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An Instrument for Measuring National Readiness and Capacity to Participate in Global Knowledge Base Economy

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ABSTRACT

An important question often asked is what are the determinants of science, technology and innovation (STI)? Is STI a measurable quantity? How can it be measured in quantitative terms? To answer these questions, a Science, Technology and Innovation Index (STII) has been developed for top 100 economies of the world on the basis of GDP, to evaluate, determine and measure the overall scientific, technological and innovative capacity and readiness of a country. The STII relies on four dimensions, each built around two or three pillars, each of which is composed of individual indicators, for a total of 44 STI indicators. The STI index is the average of aggregate of four dimensions. The economies are ranked on the basis of STII values and classified into six groups: i.e. leaders, potential leaders, dynamic adopters, slow adopters, marginalized and laggards. For more meaningful assessment of the STI capacities of nations, it captures the achievement gap of individual countries with the highest achiever. A comprehensive analysis into the strengths and weaknesses in different dimensions of STI capability of eight East-South Asian countries is also provided. The results show that there are significant disparities between developed and developing nations in STI capacity and its various aspects. STI capacity and achievement gap analysis of individual countries provides useful information for STI policy makers to furnish their STI policies for increasing national capacity, and readiness to participate in the knowledge based economy.

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1. Introduction

Change in the state of science, technology and innovation (STI) is one of the major driving forces of the long run economic growth and development, and social changes in living standard of people of a country. Also technological changes and innovations bring about scientific development. The transformation of a country from developing to developed country cannot be simply achieved by possession of natural resources, knowledge and information. Transformation also requires diffusion & adoption of scientific principals or implementation of innovative technologies. STI activities not only accelerate the economic growth and bring about the social changes of lives but also enhance the capability to create, transmit and use STI knowledge (Ertl et al, 2006). Consequently, the transformation to a knowledge based economy is required in order to attain STI based global competitiveness. Knowledge and technology have become increasingly complex, escalating the significance of relationships among different countries to acquire specialized knowledge. Countries formulate economic policies that enhance the STI environment in the society and economy, which is very important for sustainable economic growth and development and global competitiveness (Sener and Saridogan, 2011). But the question arises how would the outcomes and impact of knowledge and STI activities be measured? Although there is abundant information available about STI activities, this mainly relates to input. For example, how many people are involved in this activity?, how much expenditure is committed to research and development (R&D)? and what is nature of STI activity? However, these pieces of information do not help to fully understand measuring outcomes and impact of STI activities.

Although, some current science and technology indicators are composed of by World Bank, UNESCO, WIPO, UNDP, OECD and many other organizations. These S&T indicators give insight about the output and input of STI activities. But still, there is need to organize, explore and investigate more sophisticated measures of potential value addition in the economy and their longer-term implications on economic growth and development. There is dire need to develop the most appropriate and suitable measure base on STI composite indicators to assess the STI activities. STI composite indicators serve many purposes including: used to evaluate policy measures; providing information on the current state of STI activities in a country; providing input for benchmarking STI performance with other countries; and helping to understand how various parts of economy and society are interconnected. Hence the outcome and impact of indicators are crucial for evidence based policy, resource allocation and accountability requirements (Gault, 2006).

S & T statistics provide a distinct individual picture of different aspects of STI in relation to the economy but fail to provide a broader picture of strengths, weaknesses, and opportunities, on the national level. For example, statistics of national research and development (R&D) expenditure, number of R&D institutes and university enrollment in science and engineering give clear picture in these areas of national STI system but individual indicators are unable to explain the strength, efficiency and their impact on the economic growth & development and national STI system comprehensively. The study attempts to shed light on how STI composite indicators can be measured in terms of index, namely, Science, Technology and Innovation Index (STII). The STII is the average of an aggregate of four dimensions, each built around two or three pillars, each of which is composed of individual indicators, for a total of 44 indicators which explain the overall scientific, technological and innovative development of a country in quantitative terms. In many indices, technological capacities of a country are measured through combining input and output STI indicators. The combining of the input and output indicators in the form of index provide limited logical information. For example, the Georgia Tech High Technology Index is developed with a more systematic framework, is better in terms of public use. While some indices (like Porter and Stern, 2003) were developed only for OECD countries, they cannot be applied to developing countries. The developing economies have different situations and scenarios compared to developed ones. For example, the patent is considered one of the most important STI composite indicator for innovation used in the construction of
many indices, while in developing economies patents are not the major source for innovation, since productivity gain is seen to be more important in (Chinaprayoon, 2007). The major shortcoming in indices (like Global Competitive Index and Global Innovation Index) is that these indices are compiled upon perception and surveys data rather than original STI composite indicators. Therefore, there is a need to develop a comprehensive index based on real STI composite indicators and represents both developed and developing economies like HDI. The current study attempts to develop the STII based on 44 STI composite indicators that provides the exact STI situation of the country.

Following are the research questions:

- What are the determinants of science, technology and innovation (STI) progress?
- Is STI a measurable quantity? If yes, then how can it be measured?

On the basis of research questions, we have the following objectives:

- To find out the determinants of STI progress.
- To develop STII based on 44 composite STI indicators.

The contribution of the study aims to provide researchers and economists new insights on how STI progress can be measured and assessed quantitatively and numerically. The study contributes to our understanding of why a scientifically and technologically lagging country might be economically underdeveloped. It also aims to provide a more robust analysis about the notion of a knowledge based economy, including insights about weaknesses, strengths, and opportunities of an STI system of a country nationally and in an international context. We aim to provide thought provoking implications for policy makers and planners for the formulation and implementation of STI capacity of a country.

Although many developing countries might have access to good natural resources, they are often unsuccessful in materializing these resources into visible phenomenon due to lack of technological capabilities. The study also explores why developing countries need to make significant investments in R&D to enhance their scientific and technological capabilities.

One other, significance of the study is that STI composite indicators are used to rank different countries taking into consideration different aspects of STI. Composite S&T indicators (especially STI Index) would be very useful for policy makers to formulate STI policy measures and approaches to augment countrywide competencies in order to compete with other nations in a global framework.

2. Literature Review
Cross-country differences exist in competing STI based global marketplace and in the utilization of STI as a tool for human development. This indicates the variation among countries in STI capacity. Scientific and technical progress plays a vital role in the development of any country. Therefore, STII progress always remains a matter of interest for S&T planners, policy makers and economists. For the formulation of STI policies, policy makers of developing countries depend on the basic STI statistics (Ali et al., 2014). Different studies have been carried out to address the question of whether STI is a measurable quantity in terms of STI composite indicators? Some well-known STI composite indicators are: WEF Technology Index introduced first time as a part of the Growth Competitiveness Index (GCI) in the Global Competitiveness Report (GCR) 2001–2002 which was published by World Economic Forum (WEF) in 2002 (WEF, 2002). The Technology Index composes of three sub-indices: i) Innovation sub-index measured by innovation survey questions and innovation hard data (US utility patents granted per million
population and gross tertiary enrolment rate), ii) Technology transfer sub-index measured by technology-in-trade residual and survey data and iii) Information and communication technology (ICT) sub-index measured by number of mobile telephones, internet users, internet hosts, telephone mainlines, personal computers per capita and survey data. Technology index was based on two indices: index of technological core economies and technological non-core economies. Technology Index for core economies was calculated by the addition of ½ of innovation and ½ ICT sub-indexes while noncore technology index was calculated by addition of 1/8 innovation sub-index, 3/8 technology transfer sub-index, and ½ ICT sub-index

National Innovative Capacity Index (NICI) was introduced by Michael Porter and Scott Stern in the Global Competitiveness Report (GCR) 2001–2002 published by World Economic Forum (WEF) in 2003 (WEF, 2003). They used 2003 Executive Opinion Survey to assess the innovative capacity of 78 countries for which the required data were available. They argued that innovative capacity is to create the stream of commercially relevant innovations for both political and economic activity. They argued that NICI is composed of five indices: i) the innovation policy sub-index, ii) the cluster innovation environment sub-index, iii) the scientific and engineering manpower sub-index, iv) the linkages sub-index and v) the company operation sub-index (Porter and Stern, 2003).

Science and Technology Capacity Index-2002 (STCI-02) was developed by Wagner et al (2000). This index updated and improved an earlier index that was published by the RAND Corporation (Wagner et al, 2000). The index states “the ability of a country to absorb and retain specialized knowledge and to exploit it to conduct research, meet needs and develop efficient products and processes”. The index composes of three dimensions. Each dimension is measured by two or more than two indicators: i) enabling factors (measured by GDP per capita and tertiary enrollment in science), ii) resources (measured by the number of scientists and engineers, number of institutions and R&D expenditures) and iii) embedded knowledge (measured by patents, S&T journal articles and co-authorship publications). Wagner et al. (2000) awarded different weightage to different dimensions. Utilizing this methodology, they evaluated 150 countries for science and technology capacity and categorized them into following four groups according to their overall scientific capacity:
‘Scientifically advanced countries’—22 countries with scientific capacity well above the international mean;

• ‘Scientifically proficient countries’— 24 countries which also have positive standing in scientific capacity when compared to the rest of the world;
• ‘Scientifically developing countries’— 24 countries with some features of scientific capacity, and where the trend in spending is positive but whose scientific capacity is below the international mean;
• ‘Scientifically lagging countries’— 80 countries with little data indicating scientific capacity.

Desai et al. (2002) proposed a Technology Achievement Index (TAI) and introduced earlier by UNDP in its 2001 Human Development Report (UNDP, 2001). TAI is measurement approach to assess the technological achievements of a country by concentrating on its capacity in creating and using technology. They assessed technology achievements of a country through four dimensions: ‘creation of new technology’; ‘diffusion of recent innovations’; ‘diffusion of old innovations’; ‘human skills’. Desai et al. (2002) evaluated 72 countries on the basis of technology achievement index. They placed countries into four groups as follows:

• Leaders: Those at the cutting edge of innovation. These are highly developed countries.
• Potential leaders: Those with high skill levels, who have diffused old technologies (electricity and water supply networks), but innovate little.
Dynamic adapters: Those rapidly expanding their use of new technologies (e.g., the internet, mobile phones), who have important high technology industries, but where the diffusion of old technologies has been slow and incomplete.

Marginalized countries: Where skill levels are very low, with large proportions of the population yet to receive benefits from the diffusion of old technology.

Industrial Development Scoreboard (IDS) was published by UNIDO in its Industrial Development Report (IDR) (UNIDO, IDR, 2003; UNIDO, IDR, 2004, Lall and Albaladejo, 2003) influence UNIDO’s effort is strongly inspired by the work of (Archibugi and Coco, 2004). They argued that industrial performance can be measured by the following four categories:

- Technological activity is measured by R&D financed by productive enterprise and number of patents registered at USPTO.
- Competitive industrial performance is measured by manufactured value added (MVA) per capita, manufactured export per capita, and the share of medium and high technology (MHT) in manufactured exports.
- Technology imports are measured by FDI, foreign license payments and capital goods imports.
- Skills and ICT infrastructure is measured by technical enrollment at the tertiary enrollment in science, engineering and mathematics and computing and telephone mainlines.

Competitive Industrial Performance (CIP) index was introduced by UNDP and published in IDR 2002/2003 and IDR 2004. The results of CIP index of 87 countries were presented by the UNDP in IDR 2002/2003. UNDP extend the CIP index up to 93 countries in IDR 2004 (UNIDO, 2004). Although the IDR-2005 did not publish a CIP index, they mention six indicators of industrial performance including MVA per capita, manufactured export per capita, the share of manufactured export in total output (GDP), the share of MHT production in MVA, and share of MHT in manufactured export. This report also presented the new index of industrial technological achievement known as industrial-cum technological advance (ITA) index, which indicates another good attempt to construct STI indicator for developing countries (UNIDO, 2005).

Industrial-cum-technological advance (ITA) was reported in its Industrial Development Report 2005 (UNIDO, 2005) by UNIDO (UNIDO, 2005). ITA index is used to represent the salient features of economy emphasizing the role of industry and technology and their relation and to give other indicators for representing economy. ITA composes of two dimensions: industrial advance dimension stands on the share of manufacturing in GDP and the share of manufactures in total export; technolog advance dimension stands on the share of medium-or-high technology activities in manufacturing value added (MVA) and the share of medium-or-high technology activities in total export. The results of ITA index are very interesting for some of the developing countries which are ranked in the category of “high performer” ahead of many industrialized countries (UNIDO, 2005).

European Commission launched the European Innovation Scoreboard (EIS) and its Summary Innovation Index (SII) (European Commission, 2004). EIS is considered a good yardstick to measure and compare the innovative performance of European Union (EU) member states. Innovation indicators like Community Innovation Survey (CIS) indicators and non-CIS indicators, and trend analysis for 25 EU member countries and 8 non-EU countries are jointly used to construct the EIS, while SII is measured by gathering 19 non-CIS innovation indices. High Technology Indicators (HTI) was constructed by Porter et al (2006) comprising of four composite input indicators and output indicators. HTI developed the new four composite indicators i.e National Orientation (NO), Socioeconomic Infrastructure (SI), Technological Infrastructure (TI) and Productive
Capacity (PC) which jointly constructs the input indicators while the Technological Standing (TS) takes as output indicator which indicates the overall success in exporting high technology products. They collected the data from 33 countries through international survey and hard statistics (Porter et al, 2006).

Archibugi and Coco (2004) developed the New Indicator of Technological Capabilities (referred to as ArCO) which stands on three dimensions: i) creation of technology (based on patents registered at USPTO and scientific articles); ii) technological infrastructures (based on internet penetration, telephone penetration, and electricity consumption); iii) the development of human skills (based on tertiary science and engineering enrolment, mean years of schooling, and literacy rate). The main objective of that study was to develop a tool for measuring technological capabilities of both developed and developing countries. Countries coverage in ArCO is 162. Furthermore, Archibugi and Coco (2004) attempted to explain this indicator by including another influential component i.e. technology import (based on FDI, technology licensing payments and capital goods imports. With inclusion of this variable, the number of countries studied fell to 86 countries.

In 2007, Cornell University, INSEAD and World Intellectual Property Organization begun to publish the Global Innovation Index (GII) which is published each year. The GII is an evolving project that builds on its previous editions while incorporating newly available data. The GII stands on two sub-indices: (1) the Innovation Input sub-index measured by five sub-pillars- i) institutions, ii) human capital and research, iii) infrastructure, iv) market sophistication, and v) business sophistication; and the Innovation Output index measured by two sub-pillars- i) knowledge and technology outputs and ii) creative outputs. Each sub-pillar is constituted of individual indicators (81 in total in 2017). GII focuses provides an instrument that can furnish policies to enhance the long-term output growth, increase productivity and job growth (University, INSEAD, & WIPO, 2017).

Tabatabaeean et al. (2010) developed Technological Capability Monitoring Index, based on seventeen indicators but did not have any sub-indices or dimensions. In the Index, 127 countries are ranked in three groups: large economy, medium economy and small economy based on the size of their GDP. Nasir et al. (2011) developed a technology achievement index referred as TAI-09, by applying the methodology of Desai et al. (2002) in which they studied the existing technological capabilities and capacities of 91 countries.

