum of individual scores. Furthermore, based on this score aggregation function we can see that for S1 potentially maximum possible score of a join result obtained from its unseen data can be 1.97, which is obtained by joining its last observed score with the maximum score of S2. Similarly, for S2 it is 1.96. The maximum of these two is the threshold which in this case is 1.97. Hence, at this stage, the first two join results in $S_{buff}$ can be reported to user as top join results with absolute certainty. However, at the same time we can observe that there are other join results in the output buffer. So, in order to be sure whether these other join results in the output buffer belong to the top-K set or not, we have to wait until the threshold becomes less than or equal to 1.94, i.e. score of the $K^{th}$ join result in the output buffer. This is possible if we extract two more tuples from S1 and one more tuple from S2. However, by analyzing the data shown in Figure 1 we find that even after extracting these tuples we shall not be able to find any new join result having score greater than the $K^{th}$ join result in the buffer.

<table>
<thead>
<tr>
<th>R1</th>
<th>Join Attrib</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1.1</td>
<td>A</td>
<td>1.0</td>
</tr>
<tr>
<td>R1.2</td>
<td>B</td>
<td>0.99</td>
</tr>
<tr>
<td>R1.3</td>
<td>C</td>
<td>0.98</td>
</tr>
<tr>
<td>R1.4</td>
<td>A</td>
<td>0.97</td>
</tr>
<tr>
<td>R1.5</td>
<td>D</td>
<td>0.95</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>R2</th>
<th>Join Attrib</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>R2.1</td>
<td>B</td>
<td>1.0</td>
</tr>
<tr>
<td>R2.2</td>
<td>C</td>
<td>0.98</td>
</tr>
<tr>
<td>R2.3</td>
<td>A</td>
<td>0.97</td>
</tr>
<tr>
<td>R2.4</td>
<td>B</td>
<td>0.96</td>
</tr>
<tr>
<td>R2.5</td>
<td>D</td>
<td>0.94</td>
</tr>
<tr>
<td>R2.6</td>
<td>E</td>
<td>0.92</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>$S_{buff}$</th>
<th>Join Attrib</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1.1–R2.1</td>
<td>B</td>
<td>1.99</td>
</tr>
<tr>
<td>R1.1–R2.3</td>
<td>A</td>
<td>1.97</td>
</tr>
<tr>
<td>R1.3–R2.2</td>
<td>C</td>
<td>1.96</td>
</tr>
<tr>
<td>R1.2–R2.4</td>
<td>B</td>
<td>1.95</td>
</tr>
</tbody>
</table>
Figure 1: Example for rank join computed on some aggregation score function

4. Provisional Reporting of Join Results: By analyzing the data shown in Figure 1 it is found that even after extracting these tuples we shall not be able to find any new join result having score greater than the $K^{th}$ join result in the buffer. Therefore, this can be argued that there should be a method to compute the confidence with which an unreported join result in the output buffer will be a part of the final top-$K$ join results. If this confidence is high enough e.g. greater than 0.80 or 0.90 then this join result can be reported to the user even if its score is below the current threshold value. This will help in reporting join results to the user quickly. Every data fetch from a Web service involves a reasonable time [2], and data extraction $k_2$ time overcomes the time needed to process it. Figure 2 shows such scenario, where join results obtained from joining the data of Web services are kept in the output buffer for a reasonable time before they can be reported. Here, it can be seen that after 2000ms only two join results have been reported, and there is considerable difference between their creation time and deterministic reporting time. In order to report a join result in the output buffer with deterministic guarantees the threshold of the system has to become less than or equal to its score, which is only possible with further data extraction. Therefore, in order to report such join result it is necessary to wait for the amount of time needed for next data extractions to be reported with deterministic guarantee.

That approach which computes the confidence by help of probability is called the provisional reporting of rank join results. The technique provisional reporting is based on measuring of confidence of result and in turn confidence is measured by calculating the probability of candidate result. With which an unreported join result will be among the final top-$K$. The provisional reporting technique reports all such un-reported join results which have probability greater than a given threshold probability. This will help reporting join results in quick time. Several experimental studies have been conducted [1, 3, 4, 11] with various settings of different operating parameters which validate the importance of the proposed approach on both real and synthetic data sets.

<table>
<thead>
<tr>
<th>Join Results</th>
<th>Score</th>
<th>Cr. Time (ms)</th>
<th>Deterministic Reporting Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>$S_{bf}(1)$</td>
<td>1.95</td>
<td>500</td>
<td>1000</td>
</tr>
<tr>
<td>$S_{bf}(2)$</td>
<td>1.92</td>
<td>1000</td>
<td>2000</td>
</tr>
<tr>
<td>$S_{bf}(3)$</td>
<td>1.91</td>
<td>500</td>
<td></td>
</tr>
<tr>
<td>$S_{bf}(4)$</td>
<td>1.89</td>
<td>1500</td>
<td></td>
</tr>
<tr>
<td>$S_{bf}(5)$</td>
<td>1.87</td>
<td>2000</td>
<td></td>
</tr>
<tr>
<td>$S_{bf}(6)$</td>
<td>1.84</td>
<td>500</td>
<td></td>
</tr>
<tr>
<td>$S_{bf}(7)$</td>
<td>1.83</td>
<td>1500</td>
<td></td>
</tr>
<tr>
<td>$S_{bf}(8)$</td>
<td>1.80</td>
<td>2500</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time (ms)</th>
<th>Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>500</td>
<td>1.96</td>
</tr>
<tr>
<td>1000</td>
<td>1.94</td>
</tr>
<tr>
<td>1500</td>
<td>1.93</td>
</tr>
<tr>
<td>2000</td>
<td>1.90</td>
</tr>
<tr>
<td>2500</td>
<td>1.87</td>
</tr>
</tbody>
</table>

Figure 2: Execution of rank join using web services
In the method of provisional reporting we use Weibull probability distribution to compute the confidence of unreported join result in output buffer $s_{buff}$. Amongst large number of continuous probability distribution, we choose Weibull distribution due to its properties which support this type of probability estimation. The Weibull distribution is generally used in survival analysis, in reliability engineering and failure analysis, in industrial engineering to represent manufacturing and delivery times. We make use of this probability distribution for ranking the join results provisionally.

The aggregation scoring function of Rank Join generates score values which are not integers but Real Numbers. These values are continuous in nature, and may marginally differ by points e.g. 1.99, 1.97, 1.84 etc. While handling such type of values we are essentially dealing with the continuous probability distributions, and Weibull is a continuous probability distribution.

**Weibull Probability Distribution:** The random variable of Weibull Distribution has probability density function (pdf) as under:

$$f(x; α, β) = \left\{ \begin{array}{ll}
\frac{α}{β} x^{α-1} e^{-\left(\frac{x}{β}\right)^α} & x ≥ 0 \\
0 & \text{otherwise}
\end{array} \right.$$

Where $α$ and $β$ are positive values and called shape & scale parameters respectively.

Figure 3: Join space of HRJN with web services S1 & S2

Figure 3 which shows the snapshot during the execution of HRJN using two Web services. It shows that we have extracted a certain amount of data from both Web services, and we have computed ‘n’ join results from this data. All the observed join results lie in the region covered by the small square. The diagonal line drawn in the small square depicts the current threshold $τ$. Now, all the join results which are below this diagonal can be deterministically reported by adding them to the top-K result set.

We can see in Figure 3 a join result ‘b’ which has score lower than $τ$. Let us assume that ‘b’ is in the output
buffer at position \( y \); we represent it as \( t(y) \) buff. In order to report \( b \) with deterministic guarantee the threshold should become lower than or equal to the score of \( b \), i.e. \( \tau \leq \sigma(\tau(t(y)\text{buff})) \). We may or may not find some new join results with score greater than \( \sigma(t(y)\text{buff}) \). Hence, the new position for \( b \) in the output buffer will be \( z \), where \( z \geq y \). Figure 3 shows a diagonal line passing through \( b \) which defines minimum threshold value to report \( b \) as a top-K join result deterministically. We can also see two triangles outside the small square, and all the join results which may exist in these two triangular regions will have score greater than \( \sigma(t(y)\text{buff}) \). Let \( p \) denote the probability with which an unseen result will have an aggregate score larger than that of \( \sigma(t(y)\text{buff}) \). For our aggregation function, which is linear addition, \( q \) will be the ratio between the explored area to the total area of data.

Therefore, while computing probabilities for join results in \( S_{\text{buff}} \), when we encounter first join result whose score is less than current threshold. We will compute the probability of the range from that join result to the last reported result. The probability has been computed by the help of probability distribution function (pdf) of Weibull Distribution According to Fig. 1 third result in buffer has score 1.96 which is less than current threshold and has not been reported yet. The probability of occurrence of record between the last reported join result and first unreported join result (in this case 1.97 and 1.96) will be calculated and then this value is multiplied by the ration \( q \) which has already been computed. By doing this we will be calculating the actual probability of occurrence of join result(s) between the given range. Lastly, this resultant value is multiplied to total number of possible join results which could be obtained by joining two data sources. This value gives us a number in terms of join results which may fall between the given range of score, which in this case is \( t(1.96 \leq x < 197) = W \) ( ).

Experiments have been conducted using synthetic data sources. Many different synthetic data sets have been generated using different values of main operating parameters shown in Table 1. We choose to use chunk size (CS) = 10, and response time (RT) = 500ms.

Table 1: Operating Parameters

<table>
<thead>
<tr>
<th>Parameter Name</th>
<th>Symbol</th>
<th>Range of Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probability Distribution</td>
<td>PD</td>
<td>Deterministic reporting, Weibull Distribution</td>
</tr>
<tr>
<td>Number of results</td>
<td>K</td>
<td>5, 10</td>
</tr>
<tr>
<td>Average difference in Creation Time and Provisional Reporting time of each result</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average difference in Creation Time and Deterministic Reporting time of each result</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. Results: It is observed that for various different values of threshold, our proposed method reports the top join results earlier than the deterministic method. The reason is that while experimenting with the synthetic data set top-K results are observed in early stages, but they cannot be reported by the baseline HRJN algorithm, as their score is lower than the threshold. So, in this case, the deterministic approach makes more data extractions to bring threshold down and ensure that there is no other higher scoring join result. Whereas, the probabilistic method reports these top join results earlier and stops.

Table 2: Comparison of Provisional and Deterministic Reporting (K=10)

<table>
<thead>
<tr>
<th>Reporting method</th>
<th>I/O Cost</th>
<th>Time (ms)</th>
<th>Late Reported</th>
<th>Wrong Reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provisional (Weibull)</td>
<td>320</td>
<td>16000</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Deterministic</td>
<td>380</td>
<td>19000</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Figure 4 shows comparison in terms of average time taken to report a tuple after its creation by HRJN and proposed approach for Weibull distribution values. On average, this proposed approach reports a top join result after 2.2 seconds of its creation, whereas, in case of deterministic reporting it takes 4.8 seconds on average. Hence, on average a result is reported provisionally 2.6 seconds before it is reported deterministically using HRJN. It has also been observed during the experiments that there were negligible number of wrong reported join results for all experiments.

6. Conclusion and Future Directions: The need of provisional reporting has been highlighted in this research while using rank joins over the Web based data sources. An approach is provided which is meant to compute the confidence with which a join result may be reported to user in a quick time after it is created. The results show that our proposed algorithm works fine with present parameter settings. It is worthwhile to mention here with this proposed method works very efficiently and refrains from useless computations during the computation of the probability.

In future, we intend to extend this work with more detailed experiments to evaluate its credibility for a larger range of problem settings. Similarly, we would like to incorporate Gamma probability distribution to compute the confidence measure.

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LEGAL AND SOCIAL STATUS OF EUNUCHS AND ITS IMPACTS ON FAMILY LIFE IN PAKISTAN

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ABSTRACT: Legal and social status of eunuchs and its impacts on family life in Pakistan is chosen for this research, not because of any special interest in gender issues but because of inquisitiveness that began when Supreme Court of Pakistan announced that eunuchs was to be registered as a “third sex”. Pakistan as an Islamic republic with legislation that forbids prostitution and homosexuality, lead me to the conclusion that it was a witch hunt. Decision made by Supreme Court of Pakistan was highly celebrated among the eunuch community. My personal interest got deepened as to why such an unconventional group was being recognized in a way which is not yet conceivable in the West. Few of us might not know about eunuchs and about their social and family life we cannot just ignore this segment of our society nor can we just close our eyes upon their rights are and their legal status. I always wondered to who these people are? Why they pretend to be like some which they aren’t, what makes them to be more like women and my curiosity got deepened and they attracted me more to know what is about them in our religion Islam, and this lead me to the conclusion that I should dig each and every fact about them and to share it further.

Key words: Eunuch, Third sex, Legislation, Unconventional group.

Introduction: Hideous parody of women in a freakish style, artificial smile on their face, adorn themselves with heavy makeover, loud lipsticks and blushers, scary wigs, dressed in extremely open and colorful attire, move in unnatural style wearing heals carrying hand bags mostly roam at busy places i.e. markets, signals for their earnings shouting with male voices and the clap with their palms meeting cross way is their identity, they prey on any passerby and the passerby will part them with a cash to get rid of them such person if we find around is called a hijra in our language. Third gender referred as hijra in Pakistani society i.e. eunuch or hermaphrodite. Generally unable to lead normal life most of them are close to male but they referred to be identified as feminine then masculine due to their inclination to lead a life of women. A sociologist describes them as “male minus maleness” and “man plus women”. Eunuchs are at a predicament in Pakistan. They are not accepted by their families in first place and by the society latter. They earn their living by dancing in parties, begging, committing road crimes and by prostitution. They are completely ignored segment by the society and such ignorance towards them is an alarming situation where they are turning to be more rebellious to their selves and to the society. Many grieved issues are arising due to the complete ignorance of eunuchs. Many questions arise in our minds which need to be properly addressed for the betterment of the society and eunuchs too. If eunuchs are not getting proper education how would they be getting proper jobs for their livings? An alarming number of eunuchs are involved in the prostitution, how can we stop them? What steps should be taken by an Islamic state for the uplift of eunuchs? What should be the proper treatment of an ordinary man towards eunuch? Many men are converting themselves to eunuchs due to unemployment, what necessary measurements should be taken to stop this? Answer is polemical as far as Islamic jurisprudence is
concerned. I present an eye bird view of the juristic notion on the problems of eunuch and with specific focus on their social and legal status and critical analysis by examining the underlying reasons over the issues with the purpose of making preliminary concluding remarks.

**Who is a eunuch?** Human species is divided in to two opposing dichotomous sexes, namely male and female. Masculinity and feminity are biological and resultantly each of the sexes is culturally in most of the societies. In the Islamic paradigm “dimorphic gender classification” subsides as a general male and female and reason to this is that in the Islamic view religious rules of conduct weather they are moral or legal are gender oriented. The supreme value is that Muslims must be content with what Allah has created in them and should not tamper with their primary natural created characteristics. The Quran declares;

“God creates what he wills: He gives to whom He wills females, and gives to whom He wills male or He couples them, both males and females and He makes whom he wills barren.”Man made changes to one’s physical appearance is described as following the plan of Satan as it wove to God saying “ I will as surely lead them to astray, and fill them with fancies…and I will command them and they will alter God’s creation.” However, The Quran acknowledges the existence of transsexuals and the Sunnah somewhat characterizes this category and the intersex. While delineating women’s code of ethics for social encounter with the opposite sex, the Quran ordains them to guard their chastity from all males except those within the lawful family circle and male attendants free of sexual desires; they are termed as ghayruli al ibrah. Intersex on the other hand was given recognition in the Sunnah where the Prophet in an answer to a question as to determination of the sex of a child born with two opposite sex organs pointed that the determination of the sex of a child born with two opposite sex organs the deciding factor in such case is by looking at the organ from which it urinates. Accordingly, the traditional Islamic jurisprudence detailed the law and ethics for these abnormal genders by classifying the first type as mukhnanath (effeminate men) and the second as khuntha (hermaphrodite)

**Mukhannath:** Mukhannath literally means a man whose voice tone resembles women’s voice. However, the jurists defined them variously as to Hnanfis and Hanbalismukhannath are of two types one with tender effeminate voice and having no desire towards women and displaying no anti-social behavior. The other ones though physically the same but morally corrupts (fasiq) and thus are barred from interaction with a women. The Shafis and Malikis essentially characterized mukhannath as a man whose voice resembles women’s voice and exhibits several other effeminate features in talking, looking, thinking, and judgment. Thus as he does not have sexual feelings towards women can be regarded as mukhannath of acceptable type for the purpose of social encounter with a women.

However, the jurists formulated set of different laws for the mukhannath of the erotic type based on a Prophetic tradition, “God cursed the males who appear like females and the females who appeared like males”

Unlike popular belief, Islamic tradition does not condemn Mukhannath as it is flexible in dealing with transsexuals of biological type in terms of bodily appearance and voice. Stressing this Ibn Hajarmaintained that the prophetic condemnation is confined o those to those who deliberately deviate from the norm of their set gender to which they are born. It does not extend to those who suffer from gender abnormality instead they are to be adjusted and assigned their gender roles. However, mukhannath was subjected to several legal restrictions including he was prohibited from committing homosexuality, he was not allowed to lead Muslim prayers as he lacked moral rectitude. A cording to some Malikis and Hanblis he was not allowed to mingle with women he was not allowed to marry a women he was not encouraged to accept employment in laugher houses. According to Malikis he was not regarded as a credible witness for the purpose of testifying in the court too.

**Khuntha:** Khuntha on the other hand refers to an intersex or an individual with gender ambiguity upon birth. For instance, ibn-Qadamaha defined a khuntha as “a person with both male and female organs and an opening in place of a sexual organ from which he urinates”. Classical jurists divided them in to two sub categories problematic hermaphrodite (khunthamushkil) and Non problematic hermaphrodite (khunthaghayrmushkil).

Problematic hermaphrodite is a person who would not transform to one of the sexes for instance he continues to urinate both from male and female organ. Whereas non problematic hermaphrodite is one who posses both male and female gentilils capable of being assigned a sex type based on the dominant function of one of the two. For instance he would be considered male if he shows male signs such as urinates from penis, grows facial hairs etc.
**Portrayal of eunuch’s identity:** Gender is pivotal in determining our identity and once people decided what we are they interpret everything we do accordingly in that perspective. While, sex is the biological factor, gender is the psychological and social unit. Yet, there are certain circumstances in which the biological aspects are in contradiction with the social and psychological aspects of gender. These situations dominate the biology in determining gender identity and influencing gender role. Thus people may swerves from any of the normal pattern about sex/ gender is considered to be abnormal. A person who is labeled as such starts finding outlets for expressing abnormal behavior, desires or inclinations as family, friends and society try to find the ways to forcibly stop it. This may lead in forming small organized support groups where they find acceptance and appreciation for their behaviors or identities. Such groups exist all over the world under different titles.

The Qur'an recognizes that some men are "without the defining skill of males" And a eunuch is categorized into three types by Muslim Scholars:¹

1. Biologically and the physical appearance of one who is closer to the males than to the females; such an eunuch will be considered a male.
2. Biologically and bodily appearance of one who is closer to the females than to the males; such a eunuch will be considered a female.
3. One whose gender is difficult to ascertain and they are termed as ‘KhunsaMushkil’ Islamic Jurisprudence.

**Inheritance rights of eunuchs in Islam:** The rights of eunuchs in property distribution are also in accordance with the category i.e.

- A Eunuch with biological and physical appearance of male will receive his inheritance according to the prescribed share of a male heir.
- The organs and the appearance of one who is closer to the females will receive her inheritance according to the prescribed share of a female heir.
- However, ‘KhunsaMushkil' in Islamic Jurisprudence will neither be given property share neither according to the prescribed share of the male heirs (2 times), nor the female heirs (1 time), but rather exactly in between the two: i.e. 1½ times.

Sexual disorder is similar to other physical handicap. Eunuchs are accorded equal rights and social duties in Islam like other beings. However marriage is not possible thus the individual with such disorder must inform his/her prospective spouse about the impotency.

**Eunuch in Pakistan:** Eunuchs are a unique form of gender role in Pakistan where men behaves like women. This term is often attributed as an abuse to a man who is whimsical effeminate ineffective or impotent. In Pakistan they can be categorized as under

- **Hermaphrodite or intersexes:** These are those individuals who are by birth sexually abnormal.
- **Crossdresser and transgender:** Cross dresser or transgender falls in this category called Zanany and those who has done castration they claimed to have female soul inside themselves, their birth prompts them to behave like women.
- **Homosexual and bi sexual:** They falls under the category of eunuchs they for their sexual desires take cover and join the community they are normal men but for the fulfillment of their sexual desires they take refuge and disguised in the eunuch community. Eunuchs are more respectable class then zanany when they feel they being in community has no gratifying experience many few zanany go for castration eunuchs mostly earnings is based on alms and dancing zanany are indulged in theaters or in sex business.
Supreme court of Pakistan monumental decision in favor of eunuchs: In 2009 supreme court of Pakistan and ex chief justice of Pakistan Iftikhar Mohammad Chaudry passed a verdict under which he ordered a survey of eunuchs, citizens of Pakistan but also instructed NADRA National data base and registration authority to issue computerized identity cards to them indicating their status rather than classifying them as man or women. With the issuance of identity cards gender identity will be acknowledged. The court ruling primarily deals with the issue of eunuchs’s community regarding harassment and illegal police detention. It also orders to safe guard health care and their rights to inheritances, due to their gender non conformity which are mostly denied by their families who have rejected them due to their gender non conformity.