Since 2005, WEF has been publishing the Global Competitiveness Index (GCI) based on the original idea of Klaus Schwab (1979), developed by Xavier Sala-i-Martín in collaboration with the World Economic Forum. The GCI gathers 114 indicators that used to measure the matter for productivity and long-term prosperity. The GCI is constructed on 12 pillars and their respective indicators. The 12 pillars are i) institutions, ii) infrastructure, iii) macroeconomic environment, iv) health and primary education, v) higher education and training, vi) goods market efficiency, vii) labour market efficiency, viii) financial market development, ix) technological readiness, x) market size, xi) business sophistication, and xii) innovation (Schwab and Sala-i-Martín, 2017). Most of the studies carried out so far are about the technical performance of developed countries, while very few studies discuss performance of developing countries. Studies with a limited geographical, organizational and regional focus are almost non-existent; one exception being the Technology Achievement Index for Organization of Islamic Cooperation (OIC) member countries (referred as TAI- 13-OIC) (Ali et al., 2014). Ali et al. (2015) conducted another study, in which the Technology Achievement Index (TAI) for 41 of the OIC member states was presented (TAI-14-OIC). They concluded that though most of the OIC countries are rich in natural resources, they are unable to utilize them completely for their socio-economic development due to lack of scientific and technological capability. Bashir (2015) developed the Global Science, Technology and Innovation Capacity (GSTIC) index based on nine pillars which reflects the national STI capacities of the countries: technology creation, R&D
capacity, R&D performance, technology absorption, diffusion of old technologies, diffusion of recent innovations, exposure to foreign technology, human capital and enabling factors. He ranked 167 countries with the GSTIC and categorized them into four groups: leaders, dynamic adopters, slow adopters and laggards. The results show that there are large differences between nations in STI capacity, with developing countries far behind in some areas relative to developed nations. Recently, Ali (2017) developed the TAI of 100 top economies to examine the position of countries, technological progress for the 21 years spanning 1995 to 2015. Countries have been ranked on their TAI which is based on four pillars; technology creation, diffusion of older innovations, diffusion of recent innovations and development of human skills.

2.1 Critical Review of Literature of Composite STI Indices Studies

The composite STI indicators and different indices have been discussed in the above section. Most of them are about the developed economies, only four like Science Technology Capacity index, Technology Achievement index, Global Science, Technology and Innovation Capacity index are also used for developing economies.

Many STI composite indicators were constructed before the 2000s when data of S&T indicators were not easily available. For developing composite indicators, two things are very important; one is what types of indicators would be included and other is how to weight each indicator or dimension or pillar. Most of the indices used a very simple methodology to weight the indicators or components while very latest statistics are available. Probably, it may be used to develop the indices rather than more rigorous weighting procedure to construct an STI composite indicator.

In many indices, technological capacities of a country are measured through combining input and output STI indicators. The combining of the input and output indicators in the form of index provide limited logical information. For example, the Georgia Tech High Technology Index is developed with a more systematic framework, is better in terms of public use. While some indices (like Porter and Stern, 2003) were developed only for OECD countries, they cannot be applied to developing countries.

Developing economies have different scenarios compared to developed economies. For example, the patent is considered one of the most important STI composite indicators for innovations used in the construction of many indices, while in developing economies patents are not the major source for innovation, instead productivity gain is seen to be more important in developing economies than slight or incremental technological change (Chinaprayoon, 2007). Intarakumnerd and Viotti (2006) proposed that "the diffusion of imported technologies" might not be important to developed economies compared to the developing economies.

The major shortcoming in indices (mentioned above like GCI and GII) is that they used survey data to construct the index. These indices are based on perception and surveys, rather than original STI composite indicators. Therefore, there is dire need to develop a comprehensive index which is based on real STI composite indicators and represent both developed and developing economies like HDI. The current study attempts to develop the Science, Technology and Innovation Index (STII), which is based on 44 STI composite indicators that provides the exact STI situation of the country.

3. Science, Technology and Innovation Index (STII)

3.1 Conceptual Framework of Science, Technology and Innovation Index (STII)

When a country reviews its STI policies, a useful starting point is the realistic assessment of its current STI progress. The STII helps to create an environment in which STI factors are under continual evaluation and provides a key tool & rich database of detail metrics for refining STI policies. The STII, a composite index of achievement in STI reflects the level of scientific, technological and innovative
progress and thus the capacity of a country to participate in the network age. The STII is not meant to be the ultimate and definitive ranking of economies with respect to STI activities. Measuring STI activities (outputs) and its impact is difficult; hence great stress is placed on measuring the climate and infrastructure for STI and assessing related outcomes. The STII helps a country situate itself relative to others, especially those that are ahead. Although the end results take the shape of several rankings, the STII is more concerned with improving the ‘journey’ in order to better measure and understand STI and with identifying targeted policies, good practices, and other factors that foster STI activities (University, INSEAD & WIPO, 2015). The STII is proposed to be used as a starting point to make an overall assessment, to be followed by examining different indicators in greater detail. STII shows how much STI output a given country is getting from its inputs. The STII relies on four dimensions, each built around two or three pillars, each of which is composed of individual indicators, for a total of 44 indicators (Figure 1 and Table 1).

Table 1. Conceptual Frame Work of STII and Data Sources

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Pillars</th>
<th>Indicators</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2. Adult literacy rate</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Tertiary Science Enrollment</td>
<td></td>
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<td></td>
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<td>4. Expenditure on education as % of GDP</td>
<td></td>
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<tr>
<td></td>
<td>Resources #2</td>
<td>5. Total R&amp;D personnel (FTE)</td>
<td>UNESCO Institute of Statistics(UIS)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6. Number of universities in top ranks(10,004)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>7. Gross Domestic Expenditure on Research and Development (GERD in '000 PPP$ (in constant prices - 2005)</td>
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</tr>
<tr>
<td></td>
<td>Human skills development #3</td>
<td>8. Gross enrolment ratio primary to tertiary, both sexes (%)</td>
<td>UNESCO Institute of Statistics; Index Mundi website (for missing data)</td>
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<tr>
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<td>9. Percentage of students in tertiary education enrolled in Engineering, Manufacturing and Construction programmes, both sexes (%)</td>
<td></td>
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<td></td>
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<td>10. Pupil-teacher ratio in tertiary education (headcount basis)</td>
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<tr>
<td>R&amp;D</td>
<td>R&amp;D capacity #4</td>
<td>11. Researchers (full-time equivalent) per million inhabitants</td>
<td>UNESCO Institute of Statistics</td>
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<tr>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>R&amp;D performance #5</td>
<td>13. Gross Expenditure on R&amp;D (GERD) expenditure as % of GDP</td>
<td>Scimago Journal and Country Rank website, UIS</td>
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<td></td>
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<td>15. Number of scientific articles per million population</td>
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<td>16. Number of citations per publication</td>
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<td></td>
<td></td>
<td>17. H-Index of publications</td>
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<tr>
<td></td>
<td></td>
<td>18. Total patent grants (direct and PCT national phase entries) to resident</td>
<td>WIPO, UIS, and Scimago Journal &amp; Country Rank</td>
</tr>
<tr>
<td></td>
<td></td>
<td>19. Co-authorship index* (% International Collaboration)</td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Description</td>
<td>Source</td>
<td></td>
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<tr>
<td>20.</td>
<td>Scientific and technical (S&amp;T) journal articles</td>
<td>website</td>
<td></td>
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<td>22.</td>
<td>High-technology exports as % of manufactured exports</td>
<td>World Bank, Development Indicators 2017, UNESCO Institute of Statistics</td>
<td></td>
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<tr>
<td>23.</td>
<td>Charges for the use of intellectual property, receipts (BoP, current US$)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24.</td>
<td>Outward FDI stock per capita</td>
<td></td>
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<tr>
<td>25.</td>
<td>Computer and communications service exports</td>
<td></td>
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<tr>
<td>26.</td>
<td>ICT goods exports (% of total goods exports)</td>
<td></td>
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<tr>
<td>27.</td>
<td>Total patent applications (direct and PCT national phase entries) per million population</td>
<td>World Intellectual Property Organization (WIPO).</td>
<td></td>
</tr>
<tr>
<td>28.</td>
<td>Total patent Application (direct and PCT national phase entries) of residents per million population</td>
<td></td>
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<tr>
<td>29.</td>
<td>Total design applications (direct and via the Hague system) per million inhabitants</td>
<td>World Intellectual Property Organization (WIPO).</td>
<td></td>
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<tr>
<td>30.</td>
<td>Total design registrations (direct and via the Hague system)</td>
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<tr>
<td>31.</td>
<td>Total utility model applications (direct and PCT national phase entries)</td>
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<tr>
<td>32.</td>
<td>Total utility model grants (direct and PCT national phase entries)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>33.</td>
<td>Electric power consumption (kWh / capita)</td>
<td>World Bank, Development Indicators 2017</td>
<td></td>
</tr>
<tr>
<td>34.</td>
<td>Fixed telephone + Mobile cellular subscriptions (per 100 people)</td>
<td>The International Telecommunication Union</td>
<td></td>
</tr>
<tr>
<td>35.</td>
<td>Gross fixed capital formation (% of GDP)</td>
<td>World Bank, Development Indicators 2017</td>
<td></td>
</tr>
<tr>
<td>36.</td>
<td>Internet users (/1000 people)</td>
<td></td>
<td></td>
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<tr>
<td>37.</td>
<td>Imports of goods and services (% of GDP)</td>
<td></td>
<td></td>
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<tr>
<td>38.</td>
<td>Number of households with a computer per 100 inhabitants</td>
<td></td>
<td></td>
</tr>
<tr>
<td>39.</td>
<td>Fixed broadband internet subscribers per 100 inhabitants</td>
<td></td>
<td></td>
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<tr>
<td>40.</td>
<td>Energy imports, net (% of energy use)</td>
<td></td>
<td></td>
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<tr>
<td>41.</td>
<td>Charges for the use of intellectual property, payments (BoP, current US$)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42.</td>
<td>FDI Inward stock</td>
<td></td>
<td></td>
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<tr>
<td>43.</td>
<td>Communications, computer, etc. (% of service imports, BoP)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>44.</td>
<td>ICT goods imports (% total goods imports)</td>
<td></td>
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</tr>
</tbody>
</table>
3.1.1 Support for STI Activities

The school, college and universities are considered the source of STI activities and knowledge generation. The government investment in basic science research, engineering and technology should pay off in the long run. Thus it could be argued that some features are necessary to support STI, while other features are sufficient to support it. The necessary features are i) scientists and engineers, ii) institutions for research and iii) funds for research and development. These three variables relate directly to S&T capacity. The other variables either measure the boundary conditions or the environment for S&T or reflect the results of its application to scientific and technological production. The support for STI activities is captured by three pillars:

**Pillar I: Enabling factors**

Enabling factors that help to create an environment conducive to the absorption, retention, production and diffusion of knowledge (Wagner et al., 2002). The enabling factor is measured by four indicators: Per capita GDP (constant 2005 US$); Adult literacy rate; Tertiary Science Enrolment; Expenditures on education as % of GDP.

**Pillar II: Resources**

Resources that can be devoted to S & T activities, which are concerned with the indicators that are mostly related to S & T capacity (Wagner et al., 2002). Resources are composed of three indicators: Total R&D personnel (Full Time Equivalent (FTE)); Number of universities in top ranks (10,004); Gross Domestic Expenditure on Research and Development (GERD in ’000 PPP$ (in constant prices - 2005)).

**Pillar III: Human Skills**

A critical mass of skills is indispensable to technological dynamism. Both creators and users of new technology need skills. Today’s technology requires adaptability — skills to master the constant flow of new innovation. The foundations of such ability are the basic education to develop cognitive skills and skills in science and mathematics. Three indicators are used for measuring human skill: Gross enrolment ratio of primary to tertiary, both sexes (%); Percentage of students in tertiary education enrolled in...
Engineering, Manufacturing and Construction programmes, both sexes (%); Pupil-teacher ratio in tertiary education (headcount basis).

3.1.2 Research and Development (R&D)

Some STI activities specifically focus on carrying out R&D with the purpose of creating new product or processes, and improving existing products or processes. It is unanimously agreed by all schools of thought (in economics) that R&D affects the economic growth and development in the long run. Here R&D is captured by two pillars.

Pillar IV: R&D Capacity

R&D is a crucial component of the innovation process and a key factor in capturing competitive advantages. Some economies or companies rely on R&D for growth through new product introduction while many others use R&D to stimulate incremental improvements. R&D capabilities of a country indicate how it will be successful in future in developing new products, processes and services. It also indicates the extent of benefits that can be derived from foreign technologies through adaptation. It also shows the ability of a country in using present and related knowledge for solving local problems (Bashir, 2015). R&D capacity is gauged by the following four indicators: Researchers (full-time equivalent) per million inhabitants; Technicians (full-time equivalent) per million inhabitants; Gross Expenditure on R&D (GERD) expenditure as % of GDP; Gross Expenditure on R&D (PPPS) per researcher.

Pillar V: R&D Performance

Measuring the performance of R&D activities is not simple. However, the number of scientific articles published is one of the most widely used indicators for measuring the performance of R&D activities. Scientific articles are an important source of codified knowledge generated in R&D organizations and universities (Bashir, 2015). In the present study, the following indicators have been used for assessing R&D performance: Number of scientific articles per million population; Number of citations per publication; H-Index of publications.

3.1.3 Knowledge

This dimension covers all those variables that are traditionally thought to be the fruits of inventions and STI activities (Bessant and Venables, 2008). This dimension divides into three pillars.

Pillar VI: Embedded knowledge

Embedded knowledge of science and technology refers to the extent to which researchers are connected to the global scientific community (Wagner et al., 2002). This pillar includes four indicators: Total patent grants (direct and PCT national phase entries) to resident; Co-authorship index* (% International Collaboration); Scientific and technical (S&T) journal articles; Total No. of Publications.

Pillar VII: Absorption of knowledge

Absorption of knowledge means the ability to assimilate, utilize and exploit acquired or developed technology for social and economic gains. It is very important for developing countries to have the ability to use technologies developed by the advanced countries for their economic benefits (University, INSEAD & WIPO, 2015). Absorption of knowledge is judged by five indicators: High-technology exports as % of manufactured exports; Charges for the use of intellectual property, receipts (BoP, current US$);

* % International collaboration data from Scopus is used as a proxy for co-authorship index, as the data of Co-authorship index are not available. Outward FDI stock per capita; Computer and communications service exports; ICT goods exports (% of total goods exports).
Pillar VIII: Creation of knowledge

The third pillar of knowledge refers to the creation of knowledge. It includes five indicators that are the result of inventive and innovative activities. This pillar comprises of six indicators: Total patent applications (direct and PCT national phase entries) per million population; Total patent Application (direct and PCT national phase entries) of residents per million population; Total design applications (direct and via the Hague system) per million inhabitants; Total design registrations (direct and via the Hague system); Total utility model applications (direct and PCT national phase entries); Total utility model grants (direct and PCT national phase entries).

3.1.4 Innovation

Anything which brings change in your life, this phenomenon is called innovation. It is not easy to present an exact definition of innovation. However, innovation is a process whereby an extended set of activities translate new knowledge into something of value. It can also be a long and painstaking process of translating the initial idea into something useful – and used (e.g. in form of products, processes or services). Whether at the firm or national level, innovation involves a complex system of interacting actors, meaning their interactions can take place across a particular sector, in a region or around a major transnational firm (Bessant and Venables, 2008). This study attempts to capture innovation through different indicators and divides into two pillars.

Pillar IX: Diffusion of old innovations

This pillar includes the average electricity output in kWh per capita; a composite indicator of logistics performance; and gross capital formation which consists of outlays in additions to the fixed assets and net inventories of the economy including land improvements (fences, ditches, drains), plant, machinery and equipment purchases, the construction of roads, railways and including schools, offices, hospitals, private residential dwellings and commercial & industrial buildings. The indicators are: Electric power consumption (kWh / capita); Fixed telephone + Mobile cellular subscriptions (per 100 people); Gross fixed capital formation (% of GDP).

Pillar X: Diffusion of recent innovations

All countries must adopt innovations to take benefit from the opportunities of the network age. This is measured by diffusion of the internet, indispensable to participate and by imports of goods and services as % of GDP. Higher technology goods provide viable opportunities to the developing countries as well. Many high-technology sectors are the most dynamic in the global economy. Upgrading the technology content of the manufacturing sector diversifies the economy and creates opportunities in new markets. The internet is far more than a tool for rich countries. By dramatically increasing the access to information while decreasing the cost, the internet has vast potential to aid political participation, to increase people’s incomes, and to improve healthcare (Desai et al., 2002). Recent innovations in the form of information communication technologies (ICTs) have become a prerequisite for participation in global economic activities. ICTs are also providing solutions in other fields such as health, the environment, and agriculture (Bashir, 2015). Following are the indicators which are used for recent innovations: Internet users (/1000 people); Imports of goods and services (% of GDP)); Number of households with a computer per 100 inhabitants; Fixed broadband internet subscribers per 100 inhabitants; Energy imports, net (% of energy use); Charges for the use of intellectual property, payments (BoP, current US$); FDI Inward stock; Communications, computer, etc. (% of service imports, BoP); ICT goods imports (% total goods imports).

3.2 Methodology for Developing STI Index

During literature review, it has been observed that different indices use different methodology to calculate the index. Most of the indices have been calculated by using the same formula that is similar to the formula which is used to calculate the Technology Achievement Index (TAI).
The former mentioned formula is adopted by Desai et al. (2002), (Nasir et al. (2011), Ali et al. (2014), and Ali et al. (2015), and Ali (2017) to calculate the TAI. It has been observed that sometimes this formula provides misleading information about the STI situation of the country. Bashir (2015) also criticized this formula and argued that it overstates the difference between countries. Further, he explained that “A country with the minimum value, even if it is very close to the maximum value, will have a ‘zero’ score in the index. For example, if country A has 100 Internet users per 100 inhabitants (maximum observed value) and country B has 90 Internet users per 100 inhabitants (minimum observed value), use of this formula will show that country A’s score is one (1) and country B’s score is zero (0) in the index. In other words, country A’s performance is 100 percent and country B’s performance compared to country A is zero, which is misleading” The current study develops another formula to calculate the STII to overcome the shortcomings that were mentioned. The current study presents a very simple formula for calculation of STII:

\[
\text{Indicator Index} = \frac{\text{Actual Value of Indicator}}{\text{Observed Maximum Value}}
\]

The study has normalized the values of 44 indicators between ‘0’ and ‘1’ with ‘0’ being the lowest and ‘1’ being the highest.

First, the maximum values of the forty four (44) constituent’s indicators are extracted from the compiled data in each country of interest for every year and a table of the goal posts for calculations is constructed (Table 2). Second, the values of the different indicators are standardized to a scale from 0 to 1 using goalposts, such that an indicator value that is equal to the upper goalpost will be normalized to 1 and a value equal to the lower goalpost will be normalized to 0, according to the formula given in equation (3.1). Third, the index of each pillar is calculated by the same procedure used for the overall index; that is the simple average of sub-indicators. In the STII, each pillar contains its own indicators. The index for each pillar is calculated as the simple average of the indicator indices in that pillar. Fourth, dimension index is calculated by the simple average of its pillars indices. Fifth, the STII in turn, is the simple average of these four dimensions indices.

### 3.2.1 Weighting and Aggregation

An important issue is that of weighting of different indicators and dimensions. It is beyond the scope of this study to judge which indicator has a greater role in STI progress. The overall STII is built with the weighting of all four dimensions equally. The pillars in each dimension are given equal weight, and the dimensions are given equal (one-quarter) weight in the final index. However, double weightage is given to some individual indicators in each pillar like Patents, Publications, R&D expenditure etc. The index of each pillar is based on simple average of its indicators indices. Dimension index is calculated by the simple average of its pillars indices. STII value is calculated by the simple average of these four dimensions indices.

### 3.2.2 Data Collection and Sources

It is difficult, expensive and time-consuming to collect the data and information for the forty four indicators directly from data sources in every country in the world. For reasons of practicality, therefore, we rely on the statistical publications and databases of major international organizations. The data have been
taken primarily from reliable and highly trusted sources such as the Human Development Reports of the United Nations Development Programme (UNDP), database of the SCOPUS; Scimago Journal & Country Rank (SJR), database of World Intellectual Property Organization (WIPO), databases of the UNESCO Institutes of Statistics (UIS) and publications of the World Bank (WB). Data from 1995 to 2015 of gross capital formation and STI of countries have been retrieved from authenticated sources like World Bank, UNESCO, SCOPUS, and WIPO. The indicators and their data sources have been illustrated in Table 1.

3.2.3 Estimation of Missing Value for an Indicator

85% of the countries under study have data for more than 30 indicators out of 44; while 15% countries have data for less than 30 indicators. Details of available indicators for every country and strength are presented in Appendix - II. Two techniques (linear interpolation and forecasting) have been used to estimate missing values of individual indicators. Linear interpolation has been applied to estimate the missing data between two sets of data points. Missing data for year/s of an indicator were calculated in an Excel spreadsheet using the formula given below:

\[
\text{Missing Data} = \frac{(\text{Last year data} - \text{First year data})}{\text{Number of year/s (you want to estimate)}}
\]

Forecasting technique has been preferred for estimating future data values based on present and past data values. Calculating the Science, Technology, and Innovation Index (STII): an example

Table 2. Goal Posts for Calculating Pillar III: Human Skills Development of the STII

<table>
<thead>
<tr>
<th>Indicator Name</th>
<th>Observed maximum value</th>
<th>Actual Value of indicator of Country Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross enrolment ratio in science, both sexes at tertiary level</td>
<td>24.047</td>
<td>13.00</td>
</tr>
<tr>
<td>Gross enrolment ratio, primary to tertiary, both sexes (%)</td>
<td>96.151</td>
<td>56.00</td>
</tr>
<tr>
<td>Pupil-teacher ratio at tertiary level</td>
<td>76</td>
<td>66.00</td>
</tr>
</tbody>
</table>

- **Indicator Index**
  
  Indicator index is calculated by the formula presented in Eq.3.1:
  
  Gross tertiary science enrolment index = \((13 / 24.047) = 0.540\)
  
  Gross enrolment ratio index = \((56.00 / 96.151) =0.582\)
  
  Pupil-teacher ratio at tertiary level = \((66.00 / 76.00) =0.868\)

- **Pillar Index**

  Pillar index (Human Skills Index is presented as an example) is calculated as:
  
  Human skills index = \((0.540 + 0.582+0.868) / 3 = 0.663\)
  
  Similarly, the index of each pillar has been calculated.

- **Dimension Index**:

  The dimension index is calculated by taking a simple average of its pillars indices. For example:

  a. Support for STI Activities Index : =\((0.24+0.54+0.66)/3=0.48\)
  b. Research and Development (R&D) Index = \((0.15+0.11)/2=0.13\)
• Science, Technology and Innovation Index (STII)
  The STII in turn, is the simple average of these four dimensions indices.
  \[ \text{STII} = \frac{(0.48 + 0.13 + 0.246 + 0.34)}{4} = 0.299 \]

3.3 Ranking of Nations on the Basis of STII Value

An STII is developed for 21 years from 1995 to 2015 for the top 100 economies for which data were available and of adequate quality, as shown in Table 3. Despite efforts to collect the data for forty-four (44) indicators, data for patents and IP charges were not available for a number of nations in the developing world. A lack of data of any country might be assumed to represent that little formal innovation is taking place. Therefore, a value of zero for the missing indicator has been used for calculation purposes in such cases. Table 3 presents the STII for 1995 and 2015 of 100 countries and rank of countries by the year 2015. The ranking and STII value for other years are not presented here due to space limitations, but ranking and STII values for each year from 1995-2015 is presented in Appendix I. The estimates of STII are interesting and disappointing as well, as they illustrate the growth and limitations of the science, technology and innovation progress of nations. The STII values show great disparities not only among the countries as a whole but also within the group of countries like developed and developing countries. The highest STII value is 0.582 for the USA, while the lowest value is 0.090 for the Congo Dem Republic. Ali (2017), Ali, et al. (2015), Nasir, et al. (2011) and Desai, et al. (2002) classified the countries into four groups on the basis of TAI values. However, contrary to these studies, the countries have been classified into six groups, based on their STI values as:

- Leaders (STII ≥ 0.350)
- Potential Leaders (0.300 ≤ STII ≤ 0.349)
- Dynamic Adopters (0.250 ≤ STII ≤ 0.299)
- Slow Adopters (0.200 ≤ STII ≤ 0.249)
- Marginalized Countries (0.150 ≤ STII ≤ 0.199)
- Laggard (STII < 0.150)

3.3.1 The Leaders (TAI > 0.350)

Although Ali (2017), Ali, et al. (2015), Nasir, et al. (2011) and Desai, et al. (2002) used a TAI value greater than 0.5 for leaders, we adopt a STII value of 0.350 for leaders in the current study to capture the top 16 countries of the world. This group comprises sixteen countries which are highly developed and at the cutting edge of innovation, topped by the USA, China, Iceland, Singapore and Switzerland in the 2015 rankings (Table 3).

These countries have reached an excellent level of development of human skills and effectively diffused old technologies within their societies. They are leveraging recent technologies very well and can be described as being at the cutting edge of technological innovation and consequently as leaders in science.
and technology, trade, industry and business (Ali, et al., 2015).

In this group, the USA, Sweden and Austria seem to be successful in retaining their position from 1995 to 2015, while China, Singapore, Korea, Switzerland, Iceland, Germany, and Denmark improved 35, 18, 12, 7, 5, 2 and 2 points respectively in their ranking thus able to secure their place in the leader’s category. Declines in the scores of Canada, Finland, Japan, Israel, Netherlands, and Australia can be seen. The performance of China is particularly remarkable in terms of growth in science technology and innovation achievement with the greatest increase from 1995 to 2015 (Table 3).

3.3.2 Potential Leaders (0.300 ≤ TAI ≤ 0.349)

11 countries fall into this category. This group consists of both developed and fast developing countries which have invested in human skill development and used older technologies extensively but are behind the leaders in innovation. Countries of this group are weak in one or two dimensions like technology creation and recent innovation. Most of the countries in this group have similar skill levels as the leader countries. Some countries show very good performance in STI achievement; for example, Czech Republic, enhanced 9, while Belgium, Qatar, Iceland improved 6 points during 21 years. Other countries like France, United Kingdom, Norway, Luxemburg, and Italy ranked at 11, 13, 14, 17 and 18 respectively in 1995 could not retain their position and have fallen into the category of potential leaders in 2015 (Table 3).

3.3.3 Dynamic Adapters (0.250 ≤ STII ≤ 0.299)

Eight countries are placed in this category. Four countries Portugal, Brazil, Hong Kong and Hungry improved 20, 11, 6 and 2 points in their ranking during 21 years and are placed at 35, 34, 33, and 31 positions in 2015 while declining trends can be seen in other four countries. All these countries in the group have the capacity to enhance their STI capabilities.

3.3.4 Slow Dynamic Adapters (0.200 ≤ STII ≤ 0.249)

There are 28 countries in this group, with Croatia at the top while Venezuela at the bottom. A large number of developing countries are presented in this group. They are speedily expanding their use of new technologies such as internet and telecommunication (i.e., cellular mobile phone networks) which are imperative for high tech industries, but they are still behind in adopting and diffusing old technologies such as electricity, telephone, roads, railways, air and sea transportation which are the basic foundations of technological development. Countries belonging to this group plan to utilize new technologies through a number of techniques. Among them, Malaysia, Turkey, and India have developed significant high-technology industries and technology hubs. Apart from India, their human skill development level is considerable and continuing to improve further. India, Philippines, Vietnam, and Turkey are the 2nd, 12th, 14th and 19th most populous countries in the world, are also placed in this category and ranked at 38, 62, 61 and 53 in 2015 (Table 3). These large and heavily populated countries need to spend heavily on human capital as well as investing in the diffusion of old technologies.

3.3.5 Marginalized Countries (0.150 ≤ STII ≤ 0.199)

This group consists of 31 countries with Ecuador at the top and Ethiopia at the bottom (Table 3). The countries in this group are not only weak in technology creation and diffusion of recent innovations, but also in human skill development and the use and spread of old technologies. Large parts of the population in these countries are deprived of basic necessities like electricity, health, clean water and telecommunication. Pakistan and Nigeria with the 6th and 8th largest population in the world are especially low in the dimension of human skill development, which is a major impediment to their economic growth and contribution to the global knowledge-based economy. This group of countries would need to invest heavily in the education sector in order to improve their human skills level. Better attention for the diffusion of old technologies is also advisable for marginalized countries.
3.3.6 Laggard (STII < 0.150)
These countries lag behind in almost every pillar of STI achievement. Support of STI activities, knowledge, particularly in innovation have a long way to go in these countries. Consequently, the situation regarding technology creation and diffusion of recent technologies is still poor. Bangladesh with the 8th largest population in the world is behind all 100 countries in the dimension of human skill development, which is a major obstacle in Bangladesh’s knowledge based sustainable economic growth and its significant participation in the global knowledge based economy.

4. Science Technology Innovation (STI) Scenario in Selected East and South Asian Countries (ESACs)
This study selects Eight East and South Asian countries (ESACs) include four from East Asia (China, Japan, Korea, and Malaysia1) and four from South Asia (Bangladesh, India, Pakistan, and Sri Lanka). The reason for selection of these countries is that these countries emerged on the map of world in the same era and have almost similar geographical conditions. However, there is a substantial gap in the economic development of East and South Asian countries. Many East Asian countries were behind at the beginning of their journey compared with south Asian countries. But the situation has reversed now, whereby South Asian countries are far behind than East Asian countries. Some of the world’s most populous countries, like China (1st), India (2nd), Pakistan (5th), Bangladesh (8th) and Japan (11th) are placed in selected eight countries. 44.38% people of the total world population are living in these selected eight countries, making the East and South region the most populous region of the world. More than a quarter of the world’s gross domestic product, or GDP (26.57% in 2015), is apportioned to these eight countries.

The STI situation of the selected East and South Asian countries are illustrated through some important S&T indicators. STII based on 44 indicators, collectively reflects the actual STI situation of these countries. To explain all indicators of STII is beyond the scope of this study. Therefore, this study discusses some selected indicators of STI, as a representative to state the STI situation of East and South Asian countries.

4.1 Brief Overview of ESACs in terms of STII
If we analyse ESACs in terms of the STII, it has been observed that the state of EACs is very impressive while the position of the SACs is generally not satisfactory. China shows a very strong performance in improving its ranking and STII value. China is increasing its budget for education, health and R&D continuously and performing very well in all four dimensions of STII. In 1995, China was at in 37th position. During 21 years, China has secured its position in the top ten STI advanced countries and is placed at 2nd position in 2015. The second best ESACs performer is Korea, who was ranked 21st in 1995. After 2010 it rose to the 9th position along with Japan, Austria, Finland, Singapore, United States and Germany. Japan has not successfully retained its 2nd place position throughout the 21 years from 1995 to 2015, placed at 11th position in 2015. Malaysia’s STI performance has also seen it decline to 39th position in 2015 from the 32nd position in 1995. China, Korea and Japan are placed in the “leader” category according to the 2015 rankings while Malaysia in the slow adopter category (Table 3). In comparison, the situation of SAC in terms of STII is very disappointing. India is included in the category of slow adopters, holding the 38th positions in 2015. Pakistan and Sri Lanka are in the category of marginalized countries in 1995 and 2015 rankings. Pakistan drops 42 points from 28th to 70th, while Bangladesh drops one point from 96th to 97th (Table 3). 1 Malaysia is a vibrant economy and considered as an Asian tiger, it is ahead of other South Asia countries in terms of economic, social, and S&T indicators. However, the country is closer and similar to East Asian Countries in regard of S&T development. Accordingly, this study places Malaysia in the group of East Asian countries for comparative purpose, although, Malaysia is the part of South-East Asian region.
4.1.1 Sub Dimensional Indices of STII.

Sub dimensional indices of STII are presented in Table 4. China, Japan, and Korea are leading in the first dimensional index (Support for STI Activities), while other ESACs are far behind. The primary reason is that Researcher per million inhabitants (FTE) in Sri Lanka (122.37) Pakistan (175.25), and India (179.00) are very low compared to Korea (7250.00), Japan (5187) Malaysia (2465) and China (1211.00) (Table 4).