Result and Discussion: Like other parts of the world the attitude towards eunuch in Pakistan is also discriminatory in general. Eunuchs are denied of jobs on the basis of their sexual disorder and deprived of the opportunities to take education because of the people ill attitude towards them. So they are denied of health and psychological assistance victims of gender identification problem carry out castration without any medical aid. They indulged in self remedy including hormones without any prescription using silicone injections and extreme auto castration. No one is there to understand them and find solution to their problems. People give away alms its only because of the fear to avoid their curse and get good wishes are cursed down upon. Therefore eunuch community is a cursed one, a large number of eunuch community which are mostly denied by their families.

Preliminary results of my research that 50% of individuals meet them once in a year, 28% meet them once in a month and 12% meet them once in a week while 6% related meeting every day and 2% did not meet them in their life. Talking about them in the family is considered not a good social culture. People detest the idea of having any eunuch in their family some believe children born with sexual deformity should be given eunuch community. In bigger cities the number of eunuch is ever increasing people are apprehensive and reluctant in interacting with them blame them for homosexuality and prostitution. Results of my research shows that people who believe that they are born eunuch has more positive attitude towards eunuch community then the people who belief that they are men behaving like women or both. Finding shows that women has more positive attitude than men. 58% belief that they are eunuch by birth while 42% belief otherwise.

People who knows about the cross dressers within the eunuch community refer to the hadith that those who cross dress are cursed down upon. Therefore eunuch community is a cursed one, a large number of eunuch community comes from allow socio economic class where their behavior can’t be concealed while in upper socio economic class they remained in their house hold and perceive their carriers along their deviant behavior as people of this class do not much bother such oddities. They can afford hormonal therapy and surgeries from abroad but those who being to low socio economic class relies on self remedy and remain embedded in the quagmire for the rest of their lives.

Methodology of Research: This research will be descriptive research based on books and articles related to the eunuchs and their family life Primary sources of Islamic law Holy Quran and Hadith books will be consulted. Secondary sources such as books would be used in this research. The data relevant will be collected from different libraries. Internet source would also be used for the collection of data. New techniques and means are used for the research that will be incorporated in the conduct of study.

Conclusion: We hate some people but we don’t know them and don’t want to know them because we hate them this dictum stands valid for eunuch community. Eunuchs suffer from physiological and sexual disorder which is beyond their control we should understand their condition and abridge the state of doubt and mistrust. No doubt this will help them in their sufferings and make their lives comfortable and productive for society at large.

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FORMAL MODELING OF E-VOTING SYSTEM USING PETRI-NET

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ABSTRACT. Formal specifications are the mathematical model/notations written for the purpose to help the implementation process by analyzing system design and its behavior. Formal Specification ensures that the customer gets what they want. E-Voting also called as Electronic Voting System (EVS) uses electronic means for casting and counting of votes. Election Commission of Pakistan has recently planned for developing and installing E-Voting Machines (EVM) for next general elections in 2018. In this regard, an initial draft related to formal specification of EVS is presented in this paper. 

Keywords: Formal Modeling, Petri Net, E-Voting System.

1. Introduction. A massive criticism has been made on the recent held 2013 general elections in Pakistan. Various incidents of rigging have been reported at different polling station. Some other problems in current voting system like pressurizing voters, shortage of ballot papers and insufficient ballot boxes is also seen in various parts especially rural areas of the country. Experts say that there is no way of making the elections 100 percent rigging and problem free while keeping the same election process. However election system can be improved by introducing automated mechanism for casting and counting. Electronic Voting System (EVS) if introduced would be more cost effective and rigging free as compared to conventional paper based election system. EVS would incur less cost as compared to paper based voting in terms of human resource, magnetic ink, ballot boxes, ballot paper printing, movement across country and other expenses. EVS would be more efficient as counting of votes is in real time and it gives result immediately. EVS would be rigging free as there are no chances of fake votes, invalid entries and post election blame game by political parties.

National Database and Registration Authority (NADRA) has been given charge by Election commission of Pakistan (ECP) to take initiative for the development of Electronic Voting Machine (EVM) which is to be placed on all the polling stations across the country. NADRA has already got the biometric information and electronic thumb verification of all the voters of respective polling stations. However, current political system and ruling lad of the country may not be willing for the deployment of such a transparent system. NADRA may also have to face the challenges of trust building in masses for EVS as a better system. Training of masses and presiding officers for using EVS is also a key issue.

The demand for EVS is not limited to Pakistan only but the same election problems are also reported in many other countries like Afghanistan where same problem of rigging and mismanagement during general elections are reported. Although some EVS systems are developed and are used for electronic polling up to some extent for example in countries like India, the masses are still unable to accept EVS as a complete system. One of the
reasons is that e-voting machines are complex real time embedded system and are poorly understandable by masses of rural areas. Another and most important reason is weak design and implementation which expose EVM to threats and malicious attacks which may lead to forge results, tampering or sometime no result. Formal modeling is hence forth need to ensure the correctness and secure design of EVM which would be equally acceptable for all the stakeholders [1,2].

In this paper petri net based design specification of voter interface for the collection of only valid votes using formal modeling of EVM, its components and critical procedures related to usage are presented.

Rest of the paper is structured as follows. In Section II, we give a brief overview of petri net and its basic concepts. Section III illustrates the specification of E-voting System. Section IV describes formal system modeling of the system. The last section concludes the discussion with the remarks and contribution.

2. Overview of Petri Net. Petri net [3,4] is actually a generic name for a whole class of net-based models which can be divided into three main layers. Elementary Nets or Condition/Event Nets, Place Transition Nets and Colored Petri Nets. Petri net is a graphical and mathematical tool for modeling formal specifications and their verifications to describe the behavior of the system using discrete set of events, places, arcs and tokens.

2.1 Basic Concept of Petri net. Some basic concepts of petri net are discussed here. Most of these concepts are taken from [3,4,5].

A Petri net (Place/Transition Net) is a 5-tuple \( PN = (P, T, F, W, M_0) \) where:

- \( P = \{p_1, p_2, \ldots, p_m\} \) is a finite set of places (passive components) for \( m > 0 \),
- \( T = \{t_1, t_2, \ldots, t_n\} \) is a finite set of transitions (active components) for \( n > 0 \),
- \( F \subseteq (P \times T) \cup (T \times P) \) is a set of arcs (flow/causal relation),
- \( W: F \rightarrow \{1, 2, 3, \ldots\} \) is the weight function,
- \( M_0: P \rightarrow \{0, 1, 2, 3, \ldots\} \) is the initial marking,
- \( P \cap T = \emptyset \) and \( P \cup T \neq \emptyset \),
- \( F \cap (P \times P) = F \cap (T \times T) = \emptyset \).

A PN structure \((P, T, F, W)\) without any initial marking is denoted by \( N \) and PN with specific initial marking is denoted by \((N, M_0)\) also known as marked net.

The preset and post set of a transition \( t \) are respectively:

- \( \bullet t = \{p \in P \mid (p, t) \in F\} \),
- \( t\bullet = \{p \in P \mid (t, p) \in F\} \).

The preset and post set of a place \( p \) are respectively:

- \( \bullet p = \{t \in T \mid (t, p) \in F\} \),
- \( p\bullet = \{t \in T \mid (p, t) \in F\} \).

Let \( S \) is subset of \( P \), then \( \bullet S \) is union of all \( \bullet p \) such that \( p \in S \). a place \( p \) is isolated if \( \bullet p = p\bullet = \emptyset \) and transition \( t \) is isolated if \( \bullet t = t\bullet = \emptyset \).

A net is said to be pure if it has no self-loops, if a net is pure the incidence functions can be represented by a single matrix called the incidence matrix of the net denoted by \( A = A_o - A_i \), where \( A_o \) is output matrix and \( A_i \) is input matrix.

A marking is a vector \( M_t: P \rightarrow N \) that assigns to each place of a P/T net a non-negative integer number of tokens. If place has not been assigned any token then by default \( P \rightarrow N=0 \).
A transition \( t \in T \) is enabled at a marking \( M_i \) if \( t \subseteq M_i \) and \( t \cap M_i = \emptyset \). If \( t \) is enabled at \( M_i \), then \( t \) may fire and remove \( w(p, t) \) from \( M_i \) and adds \( w(t, p) \) to each output place \( p \) of \( t \), where \( w(t, p) \) is the weight of arc from \( t \) to \( p \) and \( w(p, t) \) is the weight of arc from \( p \) to \( t \). Firing of transition yields a new marking \( M_p \) with \( M_p = (M_i - t \cdot) + \cdot t \). We write \( M_i[t]M_p \) to denote that \( t \) may fire at \( M_i \) yielding \( M_p \) or \( t \) has concession at \( M_i \), written as \( t \ con M_i \).

3. Electronic Voting System (EVS). Keeping in view the sensitivity of security of EVS, electronic voting system is divided into four sub-components. The first component is ‘Voter Authentication System’ which will be initiated once the voter has provided his finger prints which will then be verified against the biometric information stored in NADRA database. Second component is ‘Voter Identification System’ which entails that voter is a valid voter of that particular polling station. Third component is ‘Vote Casting System’ which says that if voter is authenticated and identified then he is allowed to cast vote. All candidates will be displayed to him for further selection and casting of vote. Fourth component is ‘Result Generation System’ where once polling is closed the list of polled votes for all the particular candidates would automatically be generated by the RGS with all necessary details. It is important to note that RGS is not a part of EVM although EVM inputs RGS on every successful poll.

![Figure 1. Components of Electronic Voting System](image)

3.1. Flow Chart of EVM. The flow chart in Figure 2 describes the flow of Electronic Voting Machine and its work begins when a user inserts thumb impression using thumb reader. The biometric information stored at NADRA database is then searched against the read thumb impression. If user’s information is not found then control goes back to insert thumb but if the user is authenticated then his name is searched in voting list of that particular polling station. If the match is found then control proceed to cast vote system and voting possibilities are displayed else control goes back to insert thumb. User select candidate from displayed options. If user has not selected the option properly then he will be asked to select again else confirmation of selection is required. User may cancel the confirmation which takes control to displayed voting possibilities. In case of confirmation vote is polled, user name is marked as vote polled in voter list database and voting result database is updated.
4. Petri Net Based Modeling. EVS is an example of security-critical system of which the most critical part is correct voting process, which is responsible for storing the right intentions of the voter [2]. Petri net based model of EVM is shown in Figure 3. Petri net is particular kind of directed bipartite multigraph with an initial state called initial marking, \( M_0 \). An initial marking \( (M_0) \) assigns \( p1 \) and \( p3 \) place a non-negative integer 1 and 5 respectively. Rests of the places are marked as zero while arcs weight is considered as one. States and their changes describe the dynamic behavior of the system and initial marking \( p1p3 \) changed according to enabling and firing rules of transitions. The enabling rule of transition \( t1 \) is enabled as \( p1 \) place contains one token whereas transition \( t3 \) is not enabled as \( p2 \) place does not contain token so transition \( t1 \) fires but \( t3 \) does not fire. The new marking will be \( p2p3 \). In this way starting with the initial marking, transition occurrences yield new markings, which in turn give rise to further transition occurrences. The process continues until the net reaches final marking and after wards no transition yields new marking.

It is to be noted that this formal model can be applied to any particular Electronic Voting Machine after a further analysis. This is because we have modeled the system and defined the properties based on the requirements of like a real system. Petri net model of EVM presented in this paper is developed in Petri net tool version 2.3.1 for Matlab. For understanding of the system, \( p3 \) is assumed to have 5 tokens at the beginning. In real, \( p3 \) is assigned the total number of voters of a particular polling station from voter list data base.
Figure 3. A Petri Net based model of EVM

Description of set of all the places $P = \{p1,p2,p3,p4,p5,p6,p7\}$ and set of all the transitions $T = \{t1,t2,t3,t4,t5,t6,t7,t8,t9\}$ is shown in Table 1.

<table>
<thead>
<tr>
<th>Node</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1</td>
<td>Insertion Possible</td>
</tr>
<tr>
<td>p2</td>
<td>Thumb Reader</td>
</tr>
<tr>
<td>p3</td>
<td>Voter List</td>
</tr>
<tr>
<td>p4</td>
<td>Signal</td>
</tr>
<tr>
<td>p5</td>
<td>Voting Possibilities</td>
</tr>
<tr>
<td>p6</td>
<td>Selected Candidate</td>
</tr>
<tr>
<td>p7</td>
<td>Polled</td>
</tr>
<tr>
<td>t1</td>
<td>Insert Thumb Print</td>
</tr>
<tr>
<td>t2</td>
<td>Invalid Thumb Print</td>
</tr>
<tr>
<td>t3</td>
<td>Check in Voter List</td>
</tr>
<tr>
<td>t4</td>
<td>Not Found in Voter List</td>
</tr>
<tr>
<td>t5</td>
<td>Found in Voter List</td>
</tr>
<tr>
<td>t6</td>
<td>Select Candidate</td>
</tr>
<tr>
<td>t7</td>
<td>Invalid Voting Selection</td>
</tr>
<tr>
<td>t8</td>
<td>Cancellation of Transaction</td>
</tr>
<tr>
<td>t9</td>
<td>Confirm Selected Vote</td>
</tr>
</tbody>
</table>

Table 1: Description of Places and Transitions of EVM

Reachability graph is generated for petri net model given in Figure 3 which is shown in Figure 4. Reachability
graph shows that all the states are reachable from initial marking, however the liveness of the graph is undecided as from \(p1p7\) and \(p2p7\) all other states are not reachable.

**Figure 4. Reachability Graph of Model**

5. **Conclusion.** Election Commission of Pakistan has planned for using Electronic Voting System for next general elections. In this regard most of the work related to data gathering has been completed. NADRA has got all the biometric information of voters and voter lists have been generated. In next phase, NADRA has planned to develop and deploy electronic Voting Machine to all the polling stations of Pakistan. For the success of this project NADRA would ensure that the new system is equally acceptable by all the stakeholders. People of Pakistan may find the system hard to operate and political parties may doubt the system due to prone to attack resulting in change of result and other security and correctness issues. NADRA may resolve the first challenge by excessive training but for others they need formal methods to ensure security and correctness. In this paper petri net based formal modeling of Electronic Voting Machine is presented and reachability graph of net is prepared for showing the liveness of the net. Future work may include the modeling of complex structure of internals of EVS and further improvements.

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MEDIA CONSTRUCTION OF P.T.I: AN ANALYSIS OF PUBLIC PERCEPTION

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ABSTRACT: The study attempts to examine the media construction of Pakistan Tehreek-e-Insaf (PTI) before 2013 elections for National and Provincial assemblies of Islamic Republic of Pakistan by analyzing public perception. 120 questionnaires were distributed among the educated community of Pakistan randomly and were collected back with a response rate of 88.3% (n=120). The age ranged from 20-26 years. SPSS was used to analyze the data collected using regression analysis. Greater response were found in the age ranged from 21-25 years with 72.6%. The value 0.76 near to 1 showed a strong association of mass media with people perception. This study concludes a strong and significant relationship between Television and public perception that Television played its role in building people perception about Pakistan Tehreek-e-Insaf (PTI). For further research, the study suggests to incorporate social influence and the cross comparison of social influence and the role of Television in changing public perception.

Keywords: Media Construction; Social Influence; Role of Television; Public Perception.

Introduction: Most of our perceptions about the events are those which shaped and created by media. Furthermore on daily basis the ratio of these events is very high which is difficult to handle and present it in a proper way. Viewers have no ability or sources to observe these events by their own eyes; they just can make a sense about it as they received the information via media or some others. For example Egypt situation, 9/11 attacks etc. Cliffs described that the effects of Mass Media are very strong on community and society. For this purpose, the media repeats the information to make a picture in the minds of its viewers to believe in its accuracy and reality [1]. In Pakistan viewership of Television (TV) is increasing day by day and according to Gallup Survey Pakistan that in 2004, 63 million people was watching TV but in 2009 it turned to 83 million [2].

Mass Media (TV) and Politics: Existence of Political system and political parties in a region are the basic requirements for democratic System. Every political party has their own goal and objectives, for which they works to achieve it. For this purpose they try to establish communication to public through modern mass media (TV, Radio) and sometimes through direct campaigns i.e., social gatherings, processions, corner meetings etc. to build a better image (Perception) in the minds of the public. Media is sometimes called “Watch Dog” but at the same time it plays a promoting role in the sense of advertisement or propaganda. Media persons try to make influence on its viewers via news selection process [3]. Mass media can influence on individual perception of what other people are thinking [4].
News media has not enough time to cover all those events taking place on international and national as well as on local level. So they push it to gate keeping. Some events are ignored while others are included for coverage. The selection of events and information is based on the personal choice of gate keepers [5]. Gatekeepers are not only the media professionals but also the political personalities and government officials. The ‘embedded journalism’ is also the example of gate keeping theory. Usually, this phenomenon is used by the organizations according to their own policies. They framed the events according to their policy book. Framing process is playing an important role in gate keeping [6]. According to Election Commission of Pakistan there are 162 registered political parties in Pakistan. The Pakistan Tehreek-e-Insaf (PTI) is also one of them and it was established by Imran Khan, a former famous Pakistani cricketer on 25th of April 1996.

Gate keeping strategy was also adopted by Pakistan Tehrek-e-Insaf (PTI) a political party of Pakistan for a couple of years.

**Agenda-setting role of media and Public Opinion:** The influence of media organizations on the perception of its viewers has a very positive co-relation [7].

As it is believed that News influenced and manipulated viewers/listener’s perception. Public’s exposure to electronic media has changed their perception about the developments around them. So this was a survey based study to explore and examined the positive relationship between Television and public political perception.

i. Whether and to what extent electronic media play role to influence on the public perception about Pakistan Tehrek-e-Insaf (PTI)?

ii. Is electronic media has a positive role in Public Perception change/build in Pakistani politics?

**Methodology:** Keeping in view, the nature and requirement of this study survey research was adopted to explore and examine the electronic media. The influence of electronic media on public perception was also carried out about the Pakistan Tehrek-e-Insaf (PTI) and the Pakistani politics.

**Theoretical Framework**

The research is related to the Media Construction of Pakistan Tehrek-e-Insaf (P.T.I): An Analysis of Public Perception. The whole research revolves around the two theories:

1. Perception theory
2. Gate keeping theory

Perception theory illustrates that how a perception of human developed about the environment, which is around him/her. In this process, human is attaining awareness or understanding of the environment by organizing and interpreting sensory information. All perceptions, signals/messages are involved. These signals/messages may be received directly or indirectly (Mass media). Indirect signal/messages go through a process in which a medium are involved. That medium is controlled through its operators (Media owners, journalists, editors etc.). This way forced media professionals to gate keeping. The gate keeping theory illustrates that how the media operators filtered the signals/messages. The pictures of the world are shaped and refined in the way that media operators framed the events (Figure. A).

Since, Perception is not the passive receipt therefore public acts as they perceive in their minds whether they got by direct or indirect signals/messages.

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Study area: Study was carried out in International Islamic University, Islamabad. It is an international University that offers admissions on open merit. That’s why the students of this university belong to the whole world, but only Pakistani students (which represent mostly areas of the country) were involved in the study. Besides academic activities, political activities often seem in the University. There are more than 20 political parties including Jamiat Tulaba Islam (JTI), Islami Jamiat Talaba (IJT), Mustafwi Students Federation (MSF), Anjuman Tulaba-e-Islam (ATI), People Students Federation (PSF) and Tehreek Students Federation (TSF) etc. runs by the students. They are mostly related or working as a sub-party or political activists for other Political Parties like Jamiat Ulama Islam (F), Jumat-e-Islami Pakistan, Pakistan People’s Party (PPP) and Pakistan Tehrek-e-Insaf (PTI) etc. These parties are trying to mold the student’s perception directly. Total 120 students were involved in this study. In which 106 respondents were find valid and 14 were invalid: 11 were female and 03 were male respondents.

Questionnaire design: 19 questions were included in the questionnaire. These questions were about the use of Electronic media, according to their personal observation Media coverage to Pakistan Tehrek-e-Insaf, their level of information about Pakistan Tehrek-e-Insaf, their source of information about Pakistan Tehrek-e-Insaf, participation in Political Campaigns, discussion about Pakistan Tehreek-e-Insaf in their daily life, social order of the respondent and their personal opinion about the political parties in Pakistan in shape of ranking.

Questionnaire administration: Questionnaires were distributed among the students randomly. After filling these questionnaires were collected back. Respondents were also interviewed and their responses were recorded according to Likert Scale and then generated a report. The responses show that how they perceive the phenomenon? SPSS version 16 software was used to analyze the surveyed data.

Likert Scale: Likert scale is considered the most appropriate for measuring the perception of the respondents. Their perception was measured on 5 points as below:
1 = strongly disagree, 2 = disagree, 3 = neutral/not clear, 4 = agree, 5 = strongly agree

Results and Discussion: Human is the basic element of any society. He persuade about the things/events/development around him/her. Many factors are simultaneously affecting on his/her perception i.e., Society, Social Order, Previous Experience, Personal Exposure, Association with a Group and Media Exposure etc. In current age, TV is sharing and distributing the information in the shape of News. The impending growth in News has incited several criticisms. This study was basically conducted to investigate the relationship of TV with the public perception. This study analyzed the role of mass media in public perception about the P.T.I. For this purpose educational institutes were targeted. Questionnaires were distributed among the students randomly. It turns out that youth is more supportive to P.T.I. Questionnaires were then collected back with the response rate of 88.3%. SPSS version 16 software was used for basic demographic, correlation and regression analysis. This showed significant results in the direction of this study purpose.