Table 4. Sub-Dimensions Indices of STII

<table>
<thead>
<tr>
<th>Country</th>
<th>Support for STI Activities Index</th>
<th>R&amp;D Index</th>
<th>Knowledge Index</th>
<th>Innovation Index</th>
<th>STII</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>0.375</td>
<td>0.494</td>
<td>0.599</td>
<td>0.128</td>
<td>0.201</td>
</tr>
<tr>
<td>Japan</td>
<td>0.473</td>
<td>0.445</td>
<td>0.351</td>
<td>0.611</td>
<td>0.582</td>
</tr>
<tr>
<td>Korea, Rep.</td>
<td>0.362</td>
<td>0.385</td>
<td>0.340</td>
<td>0.378</td>
<td>0.420</td>
</tr>
<tr>
<td>Malaysia</td>
<td>0.310</td>
<td>0.351</td>
<td>0.307</td>
<td>0.105</td>
<td>0.124</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>0.174</td>
<td>0.196</td>
<td>0.198</td>
<td>0.066</td>
<td>0.090</td>
</tr>
<tr>
<td>India</td>
<td>0.389</td>
<td>0.451</td>
<td>0.415</td>
<td>0.175</td>
<td>0.204</td>
</tr>
<tr>
<td>Pakistan</td>
<td>0.289</td>
<td>0.260</td>
<td>0.231</td>
<td>0.068</td>
<td>0.105</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>0.258</td>
<td>0.302</td>
<td>0.294</td>
<td>0.067</td>
<td>0.095</td>
</tr>
</tbody>
</table>

Table 5-a. Data for Some Selected Indicators of STII

<table>
<thead>
<tr>
<th>Country</th>
<th>Total patent grants to Resident</th>
<th>Charges for the use of intellectual property, receipts (BOP, current US$)</th>
<th>Internet users (per 100 people)</th>
<th>High-technology exports (% of manufactured exports)</th>
<th>Fixed telephone + Mobile cellular subscriptions (per 100 people)</th>
<th>Electric power consumption (kWh per capita)</th>
<th>GER Primary to tertiary, both sexes (%)</th>
<th>Percentage of students in tertiary education enrolled in Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>21a</td>
<td>902006.17 a</td>
<td>9.60 a</td>
<td>0.17 c</td>
<td>76.61 a</td>
<td>278.60 c</td>
<td>31.81 b</td>
<td>16.63 d</td>
</tr>
<tr>
<td>China</td>
<td>162680 a</td>
<td>886670295.00 b</td>
<td>49.30 a</td>
<td>26.97 b</td>
<td>110.17 a</td>
<td>3475.01 c</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>India</td>
<td>720 a</td>
<td>658722433.00 a</td>
<td>18.00 a</td>
<td>8.07 b</td>
<td>76.61 a</td>
<td>743.74 c</td>
<td>55.40 d</td>
<td>33.24 b</td>
</tr>
<tr>
<td>Japan</td>
<td>177750 a</td>
<td>36832562676.00 a</td>
<td>90.58 a</td>
<td>16.78 b</td>
<td>170.3 a</td>
<td>7752.49 c</td>
<td>89.93 b</td>
<td>17.83 b</td>
</tr>
<tr>
<td>Korea Rep</td>
<td>97294 a</td>
<td>5150900000.00 b</td>
<td>84.33 a</td>
<td>27.10 b</td>
<td>175.09 a</td>
<td>10345.60 c</td>
<td>91.64 a</td>
<td>35.16 a</td>
</tr>
<tr>
<td>Malaysia</td>
<td>344 a</td>
<td>4328100000.00 b</td>
<td>67.50 a</td>
<td>43.57 b</td>
<td>163.44 a</td>
<td>4345.47 c</td>
<td>94.35 a</td>
<td>34.08 b</td>
</tr>
<tr>
<td>Pakistan</td>
<td>172 a</td>
<td>120000000.00 a</td>
<td>13.80 a</td>
<td>1.88 b</td>
<td>75.98 a</td>
<td>451.70 c</td>
<td>70.24 a</td>
<td>-</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>71 b</td>
<td>-</td>
<td>25.80 a</td>
<td>0.09 b</td>
<td>115.65 a</td>
<td>526.81 c</td>
<td>94.99 b</td>
<td>19.00 a</td>
</tr>
</tbody>
</table>

Table 5-b. Data for Some Selected Indicators of STII

<table>
<thead>
<tr>
<th>Country</th>
<th>Total Publication†</th>
<th>No. of Publication†</th>
<th>Government Expenditure on Education, total (% of GDP)</th>
<th>Researchers Per million (FTE) ¥</th>
<th>Per Inhabitants</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Asia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>24496</td>
<td>416409</td>
<td>1.848</td>
<td>468.50</td>
<td>1211.00</td>
</tr>
<tr>
<td>Japan</td>
<td>79157</td>
<td>109305</td>
<td>3.506</td>
<td>4822.50</td>
<td>5187.00</td>
</tr>
<tr>
<td>Korea</td>
<td>7504</td>
<td>73433</td>
<td>2.974</td>
<td>2253.00</td>
<td>7250.00</td>
</tr>
<tr>
<td>Malaysia</td>
<td>828</td>
<td>23414</td>
<td>4.343</td>
<td>42.75</td>
<td>2465.25</td>
</tr>
<tr>
<td>South Asian</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bangladesh</td>
<td>493</td>
<td>3011</td>
<td>1.821</td>
<td>..</td>
<td>..</td>
</tr>
<tr>
<td>India</td>
<td>19688</td>
<td>123206</td>
<td>3.066</td>
<td>162.50</td>
<td>179.00</td>
</tr>
<tr>
<td>Pakistan</td>
<td>781</td>
<td>10962</td>
<td>2.817</td>
<td>75.50</td>
<td>175.25</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>177</td>
<td>1255</td>
<td>2.958</td>
<td>201.25</td>
<td>122.37</td>
</tr>
</tbody>
</table>

Source:†SCOPUS Data; € WDI, World Bank; ¥UIS Data, UNESCO; * Data of 1995 is not available; we have to use data for 1996 for comparison. ‘a’=2012, ‘b’=2013, ‘c’=2014, ‘d’=2015, ‘-’= Data is not available,

Korea (35.16) is on the top in enrolment in science at the tertiary level, an important indicator of Support for STI Activities Index. The value of high-technology export (% of manufactured exports) of Malaysia (43.57) is very high while the other ESACs, including Bangladesh (0.17), Sri Lanka (0.99), Pakistan (1.88), India (8.07), Japan (16.78), China (26.97) and Korea (27.10) have low values (Table 5-a). Korea is on the top in two dimensional indices (Innovation Index and R&D Index) among ESACs. Electricity is the basic necessity of life as well as it being a key factor for industrial progress. Electric power consumption (kWh per capita) of Korea (10345.60) is high relative to other ESACs, including Bangladesh (278), Pakistan (451.71), Sri Lanka (526.18), India (743.74), China (3475.01), Malaysia (4345.47) and Japan (7752.49) (Table 5-a). China is on the top in knowledge index. The primary reason is that the number of patents granted to residents per million in Bangladesh (21), Sri Lanka (71) Pakistan (172), Malaysia (344) and India (720) are very low compared to Korea (97294), China (162680), and Japan (177750) (Table 5-a).

5. Conclusion and Policy Implications

On the basis of the STII values, facts and figures presented in this study, it can be concluded that most of the South Asian countries (SACs) are not only far behind scientifically and technologically but also weak in human development. If we take a bird’s eye view on the history of these selected eight East and South Asian countries (ESACs), we have found that they started their journey in similar conditions. In contrast, the East Asian countries (EACs) seem to be very developed scientifically, technologically and economically. The STII results show that the three East Asian countries under study have an index value above 0.350 hence they are placed in the leader category, one East Asian country (Malaysia) and one South Asian countries (India) are in the slow adopter category and other two (Pakistan and Sri Lanka) are classified as marginalized countries while Bangladesh in laggard list. South Asian countries have a long voyage of scientific and technological development to catch up. However, East Asian countries are still behind some OECD countries in terms of human development. They also have to work hard to pass the level of economic development found in OECD and European countries. The results of STII also indicate that the majority of South Asian countries have very low capacity of scientific, technological and innovative progress, readiness and preparedness to contribute in the global knowledge-based economy. That is why the gap between South Asian and East Asian countries and other developed countries is expanding with the passage of time.

The study provides valuable and significant information for S&T policy makers and planners, especially
for developing countries to formulate STI policies. The results can help them to decide where to take the first step in the long voyage of building adequate scientific and technological capabilities aligned to the socio-economic requirements of their people. The STI results clearly indicate that only EACs are advanced enough to be placed in the leader category, while SACs are placed in the categories of dynamic adopter and marginalized countries. It is proposed that ESACs, especially SACs, require the capability to manage and adapt new creation, technologies for their local needs. To adopt and disseminate modern scientific innovative technologies, ability and knowledge are required but the lack of scientific & technical knowledge and human skill make conditions in these countries unfavourable. SACs are not only far behind in STI but also in economic and human development. Although SACs are enriched with natural resources, they are unable to fully utilize these resources to the benefit of the public owing to these deficiencies in capacity. SACs under study are still lagging behind in old inventions and utilities, such as telecommunications and electricity, and completely unable to adopt recent high tech innovations. Large portions of rural areas are still deprived of basic technologies and utilities which are structural and functional units of scientific and technological progress that serve as prerequisites to adopt and diffuse the new advanced technologies and innovation in the 21st century.

Technology simply cannot be spread and the capacity to innovate cannot be attained without the vital presence of energy infrastructure (gas and electrical power). It is a mistake to assume that by applying external knowledge and equipment, the technology can be easily transferred, diffused and adopted. Actually, to adopt and implement new technology in a country, a minimum level of infrastructure and capacity is required. Therefore, SACs have to improve their capacity building to be able to consume foreign new innovative technologies and integrate them into their countries. This will enable them to create and develop new technologies to fulfil their local requirements.

Momentous action is needed to accelerate the technological progress in SACs. Improvement in human skills, in particular, is vital to boost technological competency. Although, Japan and Korea perform well in the gross enrolment ratio, they have yet to achieve a 100% literacy rate. The gross enrolment ratio of students in science at the tertiary level is not very good in ESACs, except in Korea and Japan. The question arises, is the education system of the ESACs satisfactory to encounter the challenges of the twenty-first century? Unfortunately, the answer at this time is ‘NO’. To achieve the needed improvements in their citizens’ human skill level, ESACs must increase their educational and R&D expenditure. The results of STII also indicate that the technological readiness and preparedness to participate in the global knowledge-based economy of SACs countries is very low compared to EACs. That is why the gap between SACs and EACs countries is increasing with passage of time. There is a large gap within EACs and SACs countries for the indicators examined in this study. For instance, in terms of publications, India (123206), Japan (109305), Korea (73433), Malaysia (23414), Pakistan (10962), Bangladesh (3011) and Sri Lanka (1255) are far behind than China (416409) in 2015 (Table 5-b). Malaysia spends 4.98 per cent of GDP on education which is two times higher than Pakistan which spends only 2.66 per cent of GDP on education in 2015 (Table 5-b). Sri Lanka spends 0.23 per cent of GDP on R&D which is seventeen times less than 4.15 per cent of GDP of Korea in 2013. This failure and worsening condition of SACs is the result of lack of support from political leaders and the failure of existing policies to solidify the importance of the components of the engine for economic growth and development which are education, research & development, science, technology and innovation policy. The efforts made by SACs in the fields of education and STI are not adequate to meet their needs. Therefore, it is critical for ESACs to realize the importance and significance of education, research & development and STI impacts on economic growth, human and industrial development. They can follow the model of rising economies like Korea, Singapore, Hong Kong and Taiwan who have been spending a high percentage of their budget on the basic facilities of twenty-first century global life, applied research, health and education. In the long run, ESACs and especially SACs have to invest more in a number of areas. These include the energy sector (to increase capacity for power and gas), education, research & development (to obtain the spillover effect of investments on invention), technology creation (in the form
of high-tech export, patents, and royalties) and human development. The direct and indirect implications of the study have been summarized in point form as follows:

6. Direct Implications
   i. STI policy makers and planners may use the STII (which situate the country preparedness and readiness to participate in global knowledge base economy). Ranking of countries on the basis of STII values may be used in futuristic studies and very useful to develop and formulate the STI Policy of the country.
   ii. There are many other indicators which are helpful to improve the STI level and useful to increase the output like: communication technology (ICT) and high-tech imports. There is dire need for developing countries to improve the uptake of ICT and high-tech import by relaxing excise rates, tariffs, duties, and quotas until they become self-sufficient in creation and innovation of new technologies.
   iii. Results of study (on the basis of STII value) indicate that developing economies are very weak in creation of technologies. There is no coordination between R&D organizations, universities and industries to produce high quality end products. Therefore, developing countries need to create university-industry linkage not only within country but across the region as well. So, strong implication of policy should be implemented by the government and a target for the R&D budget should be set. Moreover, a strategic policy is required to ensure that STI data of each country should be reported yearly at national level at first and then government should set a benchmark value to enhance it each year.

7. Indirect Implications
   i. Need for a vision of the future assessment (identifying what the priority areas in STI are)
   ii. Quality enhancement (design and launch programme standards which ensure quality services according to local needs)
   iii. Bridging the links between research & development and practice (to create up-to-date research environments at universities R&D organizations)
   iv. Taking initial steps to support the synthesis of existing STI knowledge and to build and expand the national STI knowledge base

8. Limitations of Study
   One of the problems faced in the current study, which is common to all statistical studies, was related to the availability of reliable data. The index (STII) is incomplete in its coverage of countries, limited in to 100 countries out of the 264 countries and territories of the world as per World Bank (World Bank, 2017). We attempted to obtain data for all forty four sub-indicators for each country, relying upon the statistical publications and databases of major international organizations. Data of all forty four indicators for all 100 countries included in the study was not available, therefore missing values have been estimated by linear interpolation and forecasting where required, but we were forced to use zero for STII values where data of the country is not available.

9. Future Outlook
   Finally, the STII appears to be a reasonable composite S&T indicator for assessing the technological readiness of a nation without concluding anything about its overall S&T capability. As such, it may be useful for detailed studies of regional technical capabilities; for example OECD, OIC, and SAARC nations for being of direct interest, oil-producing countries due to their prominent role in the world economy, and Central Asian republics as a future source of the world’s energy supplies.
The indices of the individual dimensions of the STII could provide meaningful information and insight about level of technology progress and economic development of developing countries as well as different regions of world. We would suggest a more detailed analysis of these as a subject of future research.

Ideally, the efforts following from the direct and indirect implications listed above would improve the status of lagging nations and raise them into a more equal stance in the knowledge-based global economy.

References


Policy and Assessment Center. Atlanta: Georgia: Georgia Institute Of Technology.


Effect of Financial Assistance on the Motivation and Satisfaction of Students with Disabilities at University Level in Punjab

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ARTICLE DETAILS

ABSTRACT

Education is an essential investment in future employability, life fulfillment and motivation designed for students with disabilities (differently abled students). Most, nonetheless, are not able to invest and require external financial assistance. The study was aimed to identify the effect of financial assistance being provided to students with disabilities enrolled in public and private sector universities in the province of Punjab on their motivation and satisfaction. The population of this paper consisted of all students with disabilities (hearing impaired, visually impaired and physically handicapped) who were receiving higher education in public and private sector universities in Punjab. The samples comprised 56 students who were differently abled and had auditory, visual or physical impairment. These students were conveniently taken from three public and three private sector universities located in the Punjab. Data were collected through a self-developed questionnaire containing twenty-three statements measuring the effect of monetary assistance on the motivation and contentment of university students. Reliability index of the instrument was (Cronbach alpha α= .95). Descriptive statistics, independent sample t-test, Analysis of variance (ANOVA) was applied to analyze the data. Major findings revealed that financial assistance was having a significant positive effect on the motivation and contentment of students having disabilities. Conclusions were drawn and recommendations were made to the Government of the Punjab for making the process of providing financial support to the students with disabilities more transparent and fast.