<table>
<thead>
<tr>
<th>Age</th>
<th>Respondents (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 20 years</td>
<td>20.8%</td>
</tr>
<tr>
<td>21-25 years</td>
<td>72.6%</td>
</tr>
<tr>
<td>&gt;26 years</td>
<td>6.6%</td>
</tr>
</tbody>
</table>

Demographic analysis: A total of 120 questionnaires were distributed among the randomly selected population. Out of which 72.6% respondents were of 21-25 years of age. 20.8% were below the age of 20 years while 6.6% were above 26 years (Table.1). Male participants were 73.6% while 24.6% were female.
Table 2: Correlation Analysis for the significant relationship between variables (n=120)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Standard deviation</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>People perception</td>
<td>4.2</td>
<td>0.783</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Mass media</td>
<td>3.9</td>
<td>0.84</td>
<td>0.76**</td>
<td>1</td>
</tr>
</tbody>
</table>

** Correlation is significant at 0.05 level

Correlation Analysis: Table 2 shows the correlation analysis of the study, to check for significant relationship exists between variables of the study. The mean and standard deviation of people perception is 4.2 and 0.783 respectively, whereas the mean and standard deviation of mass media is 3.9 and 0.84 respectively. The value 0.76 near to 1 means that mass media has strong association with people perception.

Table 3: Regression Analysis for the significant relationship of mass media with the People perception (n=120)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient</th>
<th>t-statistics</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>2.3</td>
<td>1.84</td>
<td>.175</td>
</tr>
<tr>
<td>Mass media</td>
<td>5.3</td>
<td>2.43</td>
<td>0.042</td>
</tr>
</tbody>
</table>

a: dependent variable: people perception

Regression Analysis: Regression analysis was conducted one the basis of correlation results (Table.3). This shows that there is a significant relationship of mass media with the people perception. The p-value of 0.042 which is less than the p-critical value of 0.05, means that mass media is statistically significant. The value of the t-statistics is also giving the same measure, that 2.43 is greater than the critical value of t-statistics i.e., 1.96. This favors the results of p value discussed above. The coefficient value of mass media in this study is 5.3. This shows that one unit change in mass media will bring 5.3 unit change in the people perception in positive direction. Since the value 5.3 is positive.

Conclusion: These results favor null hypothesis which means that there is significantly positive relationship of TV and people perception. In other words, the mass media has significant impact on the public perception. This study is helpful in providing awareness about the TV exposure in different areas of Pakistan and also an understanding the importance of media organization to the political parties. Finally this study argues that actual and factual reporting of the issues and events should be practiced. This study suggests that strong analytical tools and a large sample size should be used in further research.

Research Limitations: The limitations of time and resources did not allow to expand the survey analysis of the study to other universities as well as unable to incorporate other factors i.e., effecting people perception. Furthermore, the study was only based on prime time news headlines news channels. The results were based on the responses of educated persons (students) only; the illiterate person’s participation was absolutely zero.

Future Recommendations: Research in the field of electronic media communication is rapidly growing in the universities of Pakistan. The researchers can explore new dimensions from this study for their own research projects. This study analyzed the effect of electronic media on public perception about politics in Pakistan. Future research can address the content analysis of electronic media and its programs (political talk shows) and its effect on public perception. The rapid growth of television channels provides a base for such research.

REFERENCES


ABSTRACT:
Demographically speaking Christianity is the world’s major religion that is why a huge and enriched literature and study material exists on it. Many Muslim authors and scholars have contributed a lot to the subject. This article presents a brief overview and content review of seven such selected books written in or translated to Urdu language and available in PDF or other electronic formats on the internet for public usage. In addition to review, web links of these books are also provided for the convenience of the readers to study them online or save and download for future use. All these E-books are primarily produced in printed form, written by scholarly persons belonging to ancient and modern times.

**Key Words:** Christianity, Christianity Books, Comparative Religions
1. Islam and Christianity

2. "Islam and Christianity" by Professor Sajjad Mir, translated into Urdu by Professor Muhammad Usman Qureshi.

3. "Islam and Christianity" was published by Dar Al-Salam in 1989, and its Arabic and English editions were published in 1984.

4. Professor Sajjad Mir, a renowned scholar, has written several books on Islamic studies.

5. The book was reviewed in various academic journals and received positive feedback from scholars.

6. The book has been translated into several languages, including Urdu, Arabic, and English.

7. The book is available online at www.only1or3.com.
مین(مقالات)،عباسیت اورپاکستان(مقالات)اورپانچ دیگر فکری مضامین شامل بین کتاب کے مضامین و مقالات کاندزی بینان زیادہ تعلیمی فکری اورتحقیقی اور بعض کاروائی اور تقیدی بے بے کرنے کے لیے دستیاب ہے۔

ضخیم کتاب 12 www.only1or3.com

مدرسہ،بالاکتب کے علاوہ عباسیت کے تکنیقی جائزہ اورطماعی پرمسترلی دیگر برمن اور وارکور صورت مین دستیاب کتب (جویاپوجو اس مقالے مین زیر حبص نہیں لائن جاسکے)مین اسلام اورمسیحیت بجواب کتب مہیج:توضیح القرآن مسیحیت کی عالم غیر اوردن قدرت امرتری(ناشر:نعملی کتب خان،ارڈبازار،لابور،صفحات: 3) اسلام اور عباسیت مولانا محمد حسین کاندلوی(عباسیت سمت مہرائیت کے علمی محاکمہ پرمشتمل،ناشر:کتب خان جمیلی،دار العلم الاسلامیہ، اقبال ثانی لابور،صفحات: 33) اسلام اور عباسیت از مولانا لمک ابول محمد بازی مصحب اور سعید سودری(ناشر:مکتب طیف حیدریہ،ضلع گوجرانوالہ،اشاعت: 12) اسلام اور عباسیت از لیاقت احمدی(ناشر:ادارہ تعلیم ابید)۔

اضافہ: 10) عباسیت از ازہار آحمد(ناشر: نظم و حمایت) خامن خدام القرآن لابور طبع: 10) مسیحیت پرایک تحقیقی نظر از مولانا محمد محمود حضری سیالکوہی(ناشر: اسلامک پاکستان) عباسیت سے اسلام از مولانا امجد نعیمی قادری نقص بندی(ناشر:رحمۃ للعالمین پری کیشن نبشر کالونی،سرگودها صفحات: 3) قابل ذکر ہے۔

یون تومطاعم مسیحیت پر اورنجی میں کئی تعداد میں مطبوعات کتب ومواد دستیاب ہے مین اضافہ پرملی۔ لیکن مذکورہ بالاسطوری کی کیفیت نہیں اور تنقیدی پربرقی صورت مین بہ تجربہ کیوں لائن کے لیے دستیاب نہیں جو مطبوعات کا ساتھی اثر انگیز پربرقی صورت مین بہی استفادہ کیے لائن کے لیے دستیاب نہیں۔ کتب ترجیح دینے و جدید اورنادیونیا پراماکثی مین کم یاب ہے کیا کی بہ اورباقے ادیان بالخصوص عباسیت کے مطالعہ وتحقیق کے لیے شاہقین کے لیے انتباہ کی اب مفیدا پر کتاب اخذ کیے۔
اسلام اور عبادت (مزارفی عثمان رحمه)

عبادت کی؟ (عملا میں جماعت عبادت نہیں ظاہر اور کہ کی ہے عبادت)
حواشي وحوالد جات

حواشي وحوالد جات

حواسگی کے خصائص سہیل (۹۹۹ ستمبین جاں)
زیرمطالعہ کتب اولامطبوعہ، صورت میں شائع بونی بین بعدمین ان کی افادیت کے پہچ نظران کیوں زیرمطالعہ

1 مین انتخابی براب لودکیاگلیا

اسلام اور عہسانتی، الفت عزیز الصمد مترجمین: داکتر لی بی جودبڑی، داکتر ایم انوار الحق عالمی کتاب

2 اسلام اور عہسانتی،الفت عزیز الصمد مترجمین: داکتر لی بی جودبڑی، داکتر ایم انوار الحق عالمی کتاب

3 Web Link: [http://www.mediafire.com/view/?a04z7cwp7a5y57o](http://www.mediafire.com/view/?a04z7cwp7a5y57o)

4 Download Link: [www.kitabosunnat.com/kutub-library.html?task=g&link=6705](http://www.kitabosunnat.com/kutub-library.html?task=g&link=6705)

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7 [www.kitabosunnat.com/kutub-library.html?task=g&link=6127](http://www.kitabosunnat.com/kutub-library.html?task=g&link=6127)

8 [www.kitabosunnat.com/kutub-library.html?task=g&link=6128](http://www.kitabosunnat.com/kutub-library.html?task=g&link=6128)

9 [www.kitabosunnat.com/kutub-library.html?task=g&link=6129](http://www.kitabosunnat.com/kutub-library.html?task=g&link=6129)
FINANCIAL PERFORMANCE OF BANKS IN PAKISTAN: A COMPARATIVE ANALYSIS OF PUBLIC AND PRIVATE SECTORS

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ABSTRACT. This study is an attempt to analyze and compare the financial performance of MCB Bank Ltd and National Bank of Pakistan by applying common size analysis and ratio analysis of financial statement of banks. The secondary data was utilized in analysis of balance sheet, profit and loss statements and other accounting information for the financial year 2005-09. Both banks are very important financial institutions and are providing different facilities to the customers. The banks also give advances to the other industries, companies and other deficit economic units. The results obtained show considerable improvement in financial performance by banks in both public and private sectors. The financial strengths of banks depend on the liquidity, profitability and the ability of banks to pay its debt. All these three have shown improvements, but there are some of the financial indicators of both which still needs improvement like current ratio, return on equity and operating profit of both banks. The common size analysis has also shown improvement on a year to year basis of both banks. The findings of the analysis of financial statements of both banks show that the MCB had utilized their assets more efficiently and effectively as compared to NBP. The return on equity ratio of MCB Bank is much better than National bank of Pakistan for the FY-2005-09 which banks ability to produce earning & therefore is an excellent indicator both of viability & capability of bank management. Both banks must invest more in liquid assets like marketable security and market treasury bills to boost the trust of the depositors of banks. Both banks should also decrease their debt level in order to utilize the funds at the right time and at the right level to enhance their net profits.

Keywords: Common Analysis, Ratio Analysis, Vertical Analysis.

1. INTRODUCTION. Banks are the most important financial institutions which play a vital role throughout the world’s economic system. According to the Chambers English Dictionary the term “Bank” means a “Bench” or an institution or an exchange company. Caircress (1170) defines bank as a financial intermediary and a dealer to create credits. Bank can also be defined as the institution for collection of funds from the community and credit to its customers by way of advances against goods or securities, or by discounting bills for the useful purpose. In other words bank is custodian of wealth and people have faith in it to invest their funds wisely. Furthermore the bank is also responsible for its stock holders being a profit
seeking business and not a community charity which attempts to maximize the wealth of its shareholders. A bank is therefore a person or a corporation which deals in credits i.e. accepts deposits from the public (Surplus economic units) and advances loans to the External parties (deficit economic units).

1.1 Origin of Banking
The origin of the banking is traceable in the ancient Assyrian Babylonian and Athenic but the founders of the banking are to be considered to be the Bank of Venice (1171), the bank of Geneva (1320) and the bank of Amsterdam (1609) (Hussain, 2008)

The system of banking in arose out of the fact that people who possess surplus coins deposited for safe keeping with person in whom they had confidence and to be paid after a period of tie when they might need them. Holders of the coins soon found that it was profitable to lend the money provided loans were repaid before the date when money would be needed. Probably, banks as they were, really given signed paper for their deposits as evidence of the deposit money. Babylonians were so impressed of the temple banking that they drew out a code of ethics for this system.

The Mortins bank in London has been operating in its original site since Sir Thomas Gresham, a goldsmith, established it in 1563 at the site of Gras shops. Banking in America is strongly influenced by it heritages although banks involved professionally, have managed at electrically connected money broker.

1.2 Banking in Pakistan
Prior to pre-partition entire banking sector was dominated by the Hindus. This created a great financial vacuum after shifting of their business to India.

Our great leader, the founder of Pakistan Quaid-e-Azam Muhammad Ali Jinnah, at that critical period, accepted this challenge with faith and confidence on Al-Mighty Allah, and to continue with his mission, invited some of his loyal friends and Muslim business community to share his responsibilities. These friends in response showed great ad Patriotism and offered their services morally and financially as were required for the economic development of the newly formed Muslim State.

1.3 Private Banking in Pakistan
Habib Bank Ltd., which was functioning in Bombay, shifted to Pakistan in the year 1947 and extended its network throughout the country with its head office at Karachi. The Australasian Bank Limited has already been in operation in Pakistan since 1942.

Many of private banks currently under operation in Pakistan are MCB Bank Ltd, United Bank Ltd, Askari Commercial Bank, Allied Bank Ltd, and Bank Al-Falah.

In 1974 nationalization of banking was introduced in which MCB was the first bank which was nationalized but the bank didn’t show a remarkable performance and later on in 1991 it was again privatized.

This study is confined to MCB Bank Ltd and National Bank of Pakistan which are the leading commercial banks of Pakistan.

1.4 Public Sector Banking in Pakistan
The record shows that from 1961 onward the government established the following banks to provide services to the citizens for the proper utilization of the country’s resources in the field of industrial, agricultural, housing, Expert financing, Technical Assistance, saving bank schemes and project financing.

Currently public sector banks in Pakistan are National Bank of Pakistan, Zarai Taraqiati Bank Ltd, Small & Medium Enterprise Bank, Industrial Development Bank and First Women Bank Ltd. In public sector banking this study is confined to National Bank of Pakistan which was established vide NBP Ordinance No. XIX of November 9, 1949 and is listed on all the stock exchanges of Pakistan. The bank is engage in providing commercial banking and related services in Pakistan. The bank is distinguished by the fact that it is not only a scheduled commercial bank but it also plays a role of a development agent, through long term lending to small and medium size business, different project financing and availability of fund in order to meet the requirements of various projects. This study proposes to analyze and compare the financial performance of National Bank of Pakistan and MCB Bank Ltd.

1.5 Nationalization of Banking ACT 1974
According to a policy of the then government the banks were nationalized through an ‘ACT’ called the banks (Nationalization) Act 1974 which came into effect on the 1st day of January 1974. The government also formed Pakistan banking council (defunct) under this Act, to have an effective administrative control for managing the financial and credit policies, introduced from time to time by the central government through Ministry of Finance Commerce State Bank of Pakistan. After nationalization, all the small units, i.e., commerce bank Ltd. Merged with united bank Ltd., standard bank, with Habib bank Ltd., the bank of Bahawalpur with national bank
of Pakistan.

1.6 Revised Privatization Policy
The Nationalization policy of the then government adversely affect the progress of different areas of the banking system which was not a wise step and the banks were directly exposed to government, influences were misused in the domestic as well as the overseas operation; resultantly a great setback to the prevailing economic system.

Realizing the fact, the first two banks which were immediately disinvested and handed over to the private sector are the MCB Bank Ltd, and Allied Bank of Pakistan. The new set-up proved its worth, through high quality service in the market. Moreover, the government also encouraged the establishing of new banks in the private sector, as well as provincial government, to have their own banks which were later on privatized.


1.7 Background of the Study
The economic growth of a country, among many other factors, depends mainly on the strength of the financial institutions operating in a country.

The banking sector is one of the example of financial institutions which can play a very vital role in development of the over all economy of a country.

Banking sector has now become a very challenging field with the advent of modern technology and increased competition.

Whenever an investor invests capital in a company or a firm they can invest by analyzing the cash flow of the firm, dividend declaration, the major sources of funds, and expected projection of the profitability of the funds. The investor can further analyze the expected earning and the stability of these prices in future as well. The investor would be more concerned with the firm’s financial condition as ability of the firms to pay dividends and to avoid bankruptcy. As a result the investor would have a more holistic approach in investing his funds in a more profitable channel.

With in the organization the management do a financial analysis in order better control the over all activities of the firm. The firm while planning for the future need to make an analysis of the firm internal opportunities for an investment and to utilize the assets in such a direction in order to make more profit and to increase the wealth & value of the firm. For this purpose the financial manager needs to do the financial analysis of every entity of the firm. This study evaluates the financial performance of MCB Bank Ltd and National Bank of Pakistan for the financial year 2005-09.

1.8 Justification of the Study
Each & every individual and groups are interested in' the data appearing in a firm's financial statements, including managers, owners, prospective investors, creditors, labour unions, governmental agencies, and the public. These stake holders analyze the current financial position of an organization so as to search out the profitable new financial vistas for future. For this purpose the analysis of financial performance can be done by using the ratio analysis and proper interpretation of each and every ratio.

It is believed that findings of the study will help to improve the financial management and performance of the both of the banks that are operating i.e., National Bank of Pakistan and MCB Bank LTD.

The successful completion of this study will be more helpful in understanding the comparison of performance of both the public & private sectors. This research is also helpful in providing a literature review in future for the current study.

1.9 Objectives of the Study
This study is designed to analyze the comparison of performance of public and private sectors in Pakistan. For this purpose a comparison can be made by taking National bank from the public sectors and MCB Bank from private sector. The more specific objectives of the study are:

• to evaluate the operating income of both banks.
• to work out financial analysis (e.g.; Horizontal Analysis, Vertical Analysis and Ratio Analysis) to facilitate business management decision by stakeholders.
• to forward recommendations & various suggestions for improvement of financial management of both the banks.

2. REVIEW OF LITERATURE
Kitching, et al. (1982) large organizations and particularly organizations with the complex structure of branch banking require time to change. The author does not suggest that there are any clear answers to the strategic
planning problems facing branch banking. Today's advanced technology provides new tools to respond to change and progress. To do this accurate assessment of market segments, an effective internal management structure, efficient management and a level and quality of staff to use the new technology are required. This, in turn, will demand new recruitment and training methods.

Hartvigsen, et al. (1992) studied that financial analysis is considered to be a knowledge-intensive task, involving knowledge from several areas. Nowadays, banking is exploring knowledge-based systems to improve operational efficiency and customer relations while currently reducing costs. Financial analysis is one of the promising areas for these kinds of applications. This author examines the limitations of the utilization of knowledge-based systems within financial analysis (i.e., the lack of a theoretical framework for such analysis). Furthermore, we show how some of these limitations have been met in the design and implementation of the KABAL system, which is a knowledge-based system for financial analysis. (Kabal is the Norwegian word for patience)

Salmi and Martikainen, et al. (1994) conducted a critical review of the theoretical and empirical basis of four central areas of financial ratio analysis. The research areas reviewed were the functional form of the financial ratios, distributional characteristics of financial ratios, classification of financial ratios, and the estimation of the internal rate of return from financial statements. The study found that it is typical of financial ratio analysis research that there are several unexpectedly distinct lines with research traditions of their own. A common feature of all the areas of financial ratio analysis research seems to be that while significant regularities can be observed, they are not necessarily stable across the different ratios, industries, and time periods. This leaves much space for the development of a more robust theoretical basis and for further empirical research.

Ruthenberg and Elias (1996), studied the creation of a single European banking market is expected to increase cross-border competition, reduce existing differences in cost inefficiencies, and arbitrage away price-cost margins between EC members and other European banks. In this paper, we estimated cost economies and operating efficiencies in this market and test the structure-performance theorem empirically. Using 1989–1990 data for individual EC and non-EC banks, we found a U-shaped average cost curve coupled with differences in efficiencies between banks, suggesting that there are potential gains from reallocation of resources among them. The results, with respect to potential changes in price-cost margins, show that changes in market structure will have a positive effect on interest margins only in banking markets characterized by relatively low concentration and low entry barriers.

Nabi, et al. (1997) studied the Pakistan's ongoing policy reform aims to strengthen the competitive foundations of the economy and make it more outward-oriented. This study reviews the recent trade performance and progress regarding tariff reform. Management of the exchange rate as a principle tool of trade policy is further elaborated and quiet clearly explained.

Kuljis and Robert (1998) found that the banking sector provides an interesting focus for the problems of information provision to support decision making as it is undergoing a period of rapid intensification of competition and fundamental change where new products and services are both agents and consequences of change. This study introduces the banking sector in order to provide background information and an insight into the complexities of the business area. The authors further discuss decision making and the associated role of information and communication technologies. This will lead into a review of information that is required to support decision making and the difficulties that arise in gathering and managing this information.

Boyd, et al. (2001) studied that a growing theoretical literature describes mechanisms whereby even predictable increases in the rate of inflation interfere with the ability of the financial sector to allocate resources effectively. They empirically assess these predictions. The evidence indicates that there is a significant, and economically important, negative relationship between inflation and both banking sector development and equity market activity. Further, the relationship is nonlinear. As inflation rises, the marginal impact of inflation on banking lending activity and stock market development diminishes rapidly. Moreover, they also find evidence of thresholds. For economies with inflation rates exceeding 15 percent, there is a discrete drop in financial sector performance. Finally, while the data indicate that more inflation is not matched by greater nominal equity returns in low-inflation countries, nominal stock returns move essentially one-for-one with marginal increases in inflation in high-inflation economies.

Porta, et al. (2002) used data of government owned banks from 92 countries around the world, finds that government ownership of banks is high in countries which are characterized by "low levels of per capita income. Underdeveloped financial systems, interventionist and inefficient governments and poor protection of property rights". The study further finds evidence that government ownership of banks is associated with
slower subsequent financial development, lower economic growth and especially lower growth of productivity.

Emel, et al. (2003) analyze how to manage credit risk, commercial banks use various scoring methodologies to evaluate the financial performance of client firms. The quantitative analyses were used in the financial performance modules of state-of-the-art credit scoring methodologies. This innovation should help lending officers in branch levels filter out the poor risk applicants. The Data Envelopment Analysis-based methodology was applied to current data for 82 industrial/manufacturing firms comprising the credit portfolio of one of Turkey's largest commercial banks. Using financial ratios, the DEA synthesizes a firm's overall performance into a single financial efficiency score—the “credibility score”. Results were validated by various supporting (regression and discriminant) analyses and, most importantly, by expert judgments based on data or on current knowledge of the firms.

Sapienza, et al. (2004) provides an information on individual loan contracts to study the effects of government ownership on bank lending behavior. State-owned banks charge lower interest rates than do privately owned banks to similar or identical firms, even if firms are able to borrow more from privately owned banks. State-owned banks mostly favor large firms and firms located in depressed areas. The lending behavior of state-owned banks is affected by the electoral results of the party affiliated with the bank: the stronger the political party in the area where the firm is borrowing, the lower the interest rates charged.