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1. **Introduction**

Monetary assistance is a collaboration amongst the student, guardians, educational institutes of postsecondary level, state and federal governments, and existing private capital. For the student who is differently abled, the collaboration also may include a Vocational Rehabilitation Agency and the Social Security Administration. This collaboration requires support from all entities and an apprehension of their distinctive errands within the monetary aid process (Financial Aid for Students with Disabilities, 2015). People with disabilities have higher rates of unemployment than those without disabilities (Bureau of Labor Statistics, 2012), however, those who are able to attain higher levels of education also reach higher rates of employment (Smith, Grigal, & Sulewski, 2012). The higher employment rates after educational attainment are promising. However, the higher education degree financially is not viable for students with disabilities. These students remain an underrepresented but growing population in higher education (NCES, 2016; Newman, Wagner, Cameto, Knokey, & Shaver, 2010), with approximately 80% of students who are differently abled aspiring to pursue postsecondary education (Newman et al., 2011). A potential barrier that disabled students face when entering postsecondary education is the financial cost surrounding a degree.

The families of differently abled student are unevenly represented in the lowest income quartile (Wolanin, 2005), making financial aid even more vital for access opportunities. For low-socio economic status (SES) families of students having disabilities, expectations for postsecondary schooling are greatly diminished (Madaus et al., 2014). This relationship is particularly troubling since lower expectations for this population have been found to lead to lower academic and career outcomes (Wagner, Newman, Cameto, Levine, & Marder, 2007). The four umbrella categories of aid students and their families can use are loans, grants, work-study, and tax benefits. Under the loans umbrella, students can pursue private loans or one or more federal loans including: Perkins, subsidized Stafford, unsubsidized Stafford, and parent PLUS (Bittinger, 2016). Grants include a number of federal grants such as Pell as well as state, institutional, and private/employer grants. Funds from both loans and grants will be available to students once they begin their education. The amount that can be earned from work-study opportunities is also disclosed to students once they begin.

Small amount of researches have been conducted regarding the motivation and satisfaction in relation to financial assistance of students with disabilities (Hasan, Malik & Khan, 2013; Kundu, Dutta, Schiro-Geist & Crandall, 2003; O'Shea & Meyer, 2016). Self-Determination Theory (SDT) is a wide-ranging theory that put forth the context for apprehending the human behavior, and role of motivation and the way humans respond in different scenarios (Ryan & Deci, 2000). The fundamental tenet of the theory is that relatedness, autonomy and competence are the basic inborn psychological needs that are central to adaptive impulse and human development (Deci & Ryan, 2008). If their needs are not fulfilled they tend to feel coerced and agitated either externally or internally. According to McGuire, Norlander and Shaw (1990) there is a dearth of research to support the endowment and utility of facilities regarding disabilities. Therefore, the evaluation of such services vi-a-vis student motivation and satisfaction is near to impossible.

According to the statistics of World Health Organization (WHO), around fifteen percent of global population is suffering from some disability (February 10, 2015), however the occurrence of disability in Pakistan is 2.49% as assessed by the Population Census (1998). To make an all rounded and well researched policy, all disability related aspects like limited participation, restricted activity, health problems and environmental factors should be taken into account. Such over arcing information retrieval is lacking in Pakistan as it does in several other developing countries. Pakistan lacks the availability of systematic procedure and instrument for gathering disability related information from the diverse and huge population. In July 2011, Pakistan approved the UN Convention for the Rights of Persons with Disabilities (CRPD, Article 31). There are 19 % physically disabled, mentally retarded stands around 14%, multiple disabilities are 8.21 %, 8.6% are visually impaired, while auditory impairment was measured to have affected 7.40% of the population and others are 43.33%.

The National Policy for Persons with Disabilities (2002) was framed with the backdrop of data provided
by WHO estimated that 10 percent of the adults and children are disabled in Pakistan. A more comprehensive report was provided by National Census, 1998. The estimate of National Census was 2.49% of the total population that was low as compared to the WHO report. 2.49% estimation has been grouped as under into age specific groups according to the optimum level of requirement:

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children less than five who need assistance</td>
<td>10.34%</td>
</tr>
<tr>
<td>along with their families</td>
<td></td>
</tr>
<tr>
<td>Children in the age bracket of 5 to 14 years</td>
<td>23.09%</td>
</tr>
<tr>
<td>who require some type of special education</td>
<td></td>
</tr>
<tr>
<td>Youngsters up to the 29 years of age who need</td>
<td>23.98%</td>
</tr>
<tr>
<td>employment opportunities, specific training</td>
<td></td>
</tr>
<tr>
<td>and further education</td>
<td></td>
</tr>
<tr>
<td>Adults who are disabled and need help</td>
<td>25.15%</td>
</tr>
<tr>
<td>Senior disabled citizens who want special aids</td>
<td>16.56%</td>
</tr>
</tbody>
</table>

The needs and wants of differently abled college and school going students were not met and were not in accordance with the facilities provided to the other students. Getzel and Kregel (1996) found that the problems faced by the disabled student body in getting access to the facilities is not because of institutional inability, but it is due to the lack of identifying these needs. (McGuire, Norlander & Shaw, 1990) suggested that due to the dearth of research related to disabled people it is cumbersome to monitor the student satisfaction level. DeFur, Getzel and Trossi (1996) and Parker and Szymanski (1998) said that the outcomes of disability related services can be monitored qualitatively and quantitatively by accessing student’s satisfaction with academic, extra academic and professional lives transition of students at postsecondary institutions. This data can be positively used for recruiting, training and hiring for future. The investigation of the financial assistance being provided to students with disabilities, their motivation and satisfaction is the need of the hour. Therefore, current study is an attempt to investigate the influence of monetary aid on enthusiasm and gratification of students having disabilities at university level in the Punjab province of Pakistan.

2. Study Objectives

Following are the objectives of this study:

1. To identify the level of perceived effect of monetary aid on the enthusiasm of students with disabilities at university level in Punjab.
2. To identify the level of perceived effect of monetary aid on the gratification of students having disabilities at university level in Punjab.
3. To distinguish the level of perceived effect of monetary aid on the enthusiasm and satisfaction of students having disabilities at university level in Punjab on the basis of demographical variables (gender, locale, program, university, & level of education).

3. Research Hypotheses

H₁₁: There is a considerable statistical difference in the perceived effect of financial assistance received by male and female students with disabilities on their motivation and satisfaction at university level in Punjab.

H₁₂: There is a considerable statistical difference in the perceived effect of financial assistance being provided to rural and urban area students with disabilities on their motivation and satisfaction at university level in Punjab.

H₁₃: There is a statistically major difference based on the level of education in the perceived effect of monetary aid on the enthusiasm and gratification of students having disabilities at university level in Punjab.

H₁₄: There is a statistically significant difference in terms of university in the perceived effect of monetary aid on the enthusiasm and gratification of disabled students at university level in Punjab.

H₁₅: There is a statistically significant difference with respect to program in the perceived effect of
monetary aid on the enthusiasm and gratification of students with disabilities in Punjab at university level.

4. Research Design
It was a quantitative study based on a descriptive research. Cross-sectional survey method has been used to investigate the effect of monetary aid on the enthusiasm and gratification of disabled students at university level in Punjab.

4.1 Population of the Study
The study population comprised all students with disabilities (hearing impaired, visually impaired and physically handicapped) who were receiving higher education in the public and private sector universities in Punjab. It is important to clarify that the disability of mental retardation was not mentioned as these students could not access the higher education level due to their limited mental faculties.

4.2 Sample
A sample of 56 disabled students including auditory, visual and physical impairment was conveniently taken from three public and three private sector universities located in the Punjab. Fifty six students with disabilities (males=36, females=20) were enrolled in six universities including University of the Punjab, Lahore (N=22), Lahore College for Women University, Lahore (N=2), University of Management and Technology, Lahore (N=7), Government College University, Lahore (N=16), Government College University, Faisalabad (N=6), Allama Iqbal Open University, Islamabad (N=3). Out of 56 students, 50 were from urban, and six were from rural areas of the Punjab and their age range was between 20-30 years. The monthly income of their families was between Rs. 10,000-200,000. These participants were from M.A. Special Education (N=32), Islamic studies (N=2), Law (N=3), History (N=5), English (N=8), Economics (N=4), Urdu (N=2). Out of 56, 37 participants were from M.A. program, nine were from M.Phil and one student was enrolled in Ph.D.

4.3 Instrument
A questionnaire was developed on the basis of literature review which was authorized by a board of three experts. At the initial stage, a pool of 31 statements to measure the effect of monetary aid on gratification and enthusiasm of the students having disabilities was generated. All the statements of the questionnaire were rated on the five point likert scale from strongly agree 5 to strongly disagree 1. After the pilot study, the statements which did not contribute to increase the questionnaire’s reliability were omitted. Afterwards, the reliability index (Cronbach Alpha) of the questionnaire including 24 statements was \( \alpha = .95 \).

4.4 Procedure of Data Collection
Researchers gathered the data by personally visiting students with disabilities (hearing impaired, visually impaired and physically handicapped) after taking prior consent of the heads of the concerned university.

5. Data Analysis
Descriptive (mean, standard deviation) and inferential statistics (independent sample t-Test and one-way ANOVA) were applied for analyzing data.

Table 1: Demographic Characteristics of the Sample

<table>
<thead>
<tr>
<th>Variables</th>
<th>Category</th>
<th>Number</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>36</td>
<td>56</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Area</td>
<td>Urban</td>
<td>50</td>
<td>56</td>
</tr>
<tr>
<td></td>
<td>Rural</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>
Table showed the demographical information of the respondents who were participating in this study. It was shown that 36 students with disabilities were males and 20 were females. Twenty-two students were enrolled in the University of the Punjab, Lahore, two students were from Lahore College for Women University, Lahore, seven were from University of Management and Technology, Lahore, sixteen students having disabilities were enrolled in Government College University, Lahore, six students were from Government College University, Faisalabad, and just three students were from Allama Iqbal Open University, Islamabad who were participating in this study. Out of 56 students, 50 were from urban, and six were from rural areas of the Punjab and their age range was between 20–30 years. The monthly income of their families was between Rs. 10,000–200,000. These participants were from M.A. Special Education (N=32), Islamic studies (N=2), Law (N=3), History (N=5), English (N=8), Economics (N=4), Urdu (N=2). Out of 56, 37 participants were from M.A. program, nine were from M.Phil and one student was enrolled in Ph.D.

**Table 2: Summary Statistics of Perceived Effect of Monetary Aid on the Enthusiasm and Gratification of Disabled Students at University Level**

<table>
<thead>
<tr>
<th>Variables</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effect of Financial Assistance on Motivation</td>
<td>36.27</td>
<td>9.66</td>
</tr>
<tr>
<td>Effect of Financial Assistance on Satisfaction</td>
<td>36.92</td>
<td>10.17</td>
</tr>
</tbody>
</table>

Table illustrated the results regarding the effect of monetary aid on the enthusiasm and gratification of disabled students at university level. It was shown that the mean score for the effect of financial assistance on the motivation (M= 36.27, SD=9.66) and satisfaction (M=36.92, SD=10.17) of university students with disabilities was at highest level. Hence, it was concluded that the financial assistance received by the students with disabilities has positive effect on their motivation and satisfaction. Financial support being provided to students motivates them to survive in their studies and increase their level of satisfaction.

**Table 3: Difference in the Effect of Financial Assistance Received by Male and Female Students with Disabilities on Their Motivation and Satisfaction**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Male (34)</th>
<th>Female (18)</th>
<th>df</th>
<th>t- value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td></td>
<td></td>
<td>----</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motivation</td>
<td>35.35</td>
<td>37.00</td>
<td>54</td>
<td>-.59</td>
<td>.560</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>37.00</td>
<td>35.78</td>
<td>54</td>
<td>.42</td>
<td>.677</td>
</tr>
</tbody>
</table>
Table showed the results of independent sample t-test to identify the mean difference in the effect of monetary aid on the enthusiasm and gratification of students having disabilities in terms of their gender. The mean score for male ($M=35.35$) and female ($M=37.00$) regarding the effect of financial assistance on motivation was statistically not significant $t (50) = -.59, p = .560$. Similarly, the mean score for male ($M=37.00$) and female ($M=35.78$) regarding the effect of financial assistance on their satisfaction was also statistically not significant $t (54) = .42, p = .677$. So, on the basis of these results research hypothesis that" there is a considerable statistical difference in the perceived effect of financial assistance received by male and female students with disabilities on their motivation and satisfaction at university level in Punjab." is rejected. It may be inferred that the financial assistance being provided to male and female students with disabilities has the same effect on their motivation and satisfaction at university level. The motivation and satisfaction level of male and female university students with disabilities was same who were receiving financial support.

Table 4: Difference in the Effect of Monetary Aid Received by Students having Disabilities Residing in Urban and Rural Parts on Their Enthusiasm and Gratification

<table>
<thead>
<tr>
<th>Variables</th>
<th>Urban (50)</th>
<th>Rural (6)</th>
<th>df</th>
<th>t- value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivation</td>
<td>37.18</td>
<td>25.50</td>
<td>54</td>
<td>2.43</td>
<td>.019</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>38.20</td>
<td>24.50</td>
<td>54</td>
<td>3.07</td>
<td>.003</td>
</tr>
</tbody>
</table>

Table presented the results of independent sample t-test to identify mean difference in the perceived effect of monetary aid on the enthusiasm and gratification of disabled students residing in the urban and rural areas. The mean score for students residing in the urban ($M = 37.18$) and rural areas ($M= 25.50$) about the effect of monetary aid on their enthusiasm was statistically not significant $t (54) = 2.43, p = .019$. So, on the basis of these findings research hypothesis that" there is a statistically significant difference in the perceived effect of financial assistance being provided to rural and urban area students with disabilities on their motivation at university level in Punjab is rejected. On the other hand, the mean score for students with disabilities residing in the urban ($M = 38.20$) and rural areas ($M= 24.50$) regarding the effect of financial assistance on their satisfaction was statistically significant $t (54) = 3.07, p = .003$. Therefore, on the basis of these results research hypothesis that" there is a statistically significant difference in the perceived effect of financial assistance being provided to rural and urban area students with disabilities on their satisfaction at university level in Punjab" is accepted. Hence, it was concluded that the effect of financial assistance was same on the motivation of students with disabilities residing in urban and rural areas. However, the effect of financial assistance was different on the level of satisfaction of students with disabilities in the urban and rural areas. The satisfaction level of urban area disabled students was high than the students with disabilities residing in rural area due to the financial assistance which they were receiving.

Table 5: Difference on the Basis of Level of Education in the Perceived Effect of Monetary Aid on the Enthusiasm and Gratification of Students having Disabilities

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>df</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivation</td>
<td>56</td>
<td>2</td>
<td>1.25</td>
<td>.297</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>56</td>
<td>2</td>
<td>3.7</td>
<td>.033</td>
</tr>
</tbody>
</table>

Table clarified the results of ANOVA for identifying mean difference in the level of satisfaction and motivation of students with disabilities having different level of Education. It is evident that the difference is not statistically significant in level of motivation $F (2) = 1.25, p = .297$ but statistically significant in the level of satisfaction $F (2) = 3.7, p < .05$. Based on these results, the research hypothesis that “there is a statistically significant difference on the basis of level of education in the perceived effect of financial assistance on the motivation of students with disabilities at university level in Punjab" is rejected. However, the research hypothesis that “there is a statistically significant
difference on the basis of level of education in the perceived effect of financial assistance on the satisfaction of students with disabilities at university level in Punjab " is accepted. It is concluded that the effect of financial support on the motivation of students with disabilities was same in terms of their level of education (M.A, M. Phil, Ph.D). On the other hand, the effect of financial assistance on the satisfaction of students with disabilities was different with respect to their level of education (M.A, M.Phil, and Ph.D). It can be said that students with disabilities enrolled in Masters, M.phil and Ph.D were different in their level of satisfaction due to the financial assistance being provided to them.

Table 6: Difference in the Perceived Effect of Monetary Aid on the Enthusiasm and Gratification of Students having Disabilities Enrolled in Different Universities

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>df.</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivation</td>
<td>52</td>
<td>5</td>
<td>.24</td>
<td>.943</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>52</td>
<td>5</td>
<td>2.8</td>
<td>.026</td>
</tr>
</tbody>
</table>

Table presented the results of ANOVA to identify mean difference in level of satisfaction and motivation of students with disabilities enrolled in different universities. It is evident that the mean difference is statistically not significant in level of motivation $F(5) = .24, p=.943$ but statistically significant in level of satisfaction $F (5) =2.8, p = .026$. On the basis of these results the research hypothesis that " there is a statistically significant difference in terms of university in the perceived effect of financial assistance on the motivation of students with disabilities at university level in Punjab " is rejected and the research hypothesis " there is a statistically significant difference in terms of university in the perceived effect of financial assistance on the satisfaction of students with disabilities at university level in Punjab" is accepted. It is concluded that students enrolled in different universities (PU, LCWU, UMT, GCU Lahore, GCU Faisalabad and AIOU) had different level of satisfaction whereas they were equally motivated due to financial assistance being provided to them.

Table 7: Comparison on the Basis of Program in the Perceived Effect of Monetary Aid on the Enthusiasm and Gratification of Students with Disabilities

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>df.</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivation</td>
<td>56</td>
<td>5</td>
<td>1.26</td>
<td>.276</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>56</td>
<td>5</td>
<td>3.3</td>
<td>.023</td>
</tr>
</tbody>
</table>

Table showed the results of ANOVA for identifying mean difference in the level of satisfaction and motivation of disabled students of different programs. It is evident that the difference is not statistically significant in the level of motivation $F(5) = 1.26, p = .276$ but statistically significant in the level of satisfaction $F (5) = 3.3, p=.023$. Based on these results, the research hypothesis that, “There is a statistically significant difference with respect to program in the perceived effect of monetary aid on the enthusiasm of students having disabilities at university level in Punjab." is rejected. However, the research hypothesis that “there is a statistically significant difference with respect to program in the perceived effect of financial assistance on the satisfaction of students with disabilities at university level in Punjab “is accepted. It is concluded that the effect of monetary support on the motivation of students who have disabilities was alike in terms of their program (M.A special education, Islamic Studies, Law, History, English, Economics, and Urdu). On the other hand, the effect of monetary aid on the gratification of students who had disabilities was diverse with respect to program (M.A Special Education, Islamic Studies, Law, History, English, Economics, and Urdu). Students enrolled in different programs had different level of satisfaction whereas they were equally motivated due to financial assistance being provided to them.

6. Conclusions
This study intended to examine the effect of monetary aid on the enthusiasm and gratification of students with disabilities at university level in Punjab. It was concluded that the financial assistance received by students with disabilities has positive effect on their motivation and satisfaction. Financial support being provided to students with disabilities motivates them to survive in their studies and increase their level of satisfaction. The motivation and satisfaction level of male and female university
students with disabilities was same who were receiving financial support. Results further revealed that
the effect of monetary aid was also same on the motivation of students with disabilities residing in urban
and rural areas. However, the effect of monetary aid was different on the level of satisfaction of students
having disabilities residing in the urban and rural areas. The satisfaction level of urban area disabled
students was high than the students with disabilities residing in rural area due to the financial assistance
which they were receiving. Furthermore, the effect of monetary support on the enthusiasm of students
having disabilities was similar in terms of their level of education (M.A, M. Phil, Ph.D). On the other
hand, the effect of monetary assistance on the gratification of students having disabilities was different
with respect to their level of education (M.A, M. Phil, and Ph.D). It can be said that students with
disabilities enrolled in Masters, M.phil and Ph.D were similar in their level of motivation. Nonetheless,
their level of satisfaction was different due to the financial assistance being provided to them. Students
enrolled in different universities (PU, LCWU, UMT, GCU Lahore, GCU Faisalabad and AIOU) had
different level of satisfaction whereas they were equally motivated due to financial support being
provided to them. It was also observed that the effect of monetary support on the motivation of students
who had disabilities was alike in terms of their program (M.A special education, Islamic Studies, Law,
History, English, Economics, and Urdu). On the other hand, the effect of financial assistance on the
satisfaction of students with disabilities was diverse with respect to program (M.A Special Education,
Islamic Studies, Law, History, English, Economics, and Urdu). Students enrolled in different programs
had different level of satisfaction whereas they were equally motivated due to financial assistance being
provided to them.

7. Discussion on Major Findings

The purpose of current research was to inspect the effect of monetary aid on the enthusiasm and
gratification of disabled students at university level in Punjab. Results of the current study revealed that
the financial assistance received by students with disabilities has positive effect on their motivation and
satisfaction. Financial support being provided to students with disabilities motivates them to survive in
their studies and increase their level of satisfaction. These findings of the current study are supported by
the different researches (Kundu, Dutta, Schiro-Geist, & Crandall, 2003; Olbrecht, Romano, & Teigen,
2016). Another study conducted by Weaver (2013) gave opposite results to the findings of current study.
According to the disability and development report of United Nations (2018), persons with disabilities
belong to low-income families. It becomes a major obstacle in their way of getting higher education. So,
financial aid promotes students with disabilities who are getting higher education and increases their
level of motivation and satisfaction. Intrinsic and extrinsic motivations both are most important in
educational settings (Ryan & Deci, 2000). The results of the current study also revealed that the
motivation and satisfaction level of male and female university students with disabilities was same who
were receiving financial support. Results further revealed that the effect of monetary assistance was also
same on the enthusiasm of disabled students residing in urban and rural areas. However, the effect of
monetary assistance was different on the level of satisfaction of disabled students residing in the
urban and rural areas. The satisfaction level of urban area disabled students was higher than the students
with disabilities residing in rural area due to the financial assistance which they were receiving.
Furthermore, the effect of monetary support on the enthusiasm of students having disabilities was
similar in terms of their level of education. On the other hand, the effect of monetary assistance on the
satisfaction of students with disabilities was different with respect to their level of education. Students
enrolled in different universities had different level of satisfaction whereas they were equally motivated
due to financial support being provided to them. It was also observed that the effect of financial support
on the motivation of students with disabilities was alike in terms of their program in which they were
studying. On the other hand, the effect of monetary assistance on the gratification of students with
disabilities was diverse with respect to their program as M.A Special Education, Islamic Studies, Law,
History, English, Economics, and Urdu. Students enrolled in different programs had different level of
satisfaction whereas they were equally motivated due to financial assistance being provided to them.
Bittinger (2016) contacted a study to examine the financial aid received by students with disabilities
which supported the results of the current study.
8. Recommendations
Following recommendations were made after getting insight into the findings of this study.

- Financial aid administrators who are working with professional associations should provide training opportunities to educational institutes. It will be helpful for them to understand the special problems faced by low-income students with disabilities.
- Government should improve the higher education opportunities for low-income students with disabilities by providing them financial assistance.
- Higher education commission (HEC) should take initiative to implement policies regarding the financial assistance for students with disabilities to increase their motivation and satisfaction towards studies at advance level. In this way, they will be able to contribute in the economic development of Pakistan.
- Government should also provide more sources of income to low-income families of students with disabilities who are studying at higher education level.
- Future research should be conducted in different contexts and environment to investigate the problems of students with disabilities from low-income families.

References


Green Banking Products: Challenges and Issues in Islamic and Traditional Banks of Pakistan

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ARTICLE DETAILS

ABSTRACT

Purpose: The issuance of green banking guidelines in 2017 has opened the door of a new banking horizon for Islamic banks because the objective of Islamic banks, objective of Shariah, objective of Islamic economic system and objective of green banking are linked. Banking, especially Islamic banking based on products and one of the main components of green banking guidelines is the development of green banking products. Since green banking is in the infancy stage, therefore, the objective of the study is to explore the issues and challenges in green banking products in Islamic and traditional banks of Pakistan. Methodology: Semi-Structured interview technique is utilized for data collection. The green operation managers and Shariah scholars of sample banks selected as interviewees. Interviews are conducted through telephonic recorded calls and email-interviewing. Total of 26 interviews are conducted. Findings: The results indicate that lack of skills, knowledge, identification of the target market with the appropriate mode of financing and convincing the people are some main obstacles in green banking product formulation and implementation. Implications: At one-point, green banking is an opportunity for Islamic banks to achieve Maqasid-e-Shariah on the other side, it may become an obstacle because it further limits the financing areas for Islamic banks. The situation needs serious attention from policymakers to act at earliest.

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1. Introduction

The objective of Islamic banks is different from traditional banks. Islamic banks being part of Islamic
economic system work not only for the generation of profit rather welfare. The goals of Islamic economic systems based on Maqasid-e-Shariah “Objectives of Shariah” and the objective behind these objectives is welfare. In Islamic law, the welfare of all stakeholders is given much importance. The biggest problem in pursuance of the welfare of all stakeholders is the preservation of the environment, and the whole world is now heading towards this concept, green banking is one of the global actions for the protection of the environment. In response to global initiatives, State Bank of Pakistan (SBP) had issued a Green Banking Guideline in 2017, before this, there was no concept of green banking in Pakistan. The objective of green banking is very close to the objectives of Shariah. The objective of green banking is the preservation of the environment that leads towards the preservation of Din, life, wealth, intellect and family. The same is the objective of Shariah. Therefore, objective of green banking, objective of Shariah and objective of Islamic banking are linked. Banking operations, especially Islamic banking based on products. Since one of the main components of green banking is the development of green banking products, hence implementation of green banking and development of green banking products are inevitable for banks, especially for Islamic banks.

As the green banking guidelines were issued in 2017, the phenomenon of green banking in relation to green products and Maqasid-e-Shariah is unaddressed. Previous studies e.g Hurayra (2015), Al-Amine (2015), Fisol, Ariffin, and binMat (2017), focus on explaining the importance of Maqasid-e-Shariah in Islamic finance and expenditures on zakat/sadaqat, and emphasized that Islamic banks must work to promote the social welfare of all (Zubaidah, 2019). In addition, previous studies on some aspects of green banking such as paperless banking operations and services are conducted in Bangladesh for example (Chowdhury & Dey, 2016; Fayez, Mohammad, & Md, 2013; Islam & Das, 2013; Lalon, 2015) etc. After Bangladesh few studies are also conducted in China and India on managing green credit policy, such as (Aizawa & Yang, 2010; Biswas, 2011; Sahoo & Nayak, 2007; Zhang, Yang, & Bi, 2011). Other regions such as Oman, Jordan, Singapore, and UAE also have one study each on green banking on reporting issues. But most of these studies based on the importance of green banking in traditional banks only. Moreover, this study is based on real-time data as opposed to above-mentioned studies. Against this backdrop, the present study investigates the issues and challenges in green banking products in Islamic and traditional banks of Pakistan to strengthen the level of Maqasid-e-Shariah and welfare of all stakeholders in whole banking structure of Islamic banks and fulfil the GAP. Therefore, the main objective of the study is “To know the issues and challenges in green product development in Islamic and traditional banks of Pakistan”.

1.1. Significance
Green banking is very much close to Islamic objectives of Shariah, (Maqasid-e-Shariah). Therefore, the identification of issues and challenges in green banking product may help in achieving the objectives of Shariah at the bank level as well as at the industry level. Therefore, by identifying the issues and challenges in green product development, the study may provide firsthand knowledge to academic and corporate readers on current banking practices on green banking products in Islamic and traditional banks of Pakistan. The difficulties identified may describe the difficulties in achieving Maqasid-e-Shariah in Islamic banks. For regulatory authorities, the study may help in ascertaining the usefulness of green banking guidelines in term of green product development because this study is based on real-time data. This study may help SBP in identifying the outcomes, challenges and recommendations for developing green banking products and for the establishment of green banking framework, that may further become helpful in developing a regulatory framework on green banking. It is also interesting to conduct this study on Islamic banks because, in the guidelines, no specific instructions are quoted for Islamic banks to keep intended their different business model and product structures. Therefore, it will be an interesting study, that how Islamic banks are developing green products and what are the outcomes, and what obstacles they are facing in the development process and what are the solutions for these challenges. Ultimately this may help in the formulation of green product development framework.

1 A per GBG the next step is the development of green banking regulations.
for Islamic banks based on Maqasid-e-Shariah. The following model depicts the implication of this study in the shape of a new banking horizon for Islamic banks.

![New Banking Horizon (Blending green banking with Islamic Banking)](image)

For managers, this study may help in identifying the difficulties and the aspects that affect the application of green product development and the banking elements that are affected by the development of green products in Islamic and traditional banks of Pakistan. Further, this study may provide a solution to the challenges faced by traditional and Islamic banks while developing green products. The study may also help in achieving sustainable development goals and enhancing the confidence of customers in Islamic banking. Further, the study may help in exploring the untapped financing areas. Furthermore, this may help in developing green banking products for Islamic banks, such as green Ijarah, green Murabaha and green Musharakah etc.

2. Literature
This section provides the details of studies conducted on green banking in different regions of the world. The previous studies are also presented in chronological order to gain an historical view of the previous studies.

2.1 Green Banking in Bangladesh
In earlier studies on green banking in Bangladesh, Fayez, Mohammad, and Md (2013) found that policy guideline, demand for loans, stakeholders’ pressure, environmental, economic and legal factors affect the implementation of the green banking guidelines in commercial banks of Bangladesh. Furthermore, Millat, Chowdhury, and Singha (2013)\(^2\) claimed that banks show positive attitude towards implementation of green banking guidelines due to economic factors and to fulfil moral obligations. In the same year Md Masukujjaman and Aktar (2013) claimed that banks have a lot to do in this area, such as formation of climate risk funds, environmental due diligence and investments in renewable energy projects. In another study Islam and Das (2013) spotlighted the practices of green banking in Bangladesh. The study focused on mobile and online banking, green financing, the guideline on green banking and green banking units. The study suggests that due to globalization, practices of green banking are becoming inevitable. Later, Lalon (2015) found that there are some opportunities for banks adopting green banking practices such as improving brand image and technical assistance from central bank. In the same year, Mohammad Masukujjaman, Siwar, Mahmud, and Alam (2015) reveal that bankers see green bankers as a socially responsible banker. green banking helps in protecting environment, albeit green banking is a high cost venture. The study further reveals the compatibility between green banking and Islamic banking such as saving resources, cleanliness, and social accountability. In the next year, Chowdhury and Dey (2016) argued that major initiatives towards green banking by central bank of Bangladesh are formulation of polices, strategies and allocation of budgets to banks for green initiatives. They also claimed that the utilization of these budgets is increasing but at a slower pace. However, the barriers can be removed through special incentive packages for green investments. In the same year, Hossain, Bir, Tarique, and Momen (2016) imply that even the absence of

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\(^2\) This study was conducted by central bank of Bangladesh and based on the information provided by the banks on green activities in response to the guidelines announced by the central bank of Bangladesh.
reporting guideline, banks in Bangladesh are reporting the green banking practices in their yearly reports. But the lack of standardized reporting guideline is one of the obstacles in consistency of reporting. However, by considering the central bank as strong stakeholder, banks are following the instructions of central bank for green initiatives. Then Julia, Rahman, and Kassim (2016) found that all the aspects of green banking, such as governance, environmental and credit risk management, funds for climate risk management, awareness, disclosure, training and green financing, are very much in line with the objectives of Shariah. They claimed that green banking Guidelines issued by Bangladesh Bank may easier for Islamic banks to implement as these may help in fulfilling the objectives of Shariah such as preservation of wealth life and family. Similar to Islam and Das (2013) , Hoshen, Hasan, Hossain, Al Mamun, and Mannan (2017) found that privately owned commercial banks in Bangladesh are contributing more funds in green projects, and tendency to finance green projects is also increasing in these banks. However, to accelerate the goals of sustainable development a revision is required in green banking policy. In the same year, Sekreter (2017) found that green finance and Islamic finance are expending in two different geographical regions. The study found that though Murabaha is the major product of Islamic banks, Sukuk and Musharakah based products may also become major tools for Islamic banks in increasing green financing. Afterward, Alam, Julker, Rashedul, and Khadiza (2017) examined different green banking models. In addition to review of literature the study also utilized the in-depth interview technique, to obtain some personal perspective of banking leaders and to explore the opportunities and hurdles in initiating green banking activities in banks. The study found that green banking if implemented in true sense may become an effective tool for controlling polluting businesses. Most recently, Chen, Hossen, Muzafary, and Begum (2018) found that banks in Bangladesh are performing well on sustainable development goals and are acting according to the guideline of Bangladesh Bank. The study found that banks mostly report those activities which are good in nature, this type of green banking helps in attracting customers, regulators and public. Furthermore, adoption of green activities enhances the legality to the businesses. Similarly, Ghosh, Ghosh, and Chowdhury (2018) claims that mandatory, rather than voluntary implementation of green practices may create a difference.