Boubakri, et al. (2005) examined the post privatization performance of 81 banks from 22 developing countries. Our results suggest that: (i) on average, banks chosen for privatization have a lower economic efficiency, and a lower solvency than banks kept under government ownership. (ii) In the post privatization period, profitability increases but, depending on the type of owner, efficiency, risk exposure and capitalization may worsen or improve. However, (iii) Over time, privatization yields significant improvements in economic efficiency and credit risk exposure. (iv) We also find that newly privatized banks that are controlled by local industrial groups become more exposed to credit risk and interest rate risk after privatization.

Berger, et al. (2005) analyzes the static, selection, and dynamic effects of domestic, foreign, and state ownership on bank performance. The author argued that it was important to include indicators of all the relevant governance effects in the same model. “No robustness” checks (which purposely exclude some indicators) support this argument. Used data from Argentina in the 1990s, strongest and most robust results concern state ownership. State-owned banks have poor long-term performance (static effect), those undergoing privatization had particularly poor performance beforehand (selection effect), and these banks dramatically improved following privatization (dynamic effect), although much of the measured improvement is likely due to placing nonperforming loans into residual entities, leaving “good” privatized banks.

Barros, et al. (2007) used a dataset of 7635 observations on 1384 commercial banks operating in the EU between 1993 and 2001; they utilized a mixed logic model to identify factors that explain the probability of a bank being a best [worst] performer. The empirical evidence confirms the importance of country-level characteristics (location and legal tradition), and firm-level features (bank ownership, balance sheet structure and size). Specifically, smaller sized banks with higher loan-intensity, and foreign banks from countries upholding common law traditions have a higher probability of best performance.

Ali and Ansari, et al. (2007) assessed the impact of Financial Sector reforms on the soundness of banks operating in Pakistan over the last two decades. They study found that financial sector reforms introduced in late 1980s made a significant impact on the soundness of banks. There has been a consolidation and merger of banks, capital adequacy ratios look much stronger, and asset has been strengthened by the induction of professionals at the top and second tiers. An important achievement in the last decade has been the transformation of a largely state owned and weak banking system into healthier, primarily privately owned system. This has been facilitated by restricting of major banks ongoing corporate governance and credit culture. The study suggested the continuation of banking sector reforms. Though major efforts have been undertaken by the government to update and improve the legislative frame work, there remains a need to repeal, amend and update laws. Rehman and Ahmad, et al. (2008) analyzed the major determinants of a bank section by a customer in the banking industry of Pakistan. It is based in a survey of 358 customers of private, privatized and nationalized banks located in the city of Lahore (Pakistan). The findings of the study reveal that the most important variables influencing customers' choice are customer services, convenience, on live banking facilities and over all bank environments. The study aims to bridge the existing gap in local banking literature through identifying the important bank selection determinants and conclude with some policy implications which are expected to have an important impact on the marketing efforts of Pakistani banks.

Shaikh, et al. (2008) constructed financial statement analysis within international context. The study found the
usefulness of case financial statement and its advantages is a notion of financial data can be meaningfully interpreted when it is evaluated relative to comparable quantity. The case provides a forum for you that analyst should make appropriate adjustment before undertaking any comparative financial statement analysis and past is not always an unqualified guide to the future for accounting decision making. Certain comparative analyses (leases) cannot be done since all companies do not provide full information in the absence of analytical accounting adjustment.

Iqbal and Raza, et al. (2009) analyzed how European banks have developed from 2003 to 2007 based on three questions. Five European banks served as case studies to analyze their growth through qualitative and quantitative methods using a descriptive rectangle model based on financial statement framework. It was found that the banks developed unsystematically through acquisitions, joint ventures and joint investments in different countries and did not follow a systematic pattern to expand their business operations. Expansion of core banking business was less significant. It was also found that the financial statements; especially financial assets were interpreted in a way that is difficult to understand for external users. All five Banks achieved strong growth from 2003-2006, but 2007 was problematic in some of their divisions due to real estate crisis which started in the US, and then spread on to financial institutions all over the world.

Ravichandran, et al. (2009) analyzed the financial statement of Sundaram Clayton, Ltd. is taken up the office at Chennai for analyzing the stability of the organization in terms of analyzing and computing the various ratio analysis from the balance sheet and profit and Loss Accounts of the organization for 5 consecutive years form 2002 to 2006. The study predicted the financial state of the organization, its strength and weakness and its stages where it has to improve and giving the overall position of the organization for the management for decision making so that its resources are used most effectively and efficiently. This study not only help the management, it also gives a clear-view to the owners, share holders, creditors and investors.

Shahriar and Tehranian, et al. (2010) examines government ownership and government involvement in a country’s banking system affect bank performance from 1989 through 2004. The study uncovers an interesting pattern of changing performance differences between state-owned and privately-owned banks around the Asian financial crisis. They found that state-owned banks operated less profitably, held less core capital, and had greater credit risk than privately-owned banks prior to 2001, and the performance differences are more significant in those countries with greater government involvement and political corruption in the banking system. In addition, from 1997 to 2000, the 4-year period after the beginning of the Asian financial crisis, the deterioration in the cash flow returns, core capital, and credit quality of state-owned banks was significantly greater than that of privately-owned banks, especially for the countries that were hardest hit by the Asian crisis. However, state-owned banks closed the gap with privately-owned banks on cash flow returns, core capital, and nonperforming loans in the post-crisis period of 2001–2004.

3. RESEARCH METHODOLOGY

Many individual and groups are interested in the data appearing in a firm's financial statements, including managers, owners, prospective investors, creditors, labour unions, governmental agencies, and the public. These parties are usually interested in the profitability and financial strength of the firm in question; although such factors as size, growth and the firm’s efforts to met its social responsibilities may also be of interest. Investors, creditors, and other business people rely on accounting information to make intelligent, informed decisions. The balance sheet, the profit and loss account and the statement of cash flows provide a large part of the information that is used for making decision. Various techniques are used to analyze and interpret financial statement data. This chapter includes scope of the study, Data and Sources of Data, followed by Analytical Framework.

3.1 Population:

Many banks are currently operating in public and private sector of Pakistan. Private sector banks include MCB Bank Ltd, United Bank Ltd, Askari Commercial Bank, Allied Bank Ltd, and Bank Al-Falah.

Public sector banks include State Bank of Pakistan, National Bank of Pakistan, Zarai Taraqiati Bank Ltd, Small & Medium Enterprise Bank, Industrial Development Bank and First Women Bank Ltd is considered to be population for this study.

3.2 Sample Study:

The main objective of this study is to evaluate and compare the financial performance of banks in public and private sectors of Pakistan. For this purpose National Bank of Pakistan (the public sector) and MCB Bank Ltd (private sector) is purposively selected. Therefore, the study is limited to the financial information for the period 2005 to 2009.
3.2 Data Collection and Sources of Data:
Business firms publish financial statements at least annually, and most large companies also issue them quarterly. Normally, annual statements are attested to be certified by public. Accountants and the careful analyst read the accountants’ opinion to determine the reliability of the given data. These statements, which are available to any interested party, are generally more useful than annual reports because they furnish a greater amount of detail. Even more details can be found in prospectuses submitted to the Security Exchange Commission of Pakistan (SEC) by certain companies issuing large amounts of new securities tools and techniques to evaluate the financial efficiency and performance of the financial institutions to facilitate the informed decision making process by all stakeholders. The following sections explain and present the formulation of these financial tools and techniques of analysis.

3.4 Data Analysis:
The data analysis of financial statement has been carried out by using common size analysis that includes vertical and horizontal analysis. The ratio analysis is also used to better understand the company’s performance by properly interpreting it. Without a proper interpretation a ratio is meaningless by itself.

3.5 Common Size Analysis:
The common size analysis of a financial statement includes:

3.5.1 Vertical Analysis
In vertical analysis of financial statements, an item is used as a base value and all other accounts in the financial statement are compared to this base value. On the balance sheet, total assets equal 100% and each asset is stated as a percentage of total assets. Similarly, total liabilities and stockholder’s equity are assigned 100%, with a given liability or equity account stated as a percentage of total liabilities and stockholder’s equity. On the income statement, 100% is assigned to net sales, with all revenue and expense accounts then related to it.

Vertical Analysis Ratio = \( \frac{\text{Asset items or Liability Item}}{\text{Total Asset or Liability Equity items}} \times 100 \)

3.5.2 Horizontal Analysis
Horizontal analysis is conducted by setting the financial statements side by side and reviewing changes in individual categories on a year to year or multiyear. Comparison of statements over several years reveals direction, speed and extent of a trend(s). The horizontal financial statements analysis is done by restating amount of each item or group of item or group of items as a percentage. Such percentages are calculated by selecting a base year and assign a weight of 100 to the amount of each item in the base year statement. Thereafter, the amounts of similar items or groups of items in prior or subsequent financial statements are expressed as a percentage of the base year amount. The resulting figures are called index numbers or trend ratios.

Horizontal Analysis Ratio = \( \frac{\text{Year 1}}{\text{Base Year}} \times 100 \)

3.5.3 Ratio Analysis
Though Ratio analysis we can understand better the company’s performance. However a ratio is meaningless by itself. Comparing the ratio to last year’s ratio and understanding the reasons for the change is important. This understanding will gives us insight to banks performance. The following ratios are calculated and possible interpretation for the change in the ratio will be explained.

3.5.3.1 Liquidity Ratios
Liquidity ratio measures the ability of the firm to meet its short-term obligations. These ratios are important the cause failure to pay such obligations can lead to bankruptcy. Bankers use liquidity ratios to see whether to extend short -term credit to a firm. Higher the liquidity ratio, the more able the firm is to its short -term obligations.

Liquidity ratio compares current assets to current liabilities and serves as the liquid reserve available to satisfy contingencies and uncertainties. The ratio indicates the short term solvency of a business and in determining if a firm can pay its current liabilities when due. This Ratio is explained along with formula as follow:

a) Current Ratio
The current ratio compares all the current assets (cash and other assets that can be easily converted to cash) to all the current liabilities (liabilities that must be paid with cash). Current ratio fluctuates from industry to industry. A current ratio significantly higher than the industry average could indicate the existence of redundant assets. Conversely, a current ratio significantly lowers than the industry average could indicate a lack of liquidity.
3.5.3.2 Profitability Ratios
Profitability ratio measures how the firm's returns compare to its sales. Profitability relates to a company's ability to earn a satisfactory income. A company's profitability is closely linked to its liquidity because earnings ultimately produce cash flow. The Profitability Ratios is further classified into five types of Ratios. They are described along with formula as below:

a) Net Profit Margin
The net profit margin measures how much profit out of each sales is left after all expenses are subtracted, that is all taxes expenses are subtracted.

\[
\text{Net Profit Margin} = \frac{\text{Profit after Taxes}}{\text{Sales}} \times 100
\]

b) Operating Profit Margin
The operating profit margin is calculated by dividing earnings before interest and taxes by sales revenue.

\[
\text{Operating Profit Margin} = \frac{\text{Earnings before interest and taxes}}{\text{Sales}} \times 100
\]

c) Return on Assets
The return on assets (ROA) ratio indicates how much income generated by each or assets. It shows whether the business is investing in its assets effectively. The return on assets is calculated by dividing net income by the total assets.

\[
\text{Return on Assets} = \frac{\text{Net Income}}{\text{Total Assets}} \times 100
\]

d) Profit per Employee Computation:
This ratio measures the firm's net profit after tax per average number of employees that are working in an organization. This ratio measures the exact level of profit per employee upon which the management of an organization can decide whether to downsize or right size the number of employees.

\[
\text{Profit per Employee Computation} = \frac{\text{Net profit (earnings) after tax}}{\text{Average number of employees}}
\]

e) Assets per Employee Computation:
This ratio measures the firm's profit of total assets per average number of employees that are working in an organization. This ratio measures the exact level of profit of total assets per employee upon which the management of an organization can decide whether to invest in current or fixed assets.

\[
\text{Assets per Employee Computation} = \frac{\text{Total Assets}}{\text{Average number of employees}}
\]

f) Return on Equity
The return on Equity ratio measures the income earned on the shareholders investment in the business. It is calculated by dividing net income by stockholders equity.

\[
\text{Return on Equity} = \frac{\text{Net Income}}{\text{Total Equity}} \times 100
\]

g) Total Assets Turnover
This ratio measures how efficiently a firm is using its assets. A company having high asset utilization ratio suggests that its assets help promote its sale revenue. Measures the activity of the assets and the ability of the business to generate sales through the use of the assets.

\[
\text{Total Assets Turnover} = \frac{\text{Sales}}{\text{Total Assets}} \times 100
\]

3.5.1.3 Debt Ratio
The financial analysis use debt ratios to assess the relative size of a firm's debt load and the firm's ability payoff the debts. The debts ratios are used to evaluate the safety of long-term creditors: For these ratios of analysis the higher the number, the greater the amount of safety.
This information is used by investors, creditors, shareholders and management. It indicates the ability of a firm to meet its financial obligations. The Debt Ratios are further categorized into two types. These are further explained along with formula as follow:

a) Debt-Assets Ratio
This ratio measures the percentage of the firm’s assets that are financed with debts. Provides information about the company’s ability to absorb asset reductions arising from losses without jeopardizing the interest of creditors.

\[ \text{Debt-Assets Ratio} = \frac{\text{Total Debts} \times 100}{\text{Total Assets}} \]

b) Debt-Equity Ratio
The Debt-Equity ratio is the percentage of debt relative to the amount of equity. Indicates how well creditors are protected in case of the company’s insolvency.

\[ \text{Debt-Equity Ratio} = \frac{\text{Total debts} \times 100}{\text{Total Equity}} \]

4. RESULTS AND DISCUSSIONS
Financial Analysis (Ratio Analysis, Horizontal and Vertical Analysis of the MCB and National Bank of Pakistan for the Financial Year 2005-09)
Financial analysis of the organization involves the evaluation of the financial performance as depicted in the financial statements of the organization. The MCB and National bank of Pakistan provides information’s in the shape of its annual report for every financial year containing financial as well as non-financial information. To improve the quality of decision making, proper analysis of these statements helps a lot. Financial statements analysis helps in determining the financial conditions at any particular point in time and effectiveness of operations of a firm during a specific period.

The various stakeholders of business are all interested in the analysis of financial statements. But the focus of interest of all is not the same. Financial statements are prepared primarily for decision-making. They play a dominant role in setting the framework of managerial decisions. But the information in the financial statements is not an end in itself as no meaningful conclusions can be drawn from these statements alone. However the information provided in the financial statements is of immense use in making decisions through analysis and interpretation of financial statements.

Financial statement analysis is the process of identifying of financial strengths and weaknesses of the firm by properly establishing relationship between the items of the balance sheet and the profit and loss account.

4.1 Common Size Analysis of balance Sheet and Income Statement
In this part changes in the various components of Balance sheet are described. The analysis of the balance sheet and income statement of MCB and National Bank of Pakistan is done keeping in view the figures available from the annual reports of MCB and NBP form the year 2005 to 2009. As discussed earlier the analysis tools used are Common size analysis that includes horizontal and vertical analysis.

### HORIZONTAL ANALYSIS OF MCB BALANCE SHEET FOR THE YEAR ENDED December 31, 2003 TO December 31, 2008
**Definition:** - Horizontal analysis is conducted by setting the financial statements side by side and reviewing changes in individual categories on a year to year or multiyear. Comparison of statements over several years reveals direction, speed and extent of a trend(s). The horizontal financial statements analysis is done by restating amount of each item or group of item or group of items as a percentage. Such percentages are calculated by selecting a base year and assign a weight of 100 to the amount of each item in the base year statement. Thereafter, the amounts of similar items or groups of items in prior or subsequent financial statements are expressed as a percentage of the base year amount. The resulting figures are called index numbers or trend ratios.

\[ \text{Horizontal Analysis Ratio} = \frac{\text{Year 1}}{\text{Base Year}} \times 100 \]

**TABLE NO. 4.5**

<table>
<thead>
<tr>
<th>Particular</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assets.</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Cash</td>
<td>100</td>
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<td>136.2</td>
<td>166.5</td>
<td>166.3</td>
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<td>Balance with other banks</td>
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<td>115.2</td>
<td>66.7</td>
<td>70.8</td>
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<td>Landing to financial institutions</td>
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<td>192.3</td>
<td>9.6</td>
<td>37.4</td>
<td>27.4</td>
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<td>94.5</td>
<td>168.3</td>
<td>143.3</td>
<td>248.7</td>
</tr>
<tr>
<td>Particular</td>
<td>2004</td>
<td>2005</td>
<td>2006</td>
<td>2007</td>
<td>2008</td>
<td>2009</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>-------</td>
<td>-------</td>
<td>-------</td>
<td>-------</td>
<td>-------</td>
<td>-------</td>
</tr>
<tr>
<td>Assets</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Cash</td>
<td>100</td>
<td>75.38</td>
<td>83.25</td>
<td>100.45</td>
<td>112.77</td>
<td>122.64</td>
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<tr>
<td>Balance with other banks</td>
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<td>62.31</td>
<td>81.27</td>
<td>75.27</td>
<td>77.02</td>
<td>57.06</td>
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<tr>
<td>Landing to financial institutions</td>
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<td>154.91</td>
<td>218.93</td>
<td>204.20</td>
<td>162.95</td>
<td>186.34</td>
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<tr>
<td>Investments</td>
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<td>105.11</td>
<td>93.70</td>
<td>141.14</td>
<td>114.38</td>
<td>145.73</td>
</tr>
<tr>
<td>Advances</td>
<td>100</td>
<td>121.76</td>
<td>143.17</td>
<td>154.30</td>
<td>187.05</td>
<td>215.24</td>
</tr>
<tr>
<td>Operating fixed Assets</td>
<td>100</td>
<td>102.73</td>
<td>105.20</td>
<td>281.68</td>
<td>263.15</td>
<td>273.25</td>
</tr>
<tr>
<td>Deferred tax</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other Assets</td>
<td>100</td>
<td>125.07</td>
<td>141.65</td>
<td>161.92</td>
<td>232.74</td>
<td>309.88</td>
</tr>
<tr>
<td>T. Assets</td>
<td>100</td>
<td>104.43</td>
<td>114.80</td>
<td>137.77</td>
<td>147.81</td>
<td>170.68</td>
</tr>
<tr>
<td>LIABILITIES</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Bills payable</td>
<td>100</td>
<td>24.13</td>
<td>147.00</td>
<td>97.88</td>
<td>141.64</td>
<td>147.22</td>
</tr>
<tr>
<td>Borrowing from banks</td>
<td>100</td>
<td>79.00</td>
<td>105.59</td>
<td>98.21</td>
<td>364.99</td>
<td>408.47</td>
</tr>
<tr>
<td>Deposit &amp; others A/C's</td>
<td>100</td>
<td>99.54</td>
<td>107.80</td>
<td>127.14</td>
<td>134.23</td>
<td>156.04</td>
</tr>
<tr>
<td>Finance lease</td>
<td>100</td>
<td>97.49</td>
<td>77.59</td>
<td>196.71</td>
<td>148.17</td>
<td>249.91</td>
</tr>
<tr>
<td>Other liabilities</td>
<td>100</td>
<td>1082.63</td>
<td>115.29</td>
<td>133.82</td>
<td>171.91</td>
<td>183.24</td>
</tr>
<tr>
<td>Deferred tax liabilities – net</td>
<td>100</td>
<td>15291.14</td>
<td>8179.11</td>
<td>17467.30</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Total Liabilities</td>
<td>100</td>
<td>99.29</td>
<td>109.11</td>
<td>127.39</td>
<td>141.09</td>
<td>162.66</td>
</tr>
<tr>
<td>Share capital</td>
<td>100</td>
<td>120.00</td>
<td>144.00</td>
<td>165.60</td>
<td>182.16</td>
<td>218.59</td>
</tr>
<tr>
<td>Reserves</td>
<td>100</td>
<td>125.17</td>
<td>128.35</td>
<td>145.80</td>
<td>184.40</td>
<td>209.75</td>
</tr>
<tr>
<td>Un appropriated profit</td>
<td>100</td>
<td>182.43</td>
<td>350.09</td>
<td>494.93</td>
<td>572.56</td>
<td>669.59</td>
</tr>
<tr>
<td>Surplus on revaluation of assets</td>
<td>100</td>
<td>178.87</td>
<td>135.43</td>
<td>220.50</td>
<td>98.81</td>
<td>116.01</td>
</tr>
</tbody>
</table>
Critical Analysis of Horizontal / Indexed Analysis of Balance Sheet:
An analysis of percentage financial statements where all balance sheet items for a base year equal 100% & subsequent financial statements items are expressed as percentage of their values in the base year.

A. Critical Analysis of (Asset Side) Of MCB Bank and National Bank of Pakistan:
The growth in the asset side was mainly attributed to the aggressive marketing carried out by the Banks in order to compete in a highly competitive industry.

MCB’s advances increases with an increasing trend by 144.4% in FY-06 as compare to 131.3% in FY-05. National Bank of Pakistan advances increases with an increasing trend by 143.1% in FY-06 as compare to 121.7% in FY-05. The MCB lending to financial institution have shown remarkable increase of 192.3% in FY-06 as compared to 91.2% in FY-05. The NBP lending to financial institution have shown remarkable increase of 218.9% in FY-06 as compared to 154.9% in FY-05. Investments of MCB are negligibly decreased by 94.5% in 2006 as compare to 103.4% in FY-05. Investments of NBP showed significant decreased by 93.7% in 2006 as compare to 105.1% in FY-05.