2.1. Green Banking in India

In initial studies on green banking Sahoo and Nayak (2007) claimed that, being the major stakeholder of industrial sector, banks face difficulties in managing credit and liability risk, quality of assets and return rate in long run. Therefore, to tackle these issues, it is important for banks to be proactive and play their role in going green. Banks should include the ecological and environmental aspects in their lending principles. This will force industries to take compulsory actions for environment management, application of appropriate technologies and management system. The study also found the importance of green banking and highlights some international practices on green and sustainable goals. The study also claimed that the level of green banking in Indian banks is not very encouraging, therefore, needs a policy guideline for effective implementation. Later, Thombre (2011) claims that banks’ external activities have huge impact on environment, though it is tough to measure the impact. Therefore, promotion of environmental friendly investments and cautious lending responsibilities rest on banks (Sahoo & Nayak, 2007). Banks should proactively play their role in incorporating environmental aspects in their lending procedures (Hayder, 2012). The focus from profit, profit and profit is therefore gradually shifting to people, planet and profit (Verma, 2012). Furthermore, Biswas (2011) found that going green is a must for banks, though the approach in banks is not very proactive. Similar to Sahoo and Nayak (2007) emphasized that ecological aspects and environmental preservation should be a part of banks’ lending process. This will encourage industries to utilize suitable technology and management system. After two years Bhardwaj and Malhotra (2013) argue that concept of green banking is equally beneficial to economy, industry and banks. Adoption of green banking not only helps in greening of industry but also increases the worth of assets of banks. They further claimed that adoption of green banking influences the performance of companies. Next, Nath, Nayak, and Goel (2014) highlights some challenges of adopting green banking such as higher operational cost and lack of specialization, talent and expertise. In addition, banks are also confronting to reputational risk due to non-compliance with
green guidelines. The study also highlights some reasons behind global warming through banking sector, and attributes this to late sitting in banks with well-lighted offices, more computers and electricity usage. In recent studies, Deka (2015) highlighted three issues, first the green banking practices, secondly, the impact of green activities on sustainability, and thirdly, customers awareness regarding green activities in Assam. The study reveals a direct impact of green banking on sustainability due to being easy, convenient and cost effective for customers. However, there is a lack of literacy regarding green banking in customers. Most recently, Shetty and Unnikrishnan (2017) claimed that green baking is pursuing in two broader dimensions. The focus of US Banks is on financing green projects, while focus of banks in India is on green banking operations. However, banks in India may also boost green banking by focusing on green and clean projects.

2.2. Green Banking in China
In preliminary studies on green policy, Aizawa and Yang (2010) claimed that success of implementation of green credit policy depends on collection and dissemination of environmental data, technical assistance, and financial incentive for banks. Continuation in successful implementation will provide china with experiences and confidence to confront new challenges such as social and environmental conduct of its overseas businesses. In next year another study was conducted by Zhang, Yang, and Bi (2011), the study found that level of implementation of green credit policy at national level is not very encouraging. Wide range of highly polluting and energy consuming industries, unclear policy details, vague standards of implementation and absence of environment related information are the main obstacles in the implementation of the policy. After two years Bal, Faure, and Liu (2014) identify some important facts related to green credit in China. First, only a few small-scale banks are applying internationally accepted green principles. Secondly, there is a lacking in some areas such as establishment of inclusive risk management system, transparent disclosure of environment related information, monitoring and capacity building. In recent studies on green lending policies in china (Cui, Geobey, Weber, & Lin, 2018) found that green financing is gaining popularity in china after the issuance of Green Credit Policy, by conducting a panel data study on twenty four chines banks, the study explained the relative riskiness of green loans as compared to non-green loans. The data set was collected for five-years, regression technique with two-stage least square is applied to test the relationship. The study found that inclusion of more green loans in loan portfolio reduces the amount of non-performing loans. The study indicates that implementation of green credit policy positively affects the environmental and financial performance of chines banks. The study also provides some suggestions for improving the green financing performance of chines banks. First, green lending policy should be considered as an initial step and not an end. Secondly, government should play its role by providing incentives to banks for green lending. Third, role of NGOs should be encouraged. Fourth, close monitoring of environmental conduct of abroad banks should be conducted.

2.3. Green Banking in Oman
In Oman, Miah and Rahman (2017) found that provision of environmental effect during loan approval are not implemented by the selected banks for green initiatives. The study emphasized that the concept of eco-house can be implemented through financial sector. However, most of the banks required central bank to issue some guideline for the implementation of green activities.

2.4. Green Banking in United Arab Emirates (UAE) and Jordan
In a comparative study between UAE and Jordan, Jahamani (2003) found that there is some level of awareness related to environmental issues, but response to environmental preservation is very low. The study also found that there is no difference between UAE and Jordan in term of environmental awareness, involvement, and reporting.

2.5. Green Banking in Singapore
In Singapore, Sachs, Woo, Yoshino, and Taghizadeh-Hesary (2019) indicates that current investments in renewable projects have been declining and in future, it can decline more because fossil fuels dominating energy investment. This can be a threat for the acceleration of green energy which is needed to meet the climate, energy, and fresh air goals. They further claim, for achieving sustainable
development goals, it is necessary to create opportunities for green projects. There is a need to develop green products and policies such as green bonds, green banks, green fiscal policies, green central banking etc.

3. Methodology

3.1. Data Collection

The primary data is gathered through emails and telephonic recorded interviewees.

3.2. Sample and Population

At present, there are total of 26 banks in Pakistan. The respondent from all banks are selected for analysis, out of that total of 5 respondent from full-fledged Islamic banks, 14 from traditional banks and 7 Shariah scholar have participated in interviews.

3.3. Ethics

Before conducting the telephonic interviews, written consent through electronic means such as email and on-call has been obtained from all the participants agreeing to record the interviews. All respondent provided a preliminary introduction of the research and its objectives in advance. Furthermore, all the participants who are agreed to record and participate in the interviews assured that their anonymity has to be maintained.

4. Result and Analysis

4.1. Challenges and Issues in Green Products in Traditional Banks

The interviewees have opined regarding the issues and challenges of green products related to different phases from the development to the launching of products. For instance, 29% of the interviewees from traditional banks were opined, that green product development is not very challenging, however, you need to have good product development consultants, with relevant knowledge and skills. One of them was opined as:

“The green product development officer must be equipped with the knowledge and skills of green banking products and must be aware of customer needs.” (Bank 02-T).

When respondents were asked, why knowledge and skills are important for the development of green products, they responded as:

“It is challenging form the product development perspective that if I got to develop the product, then I have to hire engineers to understand all processes and life cycles of these products, all these things, on the bases I will launch that product. I will define the tenor of financing of these products, then viability in term of reciprocity if it is installed, then how cash flows are generating form it, that the customers will pay to me or not. So, it is from both financial as well as the engineering perspective needed a person who can do it all.” (Bank 08-T).

Other interviews opined that green product development is not challenging, however, one needs to deal with the challenges after the development of green products, for instance, 29% of the interviewees from traditional banks opined that one needs to identify the target market, and has to convince the customers for purchasing these products. One interviewee opined in the following way:

“……….because you need to convince the customer to purchase the renewable products which cost high” (Bank 01-T).

When interviewees were asked why green products are costly, then most of the interviewees opined that because of lack of international and government level funding these products are costly. One response was worth mentioning.

“In Pakistani environment, you can say it is challenging because green products will be somehow costly. We can understand it with a very simple example, in the UK a person has opened a shoe factory, and he has bound himself that he will not use any material in the making of shoes that can create a negative impact on the environment. He purchased

3 Full-Fledge Islamic banks and 21 Traditional banks
each material from those vendors who have no harmful impact on society, so in this way, his cost becomes so high that he could not bear it because he has no funding for it. Again, if we talk about green businesses or products, then it involved cost, until unless you have international funding, or government level funding. From product structuring and process flow point of view, there are no such challenges. Banks need to target the market and sold the products. Banking products are very standardized, at the broad level we have two products, assets and liabilities, on the assets side, we can provide the loans, and loans are also categorized in term of corporate, SMEs and consumer. On the liabilities side, we have two products that are saving and current accounts. So, these are a very standardized product, and the bank needs to identify the target market and make a product for them” (Bank 11-T). 15% of the interviewees opined that cost and convincing the customers to purchase green products are other issues in the green products, one interviewee was responded in this way:

“We have launched some small projects, but the same thing if there will be an incentive then it will work. The incentive will be of two types, in the form of an existing market or a regulatory push, such as exemptions and rebates, or the form of a created market demand, then everyone will run after that. So, in both cases, we are not seeing anything like this” (Bank 03-T).

| Table 4.1 Summary of the Issues Related to the Green Product Development |
|-------------------|-----------------|-----------------|
| **Reasons**        | **After-effects**                          |
| Skills and knowledge | Education system | Lack of good product development consultant, convincing the management |
| Identifying the target market | Less user or niche market | Low penetrations, limited product line |
| Convincing the customers | Involvement of higher cost, | Need of higher support from government and international funding agencies, need to launch separate advertisement campaign and special training of sales staff |

4.2. Islamic Banks

60% of the interviewees from Islamic banks opined that convincing the customers is the main issue in green products, and 20% of the interviewees opined that lack of knowledge and skills and lack of incentives are the other two main issues in green product development. One of the respondents summarizes the issues and consequences as:

“Customization is challenging because we need to start a separate advertisement campaign. To sell out these kinds of products you need to specially train the sales staff. You have seen in Pakistan; manufacturer of cars and house finance market of Pakistan is very established. The players who are sitting in these markets their reputation is good. In these scenarios, products flourished. First, for the renewable products, or green banking product, the market is niche. Secondly, there is no mass population for these products. The vendors producing these products are also short, and not too much, and when market competition increased, the prices go down. Because there is no competition, so, no prices discount or leverage available, the prices are such where customers become reluctant to buy” (Bank 17-I).

4.3. Shariah Scholars

57% of the interviewees from Islamic banking operations opined that convincing the customers is the main issue in green products. While 43% of the interviewees associated the lack of knowledge and skills
as an obstacle for green products and 14% of the interviewees opined that lack of incentives is the main issues in green product development. Apart from the similar comments as of traditional and Islamic banks on convincing the customers, lack of knowledge, skills and incentives, Shariah scholars have added some important shariah related issues, such as the validity of contract and selection of the appropriate mode of financing. Two interviewees’ opinions were worth noticing.

“So, from this perspective, what will be the products. Which modes of finance will be utilized here? You can take the example of microfinance banking there is no roll of banks in it. Similarly, there is an organization, FINCA. It is working in Pakistan as well and many Arab countries. Basically, it is an American firm and doing Islamic banking there, and not in Pakistan, why? because with reference to Islamic banking there is no framework in Pakistan for microfinance which can lead it. In this, there is a role of the regulator, when these things will come till now no product development from this perspective” (SSTB-20).

“……… because in product development there comes online products, e-commerce products, fintech, digitalization, mobile banking and blockchain etc. because they want a peer to peer, in all these keeping in mind the Shariah requirement, is still a challenge. Much work is needed on it and people are already researching it, whether they are Shariah compliant or not, and as you know that on blockchain and krypton currency also research is going. Similarly, as I told in online products there is a challenge of offer and acceptance and validity of contract. So, fulfilling all these shariah requirement, it is a challenge” (SSTB-22).

### Table 4.2 Summary of the Issues Related to the Green Product Development

<table>
<thead>
<tr>
<th></th>
<th>Reasons</th>
<th>After-effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Skills and knowledge</td>
<td>Lack of awareness, involvement of technology, to fulfill Shariah requirements as well, lack of research and development.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>When we go to the grass-root level or lower level and work in all areas, then all these issues will come with more intensity. No framework, meeting the requirements of Shariah, no research and development.</td>
</tr>
<tr>
<td>2</td>
<td>Identifying the target market with appropriate mode of finance</td>
<td>Less users, niche market, lack of venture capital</td>
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<tr>
<td></td>
<td></td>
<td>Limiting the financing opportunities, need to upgrade marketing skills or way of dealing, need to train sales team.</td>
</tr>
<tr>
<td>3</td>
<td>Convincing the customers</td>
<td>Lack of additional benefits</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Heavy capital requirements</td>
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5. **Summary, Conclusion and Recommendations**

The objective of the study was to find the issues and challenges in green product development in Islamic and traditional banks of Pakistan. To achieve the objective primary data collection methodology was adopted. Data was collected through in-depth semi-structured interviewee technique. The interviewees of the study were green banking officers and shariah scholars of traditional and Islamic banks of Pakistan. Interviews are conducted through telephonic recorded calls and emails. Total of 26 interviews were conducted. The results indicate that lack of skills, knowledge, identification of the target market with the appropriate mode of financing and convincing the people are some main obstacles in green banking product formulation and implementation. Recommendations for the improvement of green banking have been collected from 14 respondents of traditional banks, 5 respondents of Islamic banks and 7 respondents of Islamic banking operation of traditional banks.

- It is also a well-known fact that assigning targets guided to move in the right direction, keeping this fact in mind some interviewees also insisted that instead of looking on banks for taking some initiatives, SBP needs to assigning product development targets to banks.
• Besides penalties, there should be a reward mechanism. Though, the interviewees consider that only recognition may not be sufficient at this time to encourage banks to adopt green banking, there must be some benefit such as relief in tax, rebates or leverages in the existing products. SBP should lessen the documentations or loosening the requirements for banks so they can easily process the loans then eventually banks' cost will be reduced, and they can pass on these things. Incentives should be offered to the industries to adopt green initiatives and reducing environmental impact. There should be some incentive from the policymakers, such as rebates or leverages in the existing products. If such incentives will be there, then green banking will take some shape or structure. Apart from incentives, there should be some demand for green banking products. The interviewees also opined that in the absence of demand, green banking may only include some more check on customers, and may cause inconvenient. Therefore, the creation of demand is necessary for the promotion of green banking products. Policymakers need to push the industry by giving them incentives or provide more incentives to banks. Further, policymakers need to provide some incentives to those who are qualifying the definition of green. There should be ranking or competition of banks so that healthy competition can be created.