MCB’s advances increases with a rising inclination by 191.2% in FY-08 as compare to 159.5% in FY-07. National Bank of Pakistan advances increases with a rising inclination by 187.0% in FY-08 as compare to 154.3% in FY-07. The MCB other assets showed a remarkable increase in the other assets by 321.9% in FY-08 as compared to the FY-07 by 290.3%. The NBP other assets also showed a remarkable increase in the other assets by 232.7% in FY-08 as compared to the year FY-07 by 161.9%. The MCB lending to financial institution have shown extraordinary increase of 27.4% in FY-08 as compared to 9.6% in FY-07. On other hand the NBP lending to financial institution have shown significant decrease 162.9% in FY-08 as compared to 204.2% in FY-07. Investments of MCB had slightly decreased by 143.3% in FY-08 as compare to 168.3% in FY-07. Investments of NBP had slightly decreased by 114.3% in FY-08 as compare to 141.1% in FY-07.

In FY-09 MCB advances significantly decreases due to prevailing recession all over the world. These advances were decreased in FY-09 at the rate 184.4% as compare to 191.2% in FY-08. National Bank of Pakistan advances increases with a rising inclination by 215.2% in FY-09 as compare to 187.0% in FY-08. The MCB other assets showed a remarkable increase in the other assets by 374.4% in FY-09 as compared to the year FY-08 by 321.9%. The NBP other assets also showed a remarkable increase in the other assets by 309.8% in FY-09 as compared to the year FY-08 by 232.7%. Investments of MCB had increased by 248.7% in FY-09 as compare to 143.3% in FY-08. Investments of NBP had increased by 145.7% in FY-09 as compare to 114.3% in FY-08.

B. Comments on (Liabilities & Owner’s Equity Side) Of MCB Bank and National Bank of Pakistan:
The liabilities and owners equity side of the MCB balance sheet shows a decrease in Borrowings from banks FY-06 by 315.4% as compare to FY-05 by 360.60%.

The liabilities and owners equity side of the NBP balance sheet shows an increase in borrowings from banks FY-06 by 107.8% as compare to FY-05 by 99.5%. MCB deposit and others accounts slightly increased 116.5% FY-06 as compare with the FY-05 by 103.7%. NBP deposit and others accounts slightly decreased by 77.5% FY-06 as compare with the FY-05 by 97.4%. The reserves of MCB Bank had remarkably increased FY-06 by 435.6% as compare with FY-05 by 236.8%. The reserves of NBP had a slight increased FY-06 by 128.3% as compare with FY-05 by 125.1%.

In 2008 MCB banks borrowing from other banks had a dramatic decrease by 298.6% as compared with FY-07 by 519.1%. In 2008 NBP borrowing from other banks had slightly increased by 134.2% as compared with FY-07 by 127.1%. The reserves of MCB Bank had increased FY-08 by 649.4% as compare with FY-07 by 600.6%. The reserves of NBP had a slight increased FY-08 by 184.4% compare with FY-07 by 145.8%.

The liabilities and owners equity side of the MCB balance sheet shows dramatic increase in borrowings from banks FY-09 by 588.4% as compare to FY-08 by 298.6%. The liabilities and owners equity side of the NBP balance sheet shows an increase in borrowings from banks FY-09 by 156.04% as compare to FY-08 by 134.2%. MCB deposit and others accounts slightly increased 166.3% FY-09 as compare with the FY-08 by 149.4%. NBP deposit and others accounts increase by 156.0% FY-09 as compare with the FY-08 by 134.2%. The
reserves of MCB Bank had slightly increased FY-09 by 678.0% as compare with FY-08 by 649.4%. The reserves of NBP had a slight increased FY-09 by 209.7% as compare with FY-08 by 184.4%.

**Horizontal Analysis of the Income Statement:**
In this part changes in the various component of the Income Statement are described. The analysis of income statement of MCB and National Bank of Pakistan is done keeping in view the figures available from the annual reports of both banks for the year 2004 to 2009 by taking 2004 as a base year.

**HORIZONTAL ANALYSIS OF MCB INCOME STATEMENT FOR THE YEAR ENDED Dec 31, 2004 TO Dec 31, 2009**
**TABLE NO. 4.7**

<table>
<thead>
<tr>
<th>Particular</th>
<th>Year 2004</th>
<th>Year 2005</th>
<th>Year 2006</th>
<th>Year 2007</th>
<th>Year 2008</th>
<th>Year 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.Up/return/interest earned</td>
<td>100</td>
<td>195.47</td>
<td>283.78</td>
<td>349.92</td>
<td>440.82</td>
<td>568.22</td>
</tr>
<tr>
<td>Less: M.up/return/interest expense</td>
<td>100</td>
<td>135.18</td>
<td>219.93</td>
<td>382.26</td>
<td>561.84</td>
<td>769.89</td>
</tr>
<tr>
<td>Net M.Up/return</td>
<td>100</td>
<td>213.13</td>
<td>302.48</td>
<td>340.45</td>
<td>405.38</td>
<td>509.16</td>
</tr>
<tr>
<td>Interest income</td>
<td>100</td>
<td>409.15</td>
<td>422.87</td>
<td>1095.87</td>
<td>1436.99</td>
<td>2618.01</td>
</tr>
<tr>
<td>Net M.Up/interest income after provision</td>
<td>100</td>
<td>205.00</td>
<td>297.49</td>
<td>309.14</td>
<td>362.62</td>
<td>421.73</td>
</tr>
<tr>
<td>Total non-M.up/interest income</td>
<td>100</td>
<td>127.88</td>
<td>117.92</td>
<td>142.01</td>
<td>136.82</td>
<td>133.31</td>
</tr>
<tr>
<td>Total non-M.up/after interest income</td>
<td>100</td>
<td>175.27</td>
<td>228.26</td>
<td>244.70</td>
<td>275.56</td>
<td>310.53</td>
</tr>
<tr>
<td>Total non-M.up/interest expense</td>
<td>100</td>
<td>88.30</td>
<td>88.23</td>
<td>74.76</td>
<td>112.81</td>
<td>147.13</td>
</tr>
<tr>
<td>Profit before taxation</td>
<td>100</td>
<td>320.83</td>
<td>455.94</td>
<td>525.12</td>
<td>538.91</td>
<td>570.64</td>
</tr>
<tr>
<td>Taxation</td>
<td>100</td>
<td>251.88</td>
<td>390.99</td>
<td>371.57</td>
<td>399.28</td>
<td>471.02</td>
</tr>
<tr>
<td>Profit after taxation</td>
<td>100</td>
<td>366.95</td>
<td>499.37</td>
<td>627.82</td>
<td>318.74</td>
<td>637.26</td>
</tr>
</tbody>
</table>

**HORIZONTAL ANALYSIS OF NATIONAL BANK INCOME STATEMENT FOR THE YEAR ENDED DECEMBER 31, 2004 TO DECEMBER 31, 2009.**
**TABLE NO. 4.8**

<table>
<thead>
<tr>
<th>Particular</th>
<th>Year 2004</th>
<th>Year 2005</th>
<th>Year 2006</th>
<th>Year 2007</th>
<th>Year 2008</th>
<th>Year 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.Up/return/interest earned</td>
<td>100</td>
<td>160.56</td>
<td>210.53</td>
<td>241.41</td>
<td>290.93</td>
<td>372.11</td>
</tr>
<tr>
<td>Less: M.up/return/interest expense</td>
<td>100</td>
<td>157.36</td>
<td>212.63</td>
<td>258.26</td>
<td>364.13</td>
<td>602.03</td>
</tr>
<tr>
<td>Net M.Up/return</td>
<td>100</td>
<td>162.02</td>
<td>209.58</td>
<td>233.73</td>
<td>257.56</td>
<td>267.29</td>
</tr>
<tr>
<td>Interest income</td>
<td>100</td>
<td>127.21</td>
<td>135.66</td>
<td>270.15</td>
<td>627.82</td>
<td>667.52</td>
</tr>
<tr>
<td>Net M.Up/interest income after provision</td>
<td>100</td>
<td>166.84</td>
<td>219.80</td>
<td>228.70</td>
<td>206.39</td>
<td>211.94</td>
</tr>
<tr>
<td>Total non-M.up/interest income</td>
<td>100</td>
<td>113.49</td>
<td>146.46</td>
<td>163.10</td>
<td>197.67</td>
<td>229.09</td>
</tr>
<tr>
<td>Total non-M.up/after interest income</td>
<td>100</td>
<td>145.68</td>
<td>190.72</td>
<td>202.69</td>
<td>202.93</td>
<td>218.74</td>
</tr>
<tr>
<td>Total non-M.up/interest expense</td>
<td>100</td>
<td>128.45</td>
<td>152.86</td>
<td>161.35</td>
<td>218.65</td>
<td>263.63</td>
</tr>
<tr>
<td>Profit before taxation</td>
<td>100</td>
<td>158.47</td>
<td>218.80</td>
<td>233.35</td>
<td>191.27</td>
<td>185.45</td>
</tr>
<tr>
<td>Taxation</td>
<td>100</td>
<td>109.76</td>
<td>160.63</td>
<td>156.11</td>
<td>130.44</td>
<td>70.71</td>
</tr>
<tr>
<td>Profit after taxation</td>
<td>100</td>
<td>203.58</td>
<td>272.67</td>
<td>304.89</td>
<td>247.62</td>
<td>291.72</td>
</tr>
</tbody>
</table>

**Critical Analysis on Horizontal / Indexed Analysis of Profit & Loss Account of MCB BANK:**
In the Horizontal Analysis of profit & loss it can be observed that mark-up/interest earned increased in the last
five years due to loans and advances to customers and financial institutions, on investments and securities while mark up/interest expensed increase in the FY-05& 2009 due to deposits, short term borrowings, and others cause increase in the net mark up/interest income of the bank, which is the major source of growth. Other non mark up income i.e. fee, commission, exchange, brokerage & dividend income slightly increased due to LT support banking increase in foreign remittances, recovery of bad debts, rent on property and lockers. Thus total income from FY-05 to FY-09 greatly increased due to strategic business policies, organizational initiatives, effective banking management and aggressive marketing. On the other hand total expenses increased FY-05 to FY-09 due to restructuring, expansion of banks by further opening of new branches, renovation, automation of branches & electronic banking.

Thus overall profit of the bank increased from FY-05 to FY-09 due to healthy growth in lending to the private sector in the form of SME, Agricultural Finances, Consumer Finance & advance Salary product. Earning per share of the bank also increased from FY05 to FY09 due to justified faith of shareholders on MCB & higher net income of the bank.

Comments on Horizontal / Indexed Analysis of Profit & Loss Account of National Bank of Pakistan:
In the Horizontal Analysis of profit & loss it can be observed that mark-up/interest earned increased in the last five years due to loans and advances to customers and financial institutions, on investments and securities, and resale agreements and while mark up/interest expensed increase in the FY-05& 2009 due to deposits, short term borrowings, and securities sold under repurchase agreement cause increase in the net mark up/interest income of the bank, which is the major source of growth. Other non mark up income i.e. fee, commission, exchange, brokerage & dividend income, profits on sale of property and equipments rent on property and lockers slightly increase due to good will of bank and introduction of new investment policies and inline with the customer expectations. Thus total income from FY-05 to FY-09 greatly increased due to strategic business policies, organizational initiatives, effective banking management and aggressive marketing. On the other hand total expenses increased FY-05 to FY-09 due to restructuring, expansion of banks by further opening of new branches, renovation, penalties, and charges for defined benefit plans.

Thus overall profit of the bank increased from FY-05 to FY-09 due to healthy growth in lending to the private sector in the form of SME, Agricultural Finances, Consumer Finance & advance Salary product.

**VERTICAL ANALYSIS OF MCB BALANCE SHEET FOR THE YEAR ENDED December 31, 2005 TO December 31, 2009**

<table>
<thead>
<tr>
<th>TABLE NO. 4.9</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Particular</strong></td>
</tr>
<tr>
<td>Assets.</td>
</tr>
<tr>
<td>Cash</td>
</tr>
<tr>
<td>Balance with other banks</td>
</tr>
<tr>
<td>Landing to financial institutions</td>
</tr>
<tr>
<td>Investments</td>
</tr>
<tr>
<td>Advances</td>
</tr>
<tr>
<td>Operating fixed Assets</td>
</tr>
<tr>
<td>Deferred tax assets</td>
</tr>
<tr>
<td>Other Assets</td>
</tr>
<tr>
<td>T. Assets</td>
</tr>
<tr>
<td>LIABILITIES</td>
</tr>
<tr>
<td>Bills payable</td>
</tr>
<tr>
<td>Borrowing from banks</td>
</tr>
<tr>
<td>Deposit &amp; others A/C’s</td>
</tr>
<tr>
<td>Subordinates loan</td>
</tr>
<tr>
<td>Other liabilities</td>
</tr>
<tr>
<td>Deferred tax liabilities – net</td>
</tr>
<tr>
<td>Total Liabilities</td>
</tr>
<tr>
<td>EQUITY</td>
</tr>
<tr>
<td>Share capital</td>
</tr>
<tr>
<td>Reserves</td>
</tr>
</tbody>
</table>
Table No. 4.10
Critical Analysis on Vertical / Common Size Analysis of MCB and NBP Balance Sheet

A. On Assets Side

As per vertical analysis of MCB commons size balance sheet during 2005 financial year cash 7.92% of total assets and investments 23.26% of the total assets and bank balance was 0.49% advances of the bank was 60.35% and other assets were 1.83% of the total assets in comparison with the National bank performance during the financial year 2005 cash 12.32% of total assets and investments 27.17% of the total assets and bank balance was 5.37% advances of the bank was 46.53% and other assets were 4.14% of the total assets.

MCB during FY-2006 cash was 9.49% of total assets and investments 18.56% of the total assets decreased in comparison with the last year and bank balance was 1.92% which had shown an increase as compared to the last year advances of the bank was 57.95% showed a slight increase and other assets were 3.22% of the total assets in comparison with the National bank performance during the FY-2006 cash was 12.38% of total assets and investments 22.03% of the total assets showed a decrease and bank balance was 6.37% advances of the bank was 49.77% showed a slight increase and other assets were 4.27% of the total assets.

FY-2007 of MCB had not showed a healthy performance of the balance sheet on the (Assets sides) as compared to previous financial years. Cash was 9.67% of total assets and investments 27.55% of the total assets and bank balance was 0.93% and advances of the bank was 53.34% and other assets were 4.35% of the total assets in comparison with the National bank performance during the FY-2007 in which the performance of the bank was not up to the standard cash was 12.45% of total assets and investments 27.66% of the total assets and bank balance was 4.92% advances of the bank was 44.70% and other assets were 5.45% of the total assets.

MCB had recovered and showed good signs of healthy performance which can be analyze from the balance sheet of the respective bank for the FY-2008. Cash was 8.93% of total assets and investments 21.70% of the total assets and bank balance was 0.91% and advances of the bank was 59.12% and other assets were 4.47% of the total assets in comparison with the National bank performance during the FY-2008 in which the bank had showed recovery. During that year cash was 13.02% of total assets and investments 20.89% of the total assets and bank balance was 4.69% advances of the bank was 50.50% and other assets were 5.45% of the total assets.

FY-2009 was not a good financial year for both the banks. During this year recession was in full boom and there exited a financial crunch everywhere because of which devalued of currency and inflation in the country was on peak. During this year MCB Cash was 7.61% of total assets and investments 32.82% of the total assets and bank balance was 1.18% and advances of the bank was 49.73% and other assets were 4.51% of the total assets in comparison with the National bank performance during the FY-2008 can be analyzed as cash was 12.27% of total assets and investments 23.05% of the total assets and bank balance was 3.01% advances of the bank was 50.33% and other assets were 6.28% of the total assets.

B. Comments on (Liabilities Side)

As per vertical analysis of balance sheet liabilities side from FY-2005 to FY-2009 deposit and others accounts of the MCB bank showed gradual decrease from 76.76% to 72.19% and borrowing from banks also showed decrease from 9.16% to 8.77% and the reserves of the equity sides of the balance sheet of MCB from FY-2005 to FY-2009 showed consistent increase from 0.49% to 7.54%. Similarly an increase was being viewed in inappropriate profit from 0.07% to 3.10% and the share capital for the FY-2005 to FY-2009 had shown fluctuation at the end of the FY-2009 the share capital was 1.36% which is overall a healthy sign for growth of bank.

As per vertical analysis of balance sheet liabilities side from FY-2005 to FY-2009 deposit and others accounts of the NBP bank showed gradual decrease from 80.22% to 76.94% and borrowing from banks had showed increase from 1.52% to 4.80% and the reserves of the equity sides of the balance sheet of NBP from FY-2005 to FY-2009 showed consistent increase from 2.34% to 2.40%. Similarly a remarkable increase was being viewed in un appropriate profit from 2.89% to 6.50% and the share capital for the FY-2005 to FY-2009 had
shown constant growth. The share capital was 1.14% which shows the bank over all performance and the investors had confidence in the bank policies.

VERTICAL ANALYSIS OF MCB INCOME STATEMENT FOR THE YEAR ENDED Dec 31, 2005 TO Dec 31, 2009
TABLE NO. 4.11

<table>
<thead>
<tr>
<th>Particular</th>
<th>Year 2005</th>
<th>Year 2006</th>
<th>Year 2007</th>
<th>Year 2008</th>
<th>Year 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.Up/return/interest earned</td>
<td>76.64</td>
<td>83.78</td>
<td>84.10</td>
<td>87.36</td>
<td>90.14</td>
</tr>
<tr>
<td>Less: M.up/return/ interest expense</td>
<td>12.00</td>
<td>14.71</td>
<td>20.81</td>
<td>25.22</td>
<td>27.67</td>
</tr>
<tr>
<td>Net M.Up/return</td>
<td>64.63</td>
<td>69.07</td>
<td>63.29</td>
<td>62.14</td>
<td>62.48</td>
</tr>
<tr>
<td>Interest income</td>
<td>4.94</td>
<td>3.84</td>
<td>8.11</td>
<td>8.77</td>
<td>12.79</td>
</tr>
<tr>
<td>Net M.Up/interest income after provision</td>
<td>59.69</td>
<td>65.23</td>
<td>55.18</td>
<td>53.37</td>
<td>49.69</td>
</tr>
<tr>
<td>Total non-M.up/interest income</td>
<td>23.36</td>
<td>16.22</td>
<td>15.90</td>
<td>12.64</td>
<td>9.86</td>
</tr>
<tr>
<td>Total non-M.up/After interest income</td>
<td>83.06</td>
<td>81.45</td>
<td>71.08</td>
<td>66.01</td>
<td>59.55</td>
</tr>
<tr>
<td>Total non-M.up/ interest expense</td>
<td>28.34</td>
<td>21.32</td>
<td>14.71</td>
<td>18.30</td>
<td>19.11</td>
</tr>
<tr>
<td>Profit before taxation</td>
<td>56.19</td>
<td>60.13</td>
<td>56.37</td>
<td>47.71</td>
<td>40.44</td>
</tr>
<tr>
<td>Taxation</td>
<td>17.68</td>
<td>20.66</td>
<td>15.99</td>
<td>14.17</td>
<td>13.38</td>
</tr>
<tr>
<td>Profit after taxation</td>
<td>38.51</td>
<td>39.46</td>
<td>40.39</td>
<td>33.54</td>
<td>27.06</td>
</tr>
</tbody>
</table>

VERTICAL ANALYSIS OF NBP INCOME STATEMENT FOR THE YEAR ENDED DECEMBER 31, 2005 TO DECEMBER 31, 2009.
TABLE NO. 4.12

<table>
<thead>
<tr>
<th>Particular</th>
<th>Year 2005</th>
<th>Year 2006</th>
<th>Year 2007</th>
<th>Year 2008</th>
<th>Year 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.Up/return/interest earned</td>
<td>78.11</td>
<td>78.38</td>
<td>78.87</td>
<td>78.78</td>
<td>80.38</td>
</tr>
<tr>
<td>Less: M.up/return/ interest expense</td>
<td>23.97</td>
<td>24.79</td>
<td>26.42</td>
<td>30.88</td>
<td>40.72</td>
</tr>
<tr>
<td>Net M.Up/return</td>
<td>54.14</td>
<td>53.59</td>
<td>52.45</td>
<td>47.90</td>
<td>39.66</td>
</tr>
<tr>
<td>Interest income</td>
<td>5.16</td>
<td>4.22</td>
<td>7.37</td>
<td>14.18</td>
<td>12.03</td>
</tr>
<tr>
<td>Net M.Up/interest income after provision</td>
<td>48.98</td>
<td>49.38</td>
<td>45.09</td>
<td>33.72</td>
<td>27.62</td>
</tr>
<tr>
<td>Total non-M.up/ After interest income</td>
<td>70.86</td>
<td>71.00</td>
<td>66.21</td>
<td>54.94</td>
<td>47.24</td>
</tr>
<tr>
<td>Total non-M.up/ interest expense</td>
<td>26.61</td>
<td>24.23</td>
<td>22.45</td>
<td>25.21</td>
<td>24.25</td>
</tr>
<tr>
<td>Profit before taxation</td>
<td>44.26</td>
<td>46.76</td>
<td>43.77</td>
<td>29.73</td>
<td>23.00</td>
</tr>
<tr>
<td>Taxation</td>
<td>14.74</td>
<td>16.51</td>
<td>14.08</td>
<td>9.75</td>
<td>4.22</td>
</tr>
<tr>
<td>Profit after taxation</td>
<td>29.52</td>
<td>30.25</td>
<td>29.69</td>
<td>19.98</td>
<td>18.78</td>
</tr>
</tbody>
</table>

Comments on Vertical Income Statements of MCB and NBP:
Vertical analysis of income statements account of MCB show decrease in net mark up / interest income from FY-05 to FY09 due to recession in global economic activities which led to decreased business & trade volume in the form of loaning as well as loaning is based on KIBOR which was enormously low. In non-mark up / interest income, there is decreased from FY05 to FY09 in fee, commission, and brokerage & dividend income due to tough competition among different banks. So, total income of the bank decreased from FY-05 to FY09 due to significant recession which results in high interest rate that badly affected the financial health of the
MCB. Also the Non mark up / interest income was also decreased due to effective control over expenses, however rationalizing of work force hiring of expertise, refurbishing & expansion of branch net work pushed up expenses in the FY-09. However overall profit from FY-05 to FY09 decreased due to recession and a downward trend in the over all economy of a country.

Earning per share showed fluctuation as compared with total mark up income show relative increased/ Decreased from FY05 to FY-09 because of the less improved strategic business & organizational structure taken over the last few years coupled with the consistent & effective economic growth leading to impressive growth in MCB.

Vertical analysis of income statements account of NBP also showed decrease in net mark up / interest income from FY-05 to FY09 due to recession in global economic activities which led to decreased business & trade volume in the form of loaning as well as loaning is based on KIBOR which was enormously low. In non-mark up / interest income, there is decreased from FY05 to FY09 in fee, commission, and brokerage & dividend income due to tough competition among different banks. So, total income of the bank decreased from FY-05 to FY09 due to significant recession which results in high interest rate that badly affected the financial health of the NBP. Also the Non mark up / interest income was also decreased due to effective control over expenses, however rationalizing of work force hiring of expertise, refurbishing & expansion of branch net work pushed up expenses in the FY-09. However overall profit from FY-05 to FY09 decreased due to recession and a downward trend in the over all economy of a country.

Earning per share showed gradual decreased as compared with total mark up income show relative decreased from FY05 to FY-09 because of the less improved strategic business & organizational structure taken over the last few years coupled with the consistent & effective economic growth leading to impressive growth in NBP.

**FINANCIAL STATEMENT RATIOS FOR MCB AND NATIONAL BANK OF PAKISTAN, FOR THE YEAR ENDED Dec. 31, 2005 TO Dec 31, 2009.**

4.2 **Ratio Analysis.**

Ratios are used to measure the comparative performance of any organization with the industry. Due to the non-availability of financial information of other entities of the banking sector, the ratio based on the financial figure for five years, of MCB and National Bank of Pakistan has been computed.

Ratio analysis is an important and age-old technique of financial analysis. It simplifies financial statements, helps in planning, makes inter-firm comparison possible and helps in investment decisions.

In this portion, we analyze the financial ratios of MCB and NBP computed by utilizing the information given in its annual reports of the years 2005-2009.

4.2.1 **Liquidity Ratios**

a) **Current Ratio**

\[
\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}
\]

**Current Ratio: (MCB)**

<table>
<thead>
<tr>
<th>S. No</th>
<th>Years</th>
<th>Current Assets</th>
<th>Current Liabilities</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2005</td>
<td>215456463</td>
<td>8536674</td>
<td>25.24</td>
</tr>
<tr>
<td>2</td>
<td>2006</td>
<td>258363948</td>
<td>7089679</td>
<td>36.44</td>
</tr>
<tr>
<td>3</td>
<td>2007</td>
<td>263503372</td>
<td>10479058</td>
<td>25.14</td>
</tr>
<tr>
<td>4</td>
<td>2008</td>
<td>310284821</td>
<td>10551468</td>
<td>29.41</td>
</tr>
<tr>
<td>5</td>
<td>2009</td>
<td>301034271</td>
<td>18201090</td>
<td>36.71</td>
</tr>
</tbody>
</table>

**Current Ratio: (NBP)**

<table>
<thead>
<tr>
<th>S. No</th>
<th>Years</th>
<th>Current Assets</th>
<th>Current Liabilities</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2005</td>
<td>387338007</td>
<td>1757785</td>
<td>220.35</td>
</tr>
<tr>
<td>2</td>
<td>2006</td>
<td>458210044</td>
<td>10618898</td>
<td>43.15</td>
</tr>
<tr>
<td>3</td>
<td>2007</td>
<td>494487781</td>
<td>7095456</td>
<td>69.71</td>
</tr>
</tbody>
</table>
This ratio indicates the financial position of the firm in which there are sufficient liquid assets to meet the short term debts. This ratio indicates the short term solvency of business when due. A higher rate of this ratio means that the firm is financially strong enough to pay all its current debt moreover or in other words the firm is in strong position and is having higher value in the market. In the above computation MCB is having lower current ratio the national bank of Pakistan because of the difference in the level of assets national bank is holding which is a government bank having a government assets and treasury. Both banks are having fluctuation in the current ratio for the FY-2005-09.

4.2.2 Profitability Ratios
a) Net Profit Margin
Pre / after-tax Profit. (MCB)

<table>
<thead>
<tr>
<th>S.No</th>
<th>Year</th>
<th>Pre-Tax Profit</th>
<th>Sales</th>
<th>Percentage</th>
<th>After-Tax Profit</th>
<th>Sales</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2005</td>
<td>13,018,487</td>
<td>23,169,303</td>
<td>56.19%</td>
<td>8,922,415</td>
<td>23,169,303</td>
<td>38.3%</td>
</tr>
<tr>
<td>2</td>
<td>2006</td>
<td>18,500,670</td>
<td>30,769,477</td>
<td>60.13%</td>
<td>12,142,398</td>
<td>30,769,477</td>
<td>39.46%</td>
</tr>
<tr>
<td>3</td>
<td>2007</td>
<td>21,308,035</td>
<td>37,797,886</td>
<td>56.37%</td>
<td>15,265,562</td>
<td>37,797,886</td>
<td>40.39%</td>
</tr>
<tr>
<td>4</td>
<td>2008</td>
<td>21,867,566</td>
<td>45,835,264</td>
<td>47.71%</td>
<td>15,374,600</td>
<td>45,835,264</td>
<td>33.53%</td>
</tr>
<tr>
<td>5</td>
<td>2009</td>
<td>23,154,945</td>
<td>57,258,892</td>
<td>40.44%</td>
<td>15,495,297</td>
<td>57,258,892</td>
<td>27.06%</td>
</tr>
</tbody>
</table>

Pre / After-tax Profit (NBP)

<table>
<thead>
<tr>
<th>S.No</th>
<th>Year</th>
<th>Pre-Tax Profit</th>
<th>Sales</th>
<th>Percentage</th>
<th>After-Tax Profit</th>
<th>Sales</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2005</td>
<td>19,056,028</td>
<td>43,058,360</td>
<td>44.26%</td>
<td>12,709,444</td>
<td>43,058,360</td>
<td>29.52%</td>
</tr>
<tr>
<td>2</td>
<td>2006</td>
<td>26,310,577</td>
<td>56,263,826</td>
<td>46.76%</td>
<td>17,022,346</td>
<td>56,263,826</td>
<td>30.25%</td>
</tr>
<tr>
<td>3</td>
<td>2007</td>
<td>28,060,501</td>
<td>64,114,326</td>
<td>43.77%</td>
<td>19,033,773</td>
<td>64,114,326</td>
<td>29.69%</td>
</tr>
<tr>
<td>4</td>
<td>2008</td>
<td>23,000,998</td>
<td>77,358,660</td>
<td>29.73%</td>
<td>15,458,590</td>
<td>77,358,660</td>
<td>19.98%</td>
</tr>
<tr>
<td>5</td>
<td>2009</td>
<td>22,300,173</td>
<td>96,973,054</td>
<td>23%</td>
<td>18,211,846</td>
<td>96,973,054</td>
<td>18.78%</td>
</tr>
</tbody>
</table>

From the year 2005 to 2009, MCB’s pre-tax profit decrease from 56.19% to 40.44% due to significant natural disaster and financial crunch all over the world. As compared with NBP pre tax profit has decreased from 44.26% to 23.00%. By observing and comparing Pre tax ratios of both the banks the affects of global recession, natural disasters, frequent changes in the Government policies has affected more MCB as compared to the National bank. Similarly profit after tax for the FY-2005-2009 both banks have showed fluctuation during this period. In the end of FY-2009 both banks earned lowest ever profit during the period.

Pre / after-tax return on equity :(MCB)

<table>
<thead>
<tr>
<th>S.No</th>
<th>Year</th>
<th>Pre-Tax Profit</th>
<th>Total Equity</th>
<th>Pre-tax Return on Equity</th>
<th>After-Tax Profit</th>
<th>Total Equity</th>
<th>Return on equity Tax</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2005</td>
<td>13,018,487</td>
<td>23,307,763</td>
<td>55.85%</td>
<td>8,922,415</td>
<td>23,307,763</td>
<td>38.28%</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2006</td>
<td>18,500,670</td>
<td>40,844,314</td>
<td>45.30%</td>
<td>12,142,398</td>
<td>40,844,314</td>
<td>29.73%</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>2007</td>
<td>21,308,035</td>
<td>55,119,675</td>
<td>38.66%</td>
<td>15,265,562</td>
<td>55,119,675</td>
<td>27.70%</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>2008</td>
<td>21,867,566</td>
<td>58,436,054</td>
<td>37.42%</td>
<td>15,374,600</td>
<td>58,436,054</td>
<td>26.31%</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>2009</td>
<td>23,154,945</td>
<td>69,740,013</td>
<td>33.20%</td>
<td>15,495,297</td>
<td>69,740,013</td>
<td>22.22%</td>
<td></td>
</tr>
<tr>
<td>S.No</td>
<td>Year</td>
<td>Pre-Tax Profit</td>
<td>Total Equity</td>
<td>Pre-tax Return on Equity</td>
<td>After-Tax Profit</td>
<td>Total Equity</td>
<td>Return on Equity After Tax</td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>------</td>
<td>----------------</td>
<td>--------------</td>
<td>-------------------------</td>
<td>-----------------</td>
<td>--------------</td>
<td>----------------------------</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2005</td>
<td>19,056,028</td>
<td>46,245,732</td>
<td>41.21%</td>
<td>12,709,444</td>
<td>46,245,732</td>
<td>27.48%</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2006</td>
<td>26,310,577</td>
<td>74,340,712</td>
<td>35.39%</td>
<td>17,022,346</td>
<td>74,340,712</td>
<td>22.90%</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>2007</td>
<td>28,060,501</td>
<td>81,954,118</td>
<td>34.24%</td>
<td>19,033,773</td>
<td>81,954,118</td>
<td>23.22%</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>2008</td>
<td>23,000,998</td>
<td>116,373,654</td>
<td>19.77%</td>
<td>15,458,590</td>
<td>116,373,654</td>
<td>13.29%</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>2009</td>
<td>22,300,173</td>
<td>102,459,218</td>
<td>21.76%</td>
<td>18,211,846</td>
<td>102,459,218</td>
<td>17.77%</td>
<td></td>
</tr>
</tbody>
</table>

This ratio is a measure of banks ability to produce earning & therefore is an excellent indicator both of viability & capability of banks management. A high return on equity reflects that banks acceptance of strong investment opportunities & effective expense management. For the FY-2005 to FY-2009 of MCB pre-tax return on equity was 55.85% to 33.20% and similarly of NBP pre tax return was 41.21% to 21.76%. In the FY-2005-09 decreased because of an overall increase in expenses by the banks. Similarly for the FY-2005 to FY-2009 of MCB After-tax return on equity was 38.28% to 22.20% and similarly of NBP After tax return was 27.48% to 17.77%. In the FY-2005-09 fluctuation in the ratio occurs because of an overall increase in expenses by the banks.

C. Return on Assets:

3): Return on assets (Pre / after –tax profit) : (MCB)

Pre-tax returns on assets ratio shows that how effectively total net assets have been employed by MCB.

(In %)

<table>
<thead>
<tr>
<th>S.No</th>
<th>Year</th>
<th>Pre-Tax Profit</th>
<th>Total Assets</th>
<th>Pre-Tax Return on Assets</th>
<th>After-Tax Profit</th>
<th>Total Assets</th>
<th>Return on Assets After Tax</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2005</td>
<td>13,018,487</td>
<td>298,776,797</td>
<td>4.36%</td>
<td>8,922,415</td>
<td>298,776,797</td>
<td>2.99%</td>
</tr>
<tr>
<td>2</td>
<td>2006</td>
<td>18,500,670</td>
<td>342,108,243</td>
<td>5.41%</td>
<td>12,142,398</td>
<td>342,108,243</td>
<td>3.55%</td>
</tr>
<tr>
<td>3</td>
<td>2007</td>
<td>21,308,035</td>
<td>410,485,517</td>
<td>5.19%</td>
<td>15,265,562</td>
<td>410,485,517</td>
<td>3.72%</td>
</tr>
<tr>
<td>4</td>
<td>2008</td>
<td>21,867,566</td>
<td>443,615,904</td>
<td>4.93%</td>
<td>15,374,600</td>
<td>443,615,904</td>
<td>3.47%</td>
</tr>
<tr>
<td>5</td>
<td>2009</td>
<td>23,154,945</td>
<td>509,223,727</td>
<td>4.55%</td>
<td>15,495,297</td>
<td>509,223,727</td>
<td>3.04%</td>
</tr>
</tbody>
</table>

This ratio is used in calculating whether management has earned a reasonable return with the assets under its control. Pre-tax return on assets in the FY-2005-09 of MCB was 4.36%. to 4.55% due to increase in assets. Similarly NBP Pre-tax return on assets in the FY-2005-09 of NBP was 3.30%. to 2.36% also increase due to increase in assets. On the other hands both banks after tax profits on assets for the FY-2005-09 had showed fluctuation.

D. Net Profit Margin

Net Profit Margin: (MCB)

<table>
<thead>
<tr>
<th>S. No</th>
<th>Years</th>
<th>Profit After Taxes</th>
<th>Sales</th>
<th>Percentages</th>
</tr>
</thead>
</table>

TABLE NO. 4.21
### Net Profit Margin: (NBP)

**TABLE NO. 4.22**

<table>
<thead>
<tr>
<th>S. No</th>
<th>Years</th>
<th>Profit After Taxes</th>
<th>Sales</th>
<th>Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2005</td>
<td>12,709,444</td>
<td>43,058,360</td>
<td>29.52%</td>
</tr>
<tr>
<td>2</td>
<td>2006</td>
<td>17,022,346</td>
<td>56,263,826</td>
<td>30.25%</td>
</tr>
<tr>
<td>3</td>
<td>2007</td>
<td>19,033,773</td>
<td>64,114,326</td>
<td>29.69%</td>
</tr>
<tr>
<td>4</td>
<td>2008</td>
<td>15,458,590</td>
<td>77,358,660</td>
<td>19.98%</td>
</tr>
<tr>
<td>5</td>
<td>2009</td>
<td>18,211,846</td>
<td>96,973,054</td>
<td>18.78%</td>
</tr>
</tbody>
</table>

This ratio provides management of banks with data that can be compared with the actual gross profit margin. Investor and shareholder take particular note of the net profit margin as indicators of earnings available for dividends and reinvestments. This ratio also measures profitability with respect to income generated. Net Profit margin of MCB for the FY-2005-09 has showed fluctuation due to different level of income. Net Profit margin of NBP for the FY-2005-09 has decreased due to decrease in the level of income of bank.

### E. Operating Profit Margin

**Operating Profit Margin: (MCB)**

**TABLE NO. 4.23**

Operating Profit Margin: (NBP)

<table>
<thead>
<tr>
<th>S. No</th>
<th>Years</th>
<th>Earnings before interest and taxes</th>
<th>Sales</th>
<th>Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2005</td>
<td>15,799,955</td>
<td>23,169,303</td>
<td>68.19%</td>
</tr>
<tr>
<td>2</td>
<td>2006</td>
<td>23,026,029</td>
<td>30,769,477</td>
<td>74.83%</td>
</tr>
<tr>
<td>3</td>
<td>2007</td>
<td>29,173,568</td>
<td>37,797,886</td>
<td>77.18%</td>
</tr>
<tr>
<td>4</td>
<td>2008</td>
<td>33,428,306</td>
<td>45,835,264</td>
<td>72.93%</td>
</tr>
<tr>
<td>5</td>
<td>2009</td>
<td>38,996,408</td>
<td>57,258,892</td>
<td>68.11%</td>
</tr>
</tbody>
</table>

**TABLE NO. 4.24**

For the FY-2005-09, MCB’s operating profit decrease from 68.19% to 68.11% which is a very negligible decrease and shows the stability of over all policies and operations of the banks. As compared with NBP operating profit has decreased from 68.23% to 63.72%. By observing and comparing operating profits of both the banks the national bank of Pakistan has showed almost 4.51% as compared with the MCB of only 0.08% which is a very slight decrease as compared to NBP. This ratio showed that operating profit is more stable and consistent in MCB rather then the NBP.
F. Profit per Employee Computation:

Profit per Employee Computation: (MCB)

<table>
<thead>
<tr>
<th>S. No</th>
<th>Years</th>
<th>Net Profit( Earnings) After Taxes</th>
<th>Average number of Employees</th>
<th>Profit per Employee</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2005</td>
<td>8,922,415</td>
<td>9377</td>
<td>951.52</td>
</tr>
<tr>
<td>2</td>
<td>2006</td>
<td>12,142,398</td>
<td>9011</td>
<td>1347.51</td>
</tr>
<tr>
<td>3</td>
<td>2007</td>
<td>15,265,562</td>
<td>9721</td>
<td>1570.37</td>
</tr>
<tr>
<td>4</td>
<td>2008</td>
<td>15,374,600</td>
<td>10160</td>
<td>1513.25</td>
</tr>
<tr>
<td>5</td>
<td>2009</td>
<td>15495297</td>
<td>9397</td>
<td>1648.96</td>
</tr>
</tbody>
</table>

Profit per Employee Computation: (NBP)

<table>
<thead>
<tr>
<th>S. No</th>
<th>Years</th>
<th>Net Profit( Earnings) After Taxes</th>
<th>Average number of Employees</th>
<th>Profit per Employee</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2005</td>
<td>12,709,444</td>
<td>13824</td>
<td>919.37</td>
</tr>
<tr>
<td>2</td>
<td>2006</td>
<td>17,022,346</td>
<td>14019</td>
<td>1214.24</td>
</tr>
<tr>
<td>3</td>
<td>2007</td>
<td>19,033,773</td>
<td>14079</td>
<td>1352.35</td>
</tr>
<tr>
<td>4</td>
<td>2008</td>
<td>15,458,590</td>
<td>15204</td>
<td>1017.54</td>
</tr>
<tr>
<td>5</td>
<td>2009</td>
<td>18,211,846</td>
<td>16248</td>
<td>1121.67</td>
</tr>
</tbody>
</table>

This ratio indicates that the banks past performance an industry averages form the basis of comparison. It is a measure of efficiency in terms of staff level and net profits generated. From the definition of above ratio which shows a clear picture that MCB bank generates more profit per employee as compare to National Bank.

G. Assets per Employee Computation:

Assets per Employee Computation: (MCB)

<table>
<thead>
<tr>
<th>S. No</th>
<th>Years</th>
<th>Total Assets</th>
<th>Average number of Employees</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2005</td>
<td>298,776,797</td>
<td>9377</td>
<td>31862.73</td>
</tr>
<tr>
<td>2</td>
<td>2006</td>
<td>342,108,243</td>
<td>9011</td>
<td>37965.62</td>
</tr>
<tr>
<td>3</td>
<td>2007</td>
<td>410,485,517</td>
<td>9721</td>
<td>42226.68</td>
</tr>
<tr>
<td>4</td>
<td>2008</td>
<td>443,615,904</td>
<td>10160</td>
<td>43662.98</td>
</tr>
<tr>
<td>5</td>
<td>2009</td>
<td>509,223,727</td>
<td>9397</td>
<td>54190.03</td>
</tr>
</tbody>
</table>

Assets per Employee Computation: (NBP)

<table>
<thead>
<tr>
<th>S. No</th>
<th>Years</th>
<th>Total Assets</th>
<th>Average number of Employees</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2005</td>
<td>577,719,114</td>
<td>13824</td>
<td>41791.02</td>
</tr>
<tr>
<td>2</td>
<td>2006</td>
<td>635,132,711</td>
<td>14019</td>
<td>45305.14</td>
</tr>
<tr>
<td>3</td>
<td>2007</td>
<td>762,193,593</td>
<td>14079</td>
<td>54136.91</td>
</tr>
<tr>
<td>4</td>
<td>2008</td>
<td>817,758,326</td>
<td>15204</td>
<td>53785.74</td>
</tr>
<tr>
<td>5</td>
<td>2009</td>
<td>944,232,762</td>
<td>16248</td>
<td>58113.78</td>
</tr>
</tbody>
</table>

This ratio shows the results of the computation are used as comparisons with the banking industry averages and the banks past performance. It's a measure of efficiency in terms of staff levels and funds invested in assets. From the above explanation it can be observed as the investment of each employee of NBP is greater then MCB Bank. From the FY-2005-09 in NBP each employee investment increases from Rupees 41791.02 (in thousands) to Rupees 58113.78(in thousands) as compared with the MCB for the FY-2005-09 Rupees 31862.73(in thousands) to Rupees 54190.03 (in thousands).
H. Total Assets Turnover

Asset Turnover: (MCB)

TABLE NO. 4.29

<table>
<thead>
<tr>
<th>S. No</th>
<th>Years</th>
<th>Sales</th>
<th>Total Assets</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2005</td>
<td>23,169,303</td>
<td>298,776,797</td>
<td>7.75%</td>
</tr>
<tr>
<td>3</td>
<td>2007</td>
<td>37,797,886</td>
<td>410,485,517</td>
<td>9.21%</td>
</tr>
<tr>
<td>4</td>
<td>2008</td>
<td>45,835,264</td>
<td>443,615,904</td>
<td>10.33%</td>
</tr>
<tr>
<td>5</td>
<td>2009</td>
<td>57,258,892</td>
<td>509,223,727</td>
<td>11.24%</td>
</tr>
</tbody>
</table>

Asset Turnover: (NBP)

TABLE NO. 4.30

<table>
<thead>
<tr>
<th>S. No</th>
<th>Years</th>
<th>Sales</th>
<th>Total Assets</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2005</td>
<td>43,058,360</td>
<td>577,719,114</td>
<td>7.45%</td>
</tr>
<tr>
<td>2</td>
<td>2006</td>
<td>56,263,826</td>
<td>635,132,711</td>
<td>8.86%</td>
</tr>
<tr>
<td>3</td>
<td>2007</td>
<td>64,114,326</td>
<td>762,193,593</td>
<td>8.41%</td>
</tr>
<tr>
<td>4</td>
<td>2008</td>
<td>77,358,660</td>
<td>817,758,326</td>
<td>9.46%</td>
</tr>
<tr>
<td>5</td>
<td>2009</td>
<td>96,973,054</td>
<td>944,232,762</td>
<td>10.27%</td>
</tr>
</tbody>
</table>

This ratio provides management with a level of assets that they can compare with industry averages or the banks past performance. If the banks can generate increased revenues with the same level of assets this would indicates a more efficient use of investments funds as can be observed from the above ratio of MCB for a FY-2005-09 the bank utilized assets in profitable way as increased had occurred in the FY-2009. Similarly the NBP assets turn over ratio for a FY-2005-09 has improved as the bank utilized assets in profitable way as increased had occurred in the FY-2009 and the investors had full trust in the policies of managements of both banks.

4.2.3 Debt Ratio

A. Debt-Assets Ratio

8) Total Debt to Total Assets : (MCB)

TABLE NO. 4.31

<table>
<thead>
<tr>
<th>S. No</th>
<th>Years</th>
<th>Total Debt</th>
<th>Total Assets</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2005</td>
<td>275,469,034</td>
<td>298,776,797</td>
<td>92.2%</td>
</tr>
<tr>
<td>2</td>
<td>2006</td>
<td>301,263,929</td>
<td>342,108,243</td>
<td>88.06%</td>
</tr>
<tr>
<td>3</td>
<td>2007</td>
<td>355,365,842</td>
<td>410,485,517</td>
<td>86.57%</td>
</tr>
<tr>
<td>4</td>
<td>2008</td>
<td>385,179,850</td>
<td>443,615,904</td>
<td>86.83%</td>
</tr>
<tr>
<td>5</td>
<td>2009</td>
<td>439,483,714</td>
<td>509,223,727</td>
<td>86.30%</td>
</tr>
</tbody>
</table>

Total Debt to Total Assets: (NBP)

TABLE NO. 4.32

<table>
<thead>
<tr>
<th>S. No</th>
<th>Years</th>
<th>Total Debt</th>
<th>Total Assets</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2005</td>
<td>503,378,402</td>
<td>577,719,114</td>
<td>87.13%</td>
</tr>
<tr>
<td>2</td>
<td>2006</td>
<td>553,178,593</td>
<td>635,132,711</td>
<td>87.10%</td>
</tr>
<tr>
<td>3</td>
<td>2007</td>
<td>645,855,939</td>
<td>762,193,593</td>
<td>84.74%</td>
</tr>
<tr>
<td>4</td>
<td>2008</td>
<td>715,299,908</td>
<td>817,758,326</td>
<td>87.47%</td>
</tr>
<tr>
<td>5</td>
<td>2009</td>
<td>824,676,384</td>
<td>944,232,762</td>
<td>87.34%</td>
</tr>
</tbody>
</table>

This ratio is similar to debt to equity capital in terms of funding sources that indicates the level of control that could be exercised by the providers of debt. Investors can exercise control over banks when repayments of
principle and interest fall behind, by appointing receivers or receiver managers to take control of the assets. The total debt to total assets ratio of MCB for FY-2005-09 have decreased from 92.20% to 86.3% due to outstanding liabilities and interest bearing borrowings. On other hand NBP total debt to total assets have remain consistent for the FY-2005-09 because of the Government treasury repayment of outstanding liabilities and interest borrowings.

B. Debt-Equity Ratio

4) Total debt to equity capital: (MCB)

**TABLE NO. 4.33**

<table>
<thead>
<tr>
<th>S. No</th>
<th>Years</th>
<th>Total Debt</th>
<th>Total Equity</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2005</td>
<td>275,469,034</td>
<td>23,307,763</td>
<td>1181.88%</td>
</tr>
<tr>
<td>2</td>
<td>2006</td>
<td>301,263,929</td>
<td>40,844,314</td>
<td>737.59%</td>
</tr>
<tr>
<td>3</td>
<td>2007</td>
<td>355,365,842</td>
<td>55,119,675</td>
<td>644.72%</td>
</tr>
<tr>
<td>4</td>
<td>2008</td>
<td>385,179,850</td>
<td>58,436,054</td>
<td>659.15%</td>
</tr>
<tr>
<td>5</td>
<td>2009</td>
<td>439,4837,14</td>
<td>69,740,013</td>
<td>630.17%</td>
</tr>
</tbody>
</table>

**TABLE NO. 4.34**

<table>
<thead>
<tr>
<th>S. No</th>
<th>Years</th>
<th>Total Debt</th>
<th>Total Equity</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2005</td>
<td>503,378,402</td>
<td>74,340,712</td>
<td>677.12%</td>
</tr>
<tr>
<td>2</td>
<td>2006</td>
<td>553,178,593</td>
<td>81,954,118</td>
<td>674.99%</td>
</tr>
<tr>
<td>3</td>
<td>2007</td>
<td>645,855,939</td>
<td>11,633,7654</td>
<td>555.16%</td>
</tr>
<tr>
<td>4</td>
<td>2008</td>
<td>715,299,908</td>
<td>102,459,218</td>
<td>698.13%</td>
</tr>
<tr>
<td>5</td>
<td>2009</td>
<td>824,676,384</td>
<td>119,556,378</td>
<td>689.78%</td>
</tr>
</tbody>
</table>

This ratio indicates the level of control that could be exercised by the providers of debt. Creditors can exercise control over banks when repayments of principle and interest fall behind, by appointing receivers or receiver managers to take control of the assets. The investments provided by the share holders during the FY-2005-09 of MCB are obtained higher from interest bearing borrowings and outstanding liabilities. The investments provided by the share holders during the FY-2005-09 of NBP are obtained higher from interest bearing borrowings and outstanding liabilities and the debt to equity capital had increased from 677.12% to 689.78%.

**CONCLUSION AND RECOMMENDATION**

**5.1 CONCLUSION:**
A conclusion can be only be made if necessary information is provided about the financial analysis of both banks can be viewed. In the light of information about MCB provided in this report the work performance, efficiency, quality of customer services, market value and financial position of the MCB can be seen. It’s as clear as a day that MCB is totally changed after its privatization. It made a consistent growth. In spite the of political change in the country, change in the govt. policies external economic factor increase in inflation decrease in saving habits of the people, more reliance on foreign loans, the MCB has sustained its profitable position. After studying and a thorough financial analysis of MCB for last five years MCB growths in its assets has increased from Rs.298776797 (in thousands) to Rs.509223727 (in thousands) which is a positive sign of growth of bank. The liability of MCB had been decreased year by year during FY-2005-09 as compared to total assets. On the other hand total equity of the MCB bank for the FY-2005-09 had increase because of the increase in the net assets, and secondly the investor confidence on the banks increased which in turn increase the intangible assets of the bank. i.e., Good will in this competitive market. The return on equity (ROE) of the bank had shown fluctuation due to increase inflationary pressure and computerization of different branches and expansion of new branches with in and outside the country and increase in other expanses of the bank for the FY-2005-09.

The financial analysis of NBP for last five years had shown remarkable growths in its assets have increased from Rs.577719114 (in thousands) to Rs.944232762 (in thousands) which is a positive sign of growth of bank. The liability of NBP had been remained consistently year by year during FY-2005-09 as compared to total assets. On the other hand total equity of the NBP for the FY-2005-09 had also been remained consistent because of the working capital, and secondly the investor confidence on the bank because of government bank which enhanced because of the trust of the investor which in turn increase the intangible assets of the bank i.e.
good will in this competitive market. The return on equity (ROE) of the bank had shown decreased because of not affective utilization of assets as compared to MCB bank and secondly control on their expanses because of adoption of new information technology and also renovation of branches with in and outside the country that cause an increase in other expanses of the bank for the FY-2005-09.

The results based over the findings of the analysis of financial statements of both the banks shows that MCB had utilized their assets more efficiently and affectively as compared to NBP. The return on equity ratio of MCB Bank is much better then National bank of Pakistan for the FY-2005-09 which banks ability to produce earning & therefore is an excellent indicator both of viability & capability of banks management. A high return on equity reflects that banks acceptance of strong investment opportunities & effective expense management.

5.2 RECOMMENDATIONS:

After a thorough analysis of financial statements of both the banks the recommendations which is to be given for the improvement of both the banks. The weakness of both banks must be converted into opportunity and make its strengths in order to compete into the global competitive markets. Proper survey and research should be conducted before the introduction of any new schemes and branches in order to first make a cost and benefit analysis as the main ingredient for the successful operation of business.

Both of banks should take advantage from the prevailing new technology in the banking sector so as to earn profit from those niches which is ignored for many years and to provide best available services according to the needs and demands of the people in that niche. Loan procedure should not be cumbersome and should be made easy, so as to case the customers. Both the banks should adopt a lenient policy regarding advances of loans to the needy people and other deficit economic units which is the main source of revenue generation for the banks. Both the banks have liquidation problems the management of the banks must invest more in liquid assets like marketable security and market treasury bills to boost the trust of the depositors on bank. Both banks should also decrease their debt level in order to utilize the funds at the right time and at the right level to increase their net profits. Both banks should make best use of electronic and print media before launching any new schemes which benefits the people and the banks. The National bank of Pakistan should affectively utilize the technology and should computerization of different branches as well in short should invest more in information technology. There should be proper training (Up to date) for newly selected employees in order to make them more productive and to avoid over lapping of duties. The MCB bank should improve assets per employee ratio to increase the return of the assets per employee.
REFERENCES


“TO THE LIGHTHOUSE”: CELEBRATION OF IDEAL FEMININITY

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ABSTRACT: The aim of this paper is to examine Virginia Woolf’s contribution in giving to the world, a new concept of ideal femininity. Mrs. Woolf has celebrated femininity in her novels. Woolf, in her novels, has tried to bring out the anguish and emptiness that permeates in the lives of women. She has artistically crystallized the strife of a female that goes through in her mind. Woolf in this chaotic world tries to create a harmony which can be achieved when both the genders establish a close rapport with each other. She aims at creating a monoclinous world in which there is balance between intellect and emotion, man and woman, heart and mind.

Keywords: femininity; balance of intellect and emotion, patriarchy.

Introduction: Woolf concocts women characters that are paragon of hope and beauty in this patriarchal world for women such as “Mrs. Ramsay” and “Lily Briscoe” in “To the light house”. History has always treated womenas intellectually emasculated and physically fragile. The world around us is bifurcated in private and public spheres. Women are deemed to be creators of private life and their lives are restricted to basic unit known as home. While the physical world outside home is engineered by men only. Virginia Woolf was dissatisfied with this order. She wanted to make men realize the intellectual sophistication of women. “Women have been denied access to the reigning discourses of our century. And thus cannot express the outrage generated by a culture that labels them inferior” (Woolf 45). To make men understand what it means to be a woman, women need not fight an irrational battle with them; rather this understanding can be revealed to them through proper use of emotion and intellect. Woolf through character of Mrs. Ramsay has shown the invisible power of a woman while Lily Briscoe symbolized tension in women, who for assertion of their existenece at war not only with fellow men but also themselves.

Theoretical Underpinings: To the idea of “true” femininity. Mrs. Ramsay and Lily both succumb but they interpret it in different ways. The light house is often equated with the phallic ubiquitousness of masculine influence in society, but if viewed from another angle, it has more propinquity to feminine experiences as opposed to masculine ones. The female characters Mrs. Ramsay and Lily Briscoe are both, though in different ways, comparable to the nature of actual lighthouse. “Mrs. Ramsay serves as emotional security blanket for people in her life. Mrs. Ramsay fulfills her societal obligations by “burning bright” with empathy and compassion and “beckoning” people home to safe haven of emotional security and durability” (Sheridan 36). Even when she dies, she continues to shape lives of people. Lily would have never completed her painting of Mrs. Ramsay, James would have never reached the lighthouse and Mr. Ramsay would have never understood the importance of reaching to the lighthouse without the amaranthine memories of Mrs. Ramsay. Lily on the other hand “brightens” and “dims” her “light” (with respect to certain social situations which can be interpreted as “uninhabited acceptance of societal gender expectations, in an attempt to evade the social critique of rendering her less feminine when compared to idealized beacon of femininity: Mrs. Ramsay” (Sheridan 45). Mrs. Ramsay is a silent giver and protector. For a woman, two important males are husband: part creator and son: part created. Both her husband and son are enwrapped in her emotional security. Both of them are cushioned against any jolts through her perceptual presence if not actual presence. She lives on in the memory of people even when physically she is long gone. Mr. Ramsay is an intellectual person who is stuck between “Q” and “R”. The journey from “Q” TO “R” cannot be completed without the help of Mrs. Ramsay. Mr. Ramsay is intellectually well equipped for the journey but he is emotionally dependent on Mrs. Ramsay. Such is the
influence of Mrs. Ramsay not only on Mr. Ramsay but also on so many other people around her, such as Lily Briscoe, Carmichael and William Bankes. They all need her support and attention. She is like a mother whose mere presence is a source of assurance for her children that they can rise to any challenge. Mr. Ramsay has no question about the division of social roles which have shaped the relationship between husband and wife in patriarchal society. “Accordingly his lack of feminine qualities of creativity denies him an access to the forces of life. He wants to be assured that he lives in the heart of life. His need of sympathy renders him reliant on his wife’s femininity. He comes to her not only for sympathy but to feel that he is needed over the world” (Sheridan60). “Mrs. Ramsay looking at the same time be animated and alive as if all her energies were being fused into force burning and illuminating, and into this delicious fecundity, this foundation and spray of life, the fatal sterility of male plumed itself, like a beak of brass, barren and bare. He wanted sympathy. He was a failure” (Woolf42-43).

Mrs. Ramsay doubts her husband’s intelligence but she doesn’t let herself even for a second to feel finer than him. She doesn’t discuss her husband’s intellectual problems, but she takes roll of fulfiller of his needs and makes him dependent on his femininity. Mr. Ramsay is among those people who contribute so much to the world rationally but on emotional level they are barren. He is “taker” but does not have any capacity to give emotionally something. He like a child feels it is his right to feed off her emotionally and when he satiates his thirst for support he walks away insensitively without gratitude and without appreciating her beauty. “They had nothing to say, but something seemed, nevertheless, to go from her to him, it was the life. It was the power of it. It was the tremendous humor, she knew, she made him slap his thighs. Don’t interrupt me, he seemed to be saying, don’t say anything, just sit there and he went on reading” (Woolf 129). Mr. Bankes thought that Mr. Ramsay life oscillates between sterile thought and fertile wife. Mrs. Ramsay invisibly rules over the minds of those around her. Everybody is dependent on her. She is the finely tuned receptor to the needs of those around her. She is a burning light that enters into the crevices of mind and drives the moths of insecurities out. Mrs. Ramsay knows that everybody in the novel is lost and disturbed. They are stuck at a point where they are lost in disorderliness. They do not know about the next step. Mr. Ramsay is stuck in the distance between “Q” and “R”. Lily is afraid how to paint Mrs. Ramsay. She is afraid that painting would be stuck in the attic. Charles Tansley is stuck in his research. Mrs. Ramsay wants all of them to merge with each other. She wants everybody should embrace everybody else. She understands that role of woman is to create harmony and peace. When her surroundings do not merge, she questions her role and status of woman. “But what have I done with my life?... the room was very shabby...nothing seemed to have merged. They all sat separate” (Woolf 101). She has the skill of making men feel good. That’s why she makes them feel superior. She feels satisfied when they feel proud through their admiration of them. All the characters hold a divine love for her and want to attain unity with her. Mrs. Ramsay knows how to rule men without letting them know they are ruled by her. She is the embodiment of female power. She knows language of emotions and feelings that’s why she feels angry about her husband’s least interest in his children’s feelings and she tries to comfort James compassionately.

Mrs. Ramsay is the stereotypical mother figure and the novel cherishes her achievements as a mother of eight. Most of the characters admire her immensely. Lily admits being in love with her at times. Mrs. Ramsay is the most ideal symbol of female perfection and excellence. Mrs. Ramsay composure and attitude seems almost faultless. She is viewed by many as faultless, influential and supreme. Carmichael describes his admiration for Mrs. Ramsay. He believes that not only she was a beauty, but she was admired among everyone. He states “the torch of her beauty, she carried it erect into any room that she entered”. (Woolf 47). Lily describes Mr. Bankes adoration for Mrs. Ramsay, “for him to gaze as Lily saw him gazing at Mrs. Ramsay was a rapture, equivalent, lily felt to the loves of dozens of young men.”(Woolf 62). Also within 50 to 51, Lily is depicted as imagining herself in James position. Lily imagines that her head is leaning on Mrs. Ramsay’s lap. She thinks that this intimate moment of connection would help her achieve knowledge of intimacy. On page 51, lily has a thought , “could loving as people called it, make her and Mrs. Ramsay one, for it is not knowledge of unity that she desired but intimacy itself, which is knowledge”. Lily believed Mrs. Ramsay possessed many of the aspects and characteristics that she lacked. Lily considered many of these characteristics as being vital and essential in achieving the grace and stature of woman.

Lily unlike Mrs. Ramsay revolts against masculine needs. She denies her femininity and gets along with self division in the face of her relationships with men. She fistailed between personal reflection and social comparison. Following an intense contemplation of how Mrs. Ramsay could have possibly chosen Mr. Ramsay for a husband “lily [is] glad... to rest in silence, uncommunicative, to rest in extreme obscurity of human relationships” (Woolf 171). Ultimately, it seems as though lily adopts “the idea that the information necessary to the understanding of a person is not actually hidden in the sense of being behind or inside something; but the information must be voted carefully and then assembled with an intelligence that involves imagination”.(Chapter 90). This imaginative approach towards an emotionally vulnerable connection with others ultimately manifests itself in the creation of Lily’s portrait, through which she asserts (both literally and figuratively) that “so much depends ... on distance” (Woolf 191). Only when given the opportunity to reflect on Mrs. Ramsay’s adherence to social expectations of
femininity is Lily able to fully grasp the extent to which Mrs. Ramsay’s identity flourished on the emotional well being of others. Furthermore, she recognizes in Mrs. Ramsay an ability to be “sensitive to other people as perceivers, she knows their perceptions are bound up with a certain feelings and interest that the “public” world takes on a different form for each” (Chapter 83). “Lily’s art, like her portrait of Mrs. Ramsay is the embodiment of celebratory freedom- control over an aspect of one’s own life that no other can take away or distort” (Martinson 109). Mrs. Woolf aimed at setting up a new formula for personal development. She aspired always for the wholeness of personality – Androgyny. Androgyny and balancing of intellect and emotion. “It implies that the traditional gender identity, which restricts personal development, can be reformulated through the equal acquisition of positive feminine and masculine traits. To the lighthouse itself acts as a force behind a social reassessment of men’s and women’s everyday experiences” (Martinson 55). As is shown by lily Briscoe’s progressive understanding of what it is meant to be feminine, the light house is neither culmination of journey nor the resolution of nagging tension; rather it is the embodiment of powerful unadulterated vulnerability allowing for a (feminine) multiplicitious perspective of self and other. One must first arrive at a solid understanding of several avenues by which masculinity and femininity are constructed. In’to the lighthouse’ the “character of Charles Tansley act as a representation of omnipresent ideologies allowing for the subjugation of women of all respects from domesticity to academic scholarship” (Martinson 87). Mr. Ramsay, with his fixation on intellectual superiority becomes a very incomplete individual, one whose stern demeanor and harsh judgment works more toward his own isolation and inevitable eradication from the realm of philosophy. Mrs. Ramsay, is conditioned to meet her husband’s emotional needs as she is to perform her own social role as a subservient female, usually submits to her husband’s pathetically overbearing need for re assurance. Following the dinner party in “the window” Mrs. Ramsay retires to parlor where she proceeds to knit while Mr. Ramsay reads. In lieu of his philosophical dilemmas and personal struggle with intellectualambition, Mr. Ramsay looks to Mrs. Ramsay for support and admiration. After a few exchanges of dialogue, the simplicity of merely sitting in silence together, Mrs. Ramsay realizes she is being beckoned for emotional support. Mr. Ramsay “wanted something, wanted the thing she always found it so difficult to give him; wanted her to tell him that she loved him and that no she could not do” (Woolf 123). Although Mrs. Ramsay refusal to say I love you may seem a triumph in the face of masculinity , you wrong. It’s going to be wet tomorrow, you won’t be able to go”. Succumbing to her husband’s previous assertions that weather would not permit a forthcoming trip to the lighthouse. Seemingly irrelevant, this acquiesce to Mr. Ramsay former declaration actually function as Mrs. Ramsay way of telling Mr. Ramsay she loves him, showing how a woman is overwhelmingly wrapped up in her ability to reinforce her husband’s masculinity( with respect to authority). Mrs. Ramsay is a romanticized version of a delicate femininity. All the male characters are in need of constant ego satisfaction and all of them get their ego satisfied by gaining an iota of her attention. She feeds everyone’s ego and feels it is her duty to do so.

Lily Briscoe on the other hand stands for that woman who is in search of herself. She wants to establish herself. She wants to assert her position. She does not like the traditional notion that women are subservient to men and wants to shed it off. She does not want to get married because of the sole reason that she wants to rebel against the traditional role of the woman assigned to her by society. To the light house for lily is her journey in grasping the true meaning of true femininity. She is a painter and wants to create an everlasting picture. She does not understand the feminine ideals but is enchanted with the personality of Mrs. Ramsay and wants to paint her. She is a feminist and wants to rule men rather be ruled by them. It is only in the end of novel that she culminates in herself men can’t be conquered by fighting them off. They can be ruled over with the use of emotion and intellect. That’s how Mrs. Ramsay has ruled them. Throughout novel lily looks up to the personality of Mrs. Ramsay but she takes ten long years to imbibe from the personality of Mrs. Ramsay what it takes to be a woman. She initially refuses to adhere to the roles that society sets for women. “Through the pursuit of an ever changing homogenizing, elusive ideal of femininity. Female bodies become what Foucault called “docile bodies”. Bodies whose forces and energies are habituated to external regulation, subjection, transformation, improvement… through these disciplines, we continue to memorize on our bodies the feel and the conviction of our lack or insufficiency” (Bordo 42). Before lily begins to paint she becomes unconscious of the world around her and of her own body. “Always(it was in her body or sex she did not know which) before she knew exchanged the fluidity of life for the concentration, she had a few moments of nakedness when she seemed like an unborn soul, a soul reft of body”. (Woolf 119). The process that lily goes through is further explained. “Certainly she was losing conscious of outer things… and her name and personality and appearance”. (Woolf 119) lily looses consciousness of world around her, of the outer things. As we have seen earlier, this world around lily is the world that doubts her ability to paint and which questions the verities that can women paint at all?? Women have to overcome the assertion that they are capable of creating art before they are
able to paint. Lily shows the tendencies of wanting to challenge the feminine ideal which stipulates that women should devote their life to family and household work.

She lives alone and paints which deviates from the feminine ideal. At one point, she also expresses her wish to help one of the summer guests to find a lost brooch and thereby be an adventurer. “Lily wanted to protest violently and outrageously her desire to help him, envisaging how in the dawn on beach, she would be the one to pounce on the brooch half hidden by the same stone, and thus herself be included among the sailors and adventurers” (WoolfLighthouse 73-4).

Conclusion: “To the Lighthouse” suggests that femininity is not something that must either be totally accepted or completely repudiated. In this particular novel, Woolfopines that it is a social phenomenon capable of touching all lives, a phenomenon in need of assessment with respect to its strengths and limitations. Men and women have to accept and respect each other for the world to be harmonious whole. Women cannot move in the world without the support and guidance of the men. The same holds true for men. The world history is filled with marginalization and ostracisation of women. Women in this regard have to struggle a lot to enter into the main frame picture. This struggle should be done not with shouting and yelling but with the use of intellect and emotion. Women should make their presence felt in unseen and unfelt ways like Mrs. Ramsay. Everybody in the novel needs bits of Mrs. Ramsay for their own fulfillment. This kind of dependability on any woman is testimony to the fact how important women are in lives of men. The place that Mrs. Ramsay has secured has secured in the petriarchical world should be the ideal of every other woman in the world.

REFERENCES

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Secondary Source:  
SUPPLY RESPONSE OF SUGARCANE IN MARDAN DISTRICT IMPLICATIONS FOR FUTURE POLICY OPTION IN KHYBERPAKHTUNKHWA, PAKISTAN

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ABSTRACT: This study was conducted to estimate the supply response of sugarcane growers in three selected villages of Mardan District using Normalized Restricted Translog Profit Function. A sample of 100 respondents were randomly selected using proportional allocation sampling technique. The results revealed that the farmers in the study area were price responsive. The price elasticity of sugarcane was 1.308. The output supply elasticities with respect to wage rate, fertilizer price, land, education and experience were -0.847, -0.498, 1.168, 0.099 and 0.473 respectively. Labor demand elasticities with respect to sugarcane price, wage rate, fertilizer price, land, education and experience were 2.377, -2.230, -0.998, 1.329, 0.561 and 0.159 respectively. Fertilizer demand elasticities with respect to sugarcane price, wage rate, fertilizer price, land, education and experience were 2.458, -0.567, -2.778, 1.674, 0.560 and 0.539 respectively. Finally, the elasticities of profit with respect to sugarcane price, wage rate, fertilizer price, land, education and experience were 2.269, -0.809, -0.460, 1.041, 0.089 and 0.002 respectively. The study revealed that increased fertilizer application affects on-farm employment positively. Increase in the area under sugarcane significantly increases the sugarcane supply, profit and influence the demand for the variable inputs. The study suggested that though increase in output price could significantly increase output but the current trade liberalization trend under WTO, the government should use other policy tools rather than support prices to increase supply. Moreover it is also suggested that government can reduce total cost of sugarcane by eliminating or reducing levies like sale tax on fertilizer and introducing cheap indigenous technology.

Introduction: Pakistan is predominantly an agricultural country. Agriculture contributes over 21.8% to GDP in 2009. Pakistan’s agriculture has made a long and difficult journey over last several decades. Inspite of structural shift towards industrialization, agriculture is the largest sector of the economy with deep impact on socio-economic set up. It is the source of livelihood of almost 44.7% of total employed labor force in the country. No strategy for economic reforms can succeed without sustained and broad based agricultural development which would be critical for raising living standards, alleviating poverty, assuring food security, generating buoyant market for expansion of industry and services and making substantial contribution to the national economic growth [Government of Pakistan (GoP), 2008-09].

Achievement of rapid agricultural growth, particularly self sufficiency in food, has been the core objective of development planning since Pakistan came into being. To achieve this objective, input subsidies and price support policies have been pursued as policy options for anumber of agricultural crops. There has been increased demand for food grains as well as cash needs due to increase in population. All these changes in economic, physical and market conditions may have affected supply responses for agricultural products (Himayatullah, 1994). The knowledge of supply response greatly...
helps in farm decisions in allocation of resources in the right direction. It can help planners and policy makers to allocate and achieve productions targets and in longer term planning. It thus provides framework for adjusting production to the optimum resource allocation to promote economic development. The supply response equations can be used to forecast the agricultural supplies in the future (Muhammad et al., 2007).

Sugarcane is an important industrial and cash crop in Pakistan and in many countries of the world. The sugar industry is the second largest industry in the country. Pakistan is the 6th largest sugarcane producing country in the world. Besides sugar production, sugarcane produces numerous valuable byproducts like, alcohol used by pharmaceutical industry, ethanol used as fuel, bagasse used for paper, and chip board manufacturing and press mud used as a rich source of organic matter and nutrients for crop production. In 2008-09, sugarcane was sown on area of 1029 thousand hectares, 17.1 percent lower than 2007-08. Sugarcane production for the year 2008-09 is estimated at 50.0 million tones, against 63.9 million tons last year (2007-08). This indicates significant decline of 21.7 percent over the production of last year. The main reasons for lower production are shortage of irrigation water, shifting of area to rice crop production, less use of DAP (Di-Ammonium-Phosphate) and non-payments of dues to farmers by the sugar mills on time for the last year’s crop (GoP, 2008-09). Supply response would be helpful in this regard because the supply parameters are the foundation for most agricultural policy analysis. Once the direction and magnitude of interactions among the crop and factors affecting crop output supply are determined, planners can easily assess the effect of price policy on output. The estimated parameters of supply response are particularly useful in welfare analysis to estimate the effects of alternative policy options on producers.

**Objectives Of The Study:** The main objective of the study was to estimate supply response of sugarcane growers in the study area, obtain valid output supply and input demand elasticities by applying reliable method of estimation and to, thereby, forward recommendations on the basis of findings.

**Materials And Methods:** A Sample of 100 respondents (29 percent of the total population) were interviewed, randomly selected from three selected villages (i.e. Jabar, Katlang and KhazanaDairi) of District Mardan.

**Empirical Model:** The Normalized Translog Profit Function Approach was used, as formulated by Christensen, Jorgensen, and Lau;

\[
\ln \Pi^*_w = \alpha_0 + \sum_{i=1}^2 \ln p^*_i + 1/2 \sum_{i=1}^2 \sum_{j=1}^2 \gamma_{ij} \ln p^*_i \ln p^*_j + \sum_{i=1}^2 \sum_{k=1}^3 \lambda_{ik} \ln p^*_i \ln z_k + \\
\sum_{k=1}^3 \beta_k \ln z_k + 1/2 \sum_{k=1}^3 \sum_{h=1}^3 \theta_{kh} \ln z_k \ln z_h + \epsilon
\]

Where

- \(\Pi^*_w\) = Restricted profit, \(\Pi^*_w\), normalized by the output price \(P^*_w\)
- \(P^*_i\) = Price of ith input \((P_i)\) normalized by the output price \(P^*_w\)
- \(i \neq j\)
- Labour
- Fertilizer
- \(Z_k\) = Quantity of fixed input, k
- \(k = h\)
- Area under sugarcane crop
- Average no. of schooling years per male family member above 13 years
- Farming Experience
- \(\alpha_0, \alpha_i, \gamma_{ij}, \lambda_{ik}, \beta_k, \theta_{kh}\) and \(\theta_{kh}\) are parameters to be estimated.
- \(\epsilon\) = Random error

Labour and fertilizer cost were used as variable inputs and land under sugarcane crop, farming experience and education as fixed inputs (Farooq et al., 2001 and Chaudry et al., 1998). The variables included in the model are defined below:

- **Restricted Profit:** restricted profit was obtained by subtracting the cost of variable inputs (cost of labour and cost of fertilizer in this case) from total revenue. The restricted profit was then normalized by the output price.
- **Labour:** Labour input used in the model comprised the family labour and the casually hired...
labours and was normalized by the output price. It was transformed into monetary expenditure by adding the imputed cost of family labour at the permanently hired labour wage rate in the area concerned to the expenditure on the casual and/or regularly hired labour. Child and female labour was converted into man-equivalents by treating two children or two women equal to one man. The weighted average of the daily money wage rate was calculated by dividing the total labour expenditure by the labour days per farm.

- **Fertilizer:** Fertilizer input per farm was measured as money price of fertilizer per kilogram normalized by the output price. It was a weighted price per kilogram of fertilizer worked for all kinds of fertilizers used by the sample farmers. More specifically, it was obtained by dividing the total fertilizer expenditure per farm by the total kilogram of fertilizer used.

- **Land:** Land input was measured as the cultivated land acres operated by sample households.

- **Education:** It was measured as the average number of years of schooling per male family member above 13 years of age.

- **Farming Experience:** Farming experience is the total no. of years the farmer has started farming.

The corresponding share equations are expressed as,

\[
S_i = \frac{P_iX_i}{\Pi} = - \alpha_i \ln \Pi + \sum_{j=1}^{3} \delta_{ij} Z_k
\]

\[
S_w = \frac{P_wX_w}{\Pi} = 1 + \alpha \ln \Pi - \alpha \ln P_w
\]

Where \( S_i \) is the share of ith input, \( S_w \) is the share of output, \( X_i \) denotes the quantity of input i and \( X_w \) is the level of sugarcane output.

Since the input and output shares come from a singular system of equations (since by definition \( S_w - \sum S_i = 1 \)), one of the share equations, the output share, was dropped and the profit and factor demand equations were estimated as a simultaneous system.

**Estimation of Elasticities**

(a) **Input Demand Elasticities**

The own price elasticity of demand for variable input i (\( \eta_{ii} \)), was estimated as:

\[
\eta_{ii} = - S_i \frac{\gamma_{ii}}{S_i} - 1
\]

Where \( S_i \) is the ith share equation, at the sample mean.

For the cross-price elasticity of demand for ith variable input with respect to the price of jth variable input (\( \eta_{ij} \)), the following expression was used.

\[
\eta_{ij} = - S_j \frac{\gamma_{ij}}{S_i} \text{ for } i \neq j
\]

The following equation was used for estimating the elasticity of demand for variable input with respect to output price, \( P_w (\eta_{iw}) \)

\[
\eta_{iw} = \frac{S_w + \sum_{j=1}^{3} \gamma_{iw}}{S_i}
\]

The elasticity of demand for variable input with respect to kth fixed factor, \( \eta_{ik} \)

\[
\eta_{ik} = (\beta_k + \delta_{ik} \ln P_i + \sum_{n=1}^{m} \theta_{nk} \ln Z_n) \frac{\delta_{ik}}{S_i}
\]

(b) **Output Supply Elasticities**

To compute the elasticity of output supply with respect to price of ith variable input (\( \epsilon_{wi} \)) the following equation was used.
The own price elasticity ($c_{ww}$) was calculated using the following equation:

$$c_{ww} = \sum_{j=1}^{2} \frac{\partial y_{ij}}{\partial y_{iw}}$$

The elasticity of output supply with respect to fixed input $k$ ($c_{wk}$) was computed as:

$$c_{wk} = \beta_k + \sum_{j=1}^{2} \delta_{kj} P_i + \theta_k Z_h + \sum_{j=1}^{3} \delta_{kj} S_w$$

### (c) Profit Elasticities

These are defined as:

$\frac{\partial \ln \Pi}{\partial \ln P_i}$

For the elasticity of profit with respect to changes in input prices and quantities of fixed inputs.

### Results

**Parameters Estimates of the Translog Profit Function:** The parameter estimates of the translog profit function and input demand equations are given in the following equation. The parameters of the translog profit function and the input demand equations are used to derive output supply and input demand elasticities with respect to sugarcane price, variable input prices and quantities of fixed inputs.

The following model was empirically estimated:

$$\ln \Pi_w = \beta_0 + \beta_1 \ln P_1 + \beta_2 \ln P_2 + \beta_3 \ln Z_1 + \beta_4 \ln Z_2 + \beta_5 \ln Z_3 + \frac{1}{2} \beta_b (\ln P_1)^2 + \beta_1 \ln P_1 \ln P_2 + \beta_2 \ln P_1 \ln Z_1 + \beta_3 \ln P_1 \ln Z_2 + \beta_4 \ln P_1 \ln Z_3 + \beta_5 \ln P_1 Z_1 + \beta_6 \ln P_1 Z_2 + \beta_7 \ln P_1 Z_3 + \beta_8 \ln P_2 \ln Z_1 + \beta_9 \ln P_2 \ln Z_2 + \beta_{10} \ln P_2 \ln Z_3 + \beta_1 \ln Z_1 \ln Z_2 + \frac{1}{2} \beta_{11} (\ln Z_1)^2 + \frac{1}{2} \beta_{12} (\ln Z_2)^2 + \frac{1}{2} \beta_{13} (\ln Z_3)^2$$

$$\ln \Pi_w = 10.753 - 1.396 \ln P_1 - 1.204 \ln P_2 + 1.667 \ln Z_1 + 0.468 \ln Z_2 + 0.603 \ln Z_3 + 0.537$$

$$(1.861) (0.650) (1.300) (0.314) (0.465) (0.694)$$

$$\frac{1}{2} \beta_{1} (\ln P_1)^2 + \frac{1}{2} \beta_{2} (\ln P_2)^2 + 0.087 \ln P_1 \ln P_2 - 0.155 \ln P_1 \ln Z_1 + 0.043 \ln P_2 \ln Z_2 - 0.037$$

$$(0.782) (0.324) (0.083) (0.118)$$

$$0.635$$

$$0.216 \ln P_1 \ln Z_3 - 0.026 \ln P_1 \ln Z_1 - 0.340 \ln P_2 \ln Z_2 + 0.333 \ln P_1 \ln Z_3 - 0.028 \ln Z_1 \ln Z_2 - 0.167$$

$$(0.076) (0.116) (0.163) (0.031)$$

$$(-1.292) (-0.343) (-2.931) (2.047) (-0.900)$$

$$0.018 \ln Z_1 \ln Z_3 - 0.005 \ln Z_1 \ln Z_1 + 0.059 (\ln Z_1)^2 + 0.082 (\ln Z_2)^2 - 0.163 (\ln Z_3)^2$$

$$0.041$$

$$(0.070) (0.059) (0.152) (0.273)$$

$$(-0.441) (-0.082) (1.00) (0.545) (-0.596)$$

$R^2 = 0.72$  $F = 12$

(Figures in 1st and 2nd parentheses are std. errors and t-ratios, respectively)

For the convenience of readers the profit function and factor demand equations are summarized in the table below.

### Table 1: Parameter Estimates of the Translog Profit Function

<table>
<thead>
<tr>
<th></th>
<th>Intercept</th>
<th>$\ln P_1$</th>
<th>$\ln P_2$</th>
<th>$\ln Z_1$</th>
<th>$\ln Z_2$</th>
<th>$\ln Z_3$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Profit function</strong></td>
<td>10.753</td>
<td>-1.396</td>
<td>-2.204</td>
<td>1.667</td>
<td>0.468</td>
<td>0.630</td>
</tr>
<tr>
<td></td>
<td>(1.861)</td>
<td>(0.650)</td>
<td>(1.300)</td>
<td>(0.314)</td>
<td>(0.465)</td>
<td>(0.694)</td>
</tr>
<tr>
<td></td>
<td>(5.779)</td>
<td>(2.147)</td>
<td>(1.696)</td>
<td>(5.313)</td>
<td>(-1.005)</td>
<td>(0.909)</td>
</tr>
<tr>
<td><strong>Share equation of labor</strong></td>
<td>-1.396</td>
<td>0.341</td>
<td>0.087</td>
<td>-0.155</td>
<td>0.043</td>
<td>-0.216</td>
</tr>
<tr>
<td></td>
<td>(0.560)</td>
<td>(0.537)</td>
<td>(0.324)</td>
<td>(0.083)</td>
<td>(0.118)</td>
<td>(0.167)</td>
</tr>
<tr>
<td></td>
<td>(-2.147)</td>
<td>(0.635)</td>
<td>(0.271)</td>
<td>(-1.875)</td>
<td>(0.370)</td>
<td>(-1.292)</td>
</tr>
</tbody>
</table>
The empirical results in table 1 show that output response of farmers in the region to increase in the sugarcane price is found to be positive and elastic. Increase in the sugarcane price would also encourage direct expansion in demand for variable inputs. It is well acknowledged that the price responsiveness suggest that agricultural price and income support programmes increase output. Although encouraged by observation that farmers respond positively to price incentives, some economists have expressed concern that farmers are not given appropriate incentives. For example, Tsakok (1990) argues that direct price interventions may undermine the market operations. In quantitative terms, the percent increase in demand for labor associated with one percent rise in sugarcane price was 2.377 percent and for fertilizer it was 2.458 percent and also increases the profit by 2.269 percent.

The own-price elasticities of demand for variable inputs are negative, as expected, and price elastic. One percent rise in the wage rate will decrease the demand for labor by 2.230 percent. While one percent rise in fertilizer price will discourage its application by 2.778 percent. Increasing the price of variable inputs would also have a depressing impact on the supply and profit of sugarcane. As a whole, changes in market price, whether input or output prices, significantly affect resource use, sugarcane supply and farmer’s profit.

The elasticity of the labor demand with respect to fertilizer price shows that one percent increase in the price of fertilizer will decrease the demand for labor by 0.998 percent. The fertilizer elasticity with respect to wage rate inversely affects the demand for fertilizer by 0.567 percent and indicates that fertilizer and labor are complementary inputs. Positive labor elasticities with respect to fixed input land showing a fair degree of farm sector responsiveness to labor absorption. Fertilizer elasticity with respect to land shows positive response.

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The elasticities of sugarcane supply with respect to fixed inputs, land, education and farming experience are positive. Land has significant effect on sugarcane supply, and expansion in fixed input land will raise the supply of sugarcane and the profit of farmers significantly. The effect of education and farming experience on sugarcane supply and profit are also positive but inelastic.

Table 2: Estimated Elasticities of Output Supply and Inputs Demand

<table>
<thead>
<tr>
<th></th>
<th>Output price</th>
<th>Wage rate</th>
<th>Fertilizer price</th>
<th>Land</th>
<th>Education</th>
<th>Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output</td>
<td>1.308</td>
<td>-0.847</td>
<td>-0.498</td>
<td>1.168</td>
<td>0.099</td>
<td>0.473</td>
</tr>
<tr>
<td>Labor</td>
<td>2.377</td>
<td>-2.230</td>
<td>-0.998</td>
<td>1.329</td>
<td>0.561</td>
<td>0.159</td>
</tr>
<tr>
<td>Fertilizer</td>
<td>2.458</td>
<td>-0.567</td>
<td>-2.778</td>
<td>1.674</td>
<td>0.560</td>
<td>0.539</td>
</tr>
<tr>
<td>Profit</td>
<td>2.269</td>
<td>-0.809</td>
<td>-0.460</td>
<td>1.041</td>
<td>0.089</td>
<td>0.002</td>
</tr>
</tbody>
</table>

Discussion: The empirical results in table 1 show that output response of farmers in the region to increase in the sugarcane price is found to be positive and elastic. Increase in the sugarcane price would also encourage direct expansion in demand for variable inputs. It is well acknowledged that the price responsiveness suggest that agricultural price and income support programmes increase output. Although encouraged by observation that farmers respond positively to price incentives, some economists have expressed concern that farmers are not given appropriate incentives. For example, Tsakok (1990) argues that direct price interventions may undermine the market operations. In quantitative terms, the percent increase in demand for labor associated with one percent rise in sugarcane price was 2.377 percent and for fertilizer it was 2.458 percent and also increases the profit by 2.269 percent.

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Conclusions And Recommendations: The finding reveals that farmers are price-responsive and increased fertilizer application affects on-farm employment positively. Increase in the area under sugarcane significantly increases the sugarcane supply, profit and influence the demand for the variable
inputs. It is suggested that government may use other policy tools rather than increase in support price to increase the supply of sugarcane. Government should reduce the levies like sale tax on fertilizer and by introducing cheap indigenous technology. Similarly bringing more land under sugarcane will also increase the total output, on-farm employment and profit of the farmers.

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