• The development of courses related to green banking can overcome the issue of lacking skills and competences for the future. This study indicates that professionals with only one-sided knowledge are gradually taking place in the banks as green banking offices. Therefore, some provisions must be there for newly hired green banking officers to be qualified by asking them to complete some scholastic requirements, for example, attending a green banking certified course. However, regulators, government and professional organizations should take part in support of such requirements. For example, entrepreneurs, academics and professionals should form a network to identify the needs and design such courses and build the infrastructure to produce qualified green banking officer. Although the interviewees opined that there is lack of adequate infrastructure in the country to support green banking, it seems that the issue is with lack of awareness, organization and a lack of training. The universities of Pakistan must be well prepared to support training programs and must have some specialized training institutes, on the other side there must be some role of entrepreneurs to provide training to fill the skills gap.

• The board should annually assess the qualification of green banking officer to determine whether the knowledge and experience of the green banking officer fulfil the strategic demands of the bank. These assessments must be considered while hiring new green banking officers or delegating the responsibilities to the existing employees.

• In order to address the issue of lack of training, there must be some training related provision. Apart from the current provisions related to training, the interviewees recommended that there must be some more clauses to ensure that senior and middle-level managers can get training regularly. Banks still would have more knowledge into they need to be more upgrade about the latest happenings in the world. Considering the lack of time for employees, the provision must be flexible to allow a reasonable time for employees to update with these requirements.

• There is a need for the continuous support of the government, regulators, banks, peoples and educational institutions researcher. If everybody starts talking about something, they will provide push and eventually, an environment will be developed. Therefore, policymaker will continuously strive for the betterment in their policies and should have focused on green banking.

References


Monetary Policy Channels and Industrial Production in Pakistan: Evidences based on ARDL Approach

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ABSTRACT

Monetary policy is a significant component of economic management, with which we can control higher inflation, boost the economic growth and stabilize the other macroeconomic activities. This study investigates the channels of monetary policy affecting the industrial production using monthly data of Pakistan. In this regard, we have applied Bound test for co-integration to investigate the dynamic behaviour of the variables. Our results indicate that the consumer prices, money supply and money market rates are negatively effective for industrial production in the short-run. On the other hand, exchange rate has positive effect in short-run. The results also indicate that there is statistically significant and positive relationship between industrial output and money supply in the long-run, too. The adjustment mechanism suggests stability in the system and is statistically significant. Our results imply that the authorities should use expansionary monetary stance through money supply channel to boost the industrial sector.

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1. Introduction

The main goal of monetary policy is to achieve the sustainable economic growth and to determine the role of other socioeconomic activities in the country. In modern economics, the supervision of money market, regulation of money supply and the management of banking system are merged in a phrase “Monetary Policy”. The policy makers use monetary policy as a tool to control the financial sector of the economy. Furthermore, the monetary policy is influential for credit channels, balance of trade, money supply channels, interest rate channels and unemployment rate. The correct diagnosis of monetary policy channels is very important for any given economy. The previous literature investigated the relationship between monetary policy channels in detail but the part of the industrial sectors has less unexplored in the case of Pakistan. The industrial sectors are main and key role in developed and developing countries.
The economists used various econometric methods to investigate the relationships between the monetary policy channels and industrial growth. The most practical method is Autoregressive Distributed Lag (ARDL) approach. Many economists investigated the short run and long run associations among the monetary policy channels through distributed lag model (ARDL). Among these renowned, Banerjee et al. (1993), investigated the ARDL model through simple linear equation and found the dynamic of short run relationship with the help of Error Correction Model (ECM). The ECM is the measurement of the short run behaviour with long run equilibrium without losing long run sequence.

The key link between monetary channels and economy needs to be paid attention at in recent economy due to the financial crises. In this principle, we analyze the dynamics relationships of variables, such as Industrial Manufacture Product Index (Y), Money Supply (M2), Money Market Rate (MMR), Nominal Effective Exchange Rate (NEER) and Consumer Price Index (CPI), our model is similar to Dingela and Khobai (2017). Although the Dingela and Khobai (2017) model is not designed for Pakistan economy, but they analyzed the mechanism of macroeconomic variables with the help of ARDL approach.

In addition, there are a number of reasons, why we might be choosing ARDL model to estimate the relationship between monetary policy channels and industrial sector growth in Pakistan. Firstly, the ARDL model are being used broadly on the data of developing and developed countries to analyse the economic growth. For example, Rabi and Waliullah (2011) reveal strong evidence about the relationships between money supply, level of prices and Economic Growth (GDP). The monetary policy tools such as money supply has a stable and long run relationship with consumer price index (Rabi and Waliullah, 2011). Secondly, the ARDL model is simple and can correctly identify the time series analysis. Finally, we chose the ARDL model, it is useful to clearly understand the long run and short run behaviour of monetary channels and that is more critical for modern economy. The objective of this study is to find out the relationship between monetary policy instruments and the industrial production. Most of the earlier literature has done primarily focussed on the GDP, but we in this study have emphasized on the use of industrial production as proxy for output due to number of reasons; including the frequency of the series, and the suppose link between the investment and interest rate (theoretically). In this scenario, we analyzed our regression equations with ARDL approach.

The study has been divided into five sections. Section 1 introduces this study; section 2 is based on the review of existing literature; in section 3, we discussed model, methodology and description of variables; section 4 presents the empirical analysis. Section 5 concludes. References are given in the end.

2. Literature Review
The monetary policy plays a vital role in both open and closed economy. The following literature explains the monetary policy system by using Vector Autoregressive (VAR) and ARDL model, to examine the macroeconomic volatility in economy.

Bernanke and Mihov (1998) analyzed how change in monetary policy (interest rates) and their macroeconomic impact could be calculated via VAR models. Precise monetary policy measurement is important for the economy. Their method was semi-structural VAR, focused on reserve market measures, to estimate monetary policy. The paper's main conclusion is that, especially for the whole period 1965-1967 (for US) no clear determinants are available for reserve bank. Finally, the strutural-VAR model was proposed as an useful measure for monetary shocks.

The Structural Factor model was used as an experiment to detect the complex behaviour of monetary policy impacts by Forni and Gambetti (2008). Therefore, the two models Structural Factor and Structural Autoregressive Vector were compared. The Structural Factor Model allows us to use a large data set and avoid significant restrictions on VAR Structural models. With the help of the structural factor model, Forni and Gambetti (2008) found that the real two-way exchange rates simultaneously
respond to a tight monetary policy with a valuable appreciation and monetary policy shocks influence all forms of real and nominal variables considerably. Moreover, a contractionary monetary policy helps in the removing of price puzzle.

Qayyum (2008) examined the financial policy and its impacts to controlling the inflationary pressure in Pakistan. His finding suggest that high inflation rate should be control by authority because it adverse impact on overall commodity prices. The high and harmful inflation rate has inimical for the economic growth, developing and poor societies (people have limited assets). Aleem (2010) investigated the Transmission Mechanism of monetary policy in India and Pakistan by using financial channel approach. Its results indicate that the inclusion of exogenous variables in the model to improve the problem of price puzzle and checked the importance of each channel simultaneously by comparing two different impulse response shocks of GDP for the addition in the interest rate. The Bank lending channel is important for Indian economy, and the exchange rate channel is important for Pakistan (Aleem, 2010). On the other hand, Stevanovi (2010) found that the behaviour of economic factors has strong coordination with economic environments as these factors change over time. There are few structural relations that may vary over time which cause a time variation in parameters. The time variation has an important role in estimated coefficients of VAR model. Mahmood and Shahab (2012) explored the optimal shocks of monetary policy and its impacts on social welfare, considering a small open economy. When the central bank adopts discretion monetary policy for improvement in economy, the economy faces price puzzle and exchange rate puzzle which can damage in macroeconomic conditions. They discussed how the discretionary policies are not instantly effective in society as anticipated and that they are not appropriate for the welfare and exchange rate stream. With inflation, growth, and interest rates increasing, the liberal target is better than the tight target. We indicated that monetary policy based on the rule shows good results in production, output, consumption, and the open economy.

The co-integration and VECM techniques by Mustafa et al (2013) were used to test the connection between reserve prices and money supply in Pakistan. Results show that the financial supply and stock prices have a casual relation. They showed that the stock price had a negative, relevant and short-term casual impact on the supply of money. Further, Hanif (2014) addressed Pakistan's monetary environment mainly concerned with bank loan availability for control of its economic activity. For monetary related factors like bank loan, stock of money that causes economic impact, the SBP is responsible. Cooperation between fiscal and monetary authorities is found in the use of interest rate targeting. Abdurrahman, et al., (2016) investigated the empirically two-way correlation of the effectiveness of financial policy and macroeconomic variables by using the structural-VAR model and non-recursive detection of small open economy. The essential point of this paper is to explore the monetary policy shocks in the occurrence of external variables. Further it is revealed in this study that in the case of higher inflation, the efficiency of the monetary channels shows a good performance in the long run. Furthermore, in monetary policy the interest rate plays a central role in maintaining low inflation. Although tightening the monetary policy has a positive impact on high inflation, it creates fluctuations in prices in the short term. Finally, the inclusion of external variables in the model indicates that the effects on domestic financial variables in the model reduced.

Ghafoor (2018) investigated the impact of monetary policy behaviour on economic growth of Pakistan. He applied multiple regressions and correlation techniques for analysis the time series data and explained the relationship among the selected variables. He found that, there is a long run relationship between monetary policy and the macroeconomics channels. Monetary policy has significant effect on inflation rate, money supply, employment, and economic growth. Therefore, the monetary policy leads to improve economic growth and a positive impact on economic growth. He suggested that should give a ultimate authority to the policy makers and central bank, but at same time, it must have coordination with fiscal authority.

This review of literature suggests that the monetary policy play a principle role for industrial growth
through its direct impact on the investment. It also influences the balance of payments and exchange rate policy. Based on this review we have used a model based on Waliullah et al (2010), Dingela and Khobai (2017) in the next section for empirical analysis.

3. Model and Methodology

3.1. Theoretical Model

In line with the objectives, we can now define the framework of this study. To estimate the macroeconomic policy model for Industrial Sector Growth, the ARDL model is being broadly used in monetary policy channels to find the short run and long run relationships of variables. Here, we have used five variables similar to the model used by Waliullah et al (2010), Dingela and Khobai (2017) and Ezeaku et al (2018). The simple linear regression equations for industrial sector as follows:

\[ \text{Ln}(Y_t) = \beta_0 + \beta_1 \text{Ln}(\text{CPI}_t) + \beta_2 \text{Ln}(\text{M2}_t) + \beta_3 \text{MMR}_t + \beta_4 \text{Ln}(\text{NEER}_t) + \epsilon_t \]  

Where \( Y_t \) is the industrial/manufacture production at given time period, \( M2 \) is the money supply, CPI is the consumer price index, MMR is the money market and last variables is the Nominal Effective Exchange Rate (NEER). All these variables are set in logarithmic form, except the Money Market Rate. In the recent literature of financial econometrics, it has been focused on integration of the model into the short run dynamic adjustment process. The speed of adjustment from short-run to long-run equilibrium is necessary for the ARDL approach. In this principle, we prepared ECM by modifying the equation (1) as follows:

\[ \Delta \text{Ln}(Y_{t-1}) = \beta_0 + \sum_{i=1}^{n_I} \beta_i \Delta \text{Ln}(Y_{t-1}) + \sum_{i=0}^{n_H} \beta_i \Delta \text{Ln} (\text{CPI}_{t-1}) + \sum_{i=0}^{n_M} \beta_i \Delta \text{Ln} (\text{M2}_{t-1}) + \sum_{i=0}^{n_N} \beta_i \Delta \text{Ln} (\text{NEER}_{t-1}) + S_{t-1} + \epsilon_t \]  

The equation 2 represents the short run dynamics of the model, where the symbol ‘S’ shows the speed of adjustment factor in terms of Error Correction Model (ECM) derived from the baseline equation 1. The \( B_0 \) represents the constant term in the each equations. \( B_1 \) to \( B_6 \) is the coefficients, \( \epsilon_t \) is the error term and \( n \) is the number of lag length of \( i \). While \( \Delta \) symbol is indicate for change.

According to the past empirical analysis, if we have a mix order of variables (i.e. integrated order at I (0) and I (1)), then we will go for ARDL or Bound test for the co-integration analysis. Therefore, we will develop the ARDL or Bound test to find the relationships of variables in system which integrates into one step function, suggested by Engel and Granger (1987). For this purpose we substitutes \( S_{t-1} \) in Equation 2 for lagged variables of the dependent variable and the independent variables. The ARDL model is therefore particular in Equation 3.

\[ \text{Ln}(Y_{t-1}) = \alpha_0 + \beta_1 \text{Ln}(Y_{t-1}) + \beta_2 \text{Ln}(\text{CPI}_{t-1}) + \beta_3 \text{Ln}(\text{M2}_{t-1}) + \beta_4 \text{MMR}_{t-1} + \beta_5 \text{Ln}(\text{NEER}_{t-1}) + \sum_{i=1}^{n} \Delta \text{Ln}(Y_{t-1}) + \sum_{j=0}^{n} \Delta \text{Ln} (\text{CPI}_{t}) + \sum_{k=0}^{n} \Delta \text{Ln} (\text{M2}_{t-k}) + \sum_{i=0}^{n} \Delta \text{MMR}_{t-i} + \sum_{m=0}^{n} \Delta \text{Ln} (\text{NEER}_{t-m}) + \epsilon_t \]  

Here \( i, j, k, l, \) and \( m \) represent the lags of all the endogenous variables of the model. The main assumption in this model is that the long run coefficients of the model are equal to zero. However, the bound pattern for the short run dynamics is estimated based on the Error Correction Model (ECM) as symbolize in our equation (2).

3.2 Data and Variables Description

The monthly data of variables from 2000M01 to 2019M02 have been collected from different database and the sample consisted of 230 observations in for Pakistan.
Table No. 1: Description of Variables:

<table>
<thead>
<tr>
<th>Variables</th>
<th>Description</th>
<th>Symbols</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial/Manufacturing Productivity Index</td>
<td>At constant prices 2010</td>
<td>Y</td>
</tr>
<tr>
<td>Consumer Price Index (CPI)</td>
<td>CPI at constant prices 2010</td>
<td>CPI</td>
</tr>
<tr>
<td>Nominal Effective Exchange Rate</td>
<td>Rupees per Dollar</td>
<td>NEER</td>
</tr>
<tr>
<td>Money Supply</td>
<td>In million rupees (seasonally adjusted)</td>
<td>M2</td>
</tr>
<tr>
<td>Interest Rate/ Money Market Rate</td>
<td>Monthly cost of money</td>
<td>MMR</td>
</tr>
</tbody>
</table>

In the Data, we include Manufacturing/industrial productivity index (Y) at constant prices 2010. Consumer Price Index (CPI) at 2010 base is used to measure inflation rate. The Nominal effective exchange rate (NEER) is indicating in rupees per dollar at 2010 base and proxies the effects of currency rate with other trading partners. Money Supply is in million rupees by SBP to investigate the growth rate of currency in selected period. MMR is the monthly interest rate settled at money market.

4. Empirical Analysis

4.1 Results from Unit Root Test

Table (2) shows the mean reverting property test for all variables set in logarithmic form except the domestic Money market Rate (MMR). The test results indicate that all variables are stationary at 1st difference except MMR, i.e., I(0). Thus the results dragged us towards ARDL approach, because data has mixed order. Actually, we are interested in the study of dynamic responses of the variables in short run and long run pattern. So we pursue the ARDL approach to investigate the long run and short run relationships among variables.

Table No. 2 Unit Root Test Result (ADF)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient</th>
<th>Critical Value at 5%</th>
<th>Test Statistic</th>
<th>Intercept/Trend</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>LnIMPI</td>
<td>-0.91</td>
<td>-3.4294</td>
<td>-13.49</td>
<td>I/T</td>
<td>1st Difference</td>
</tr>
<tr>
<td>LnCPI</td>
<td>-0.48</td>
<td>-2.5750</td>
<td>-7.21</td>
<td>None</td>
<td>1st Difference</td>
</tr>
<tr>
<td>LnNEER</td>
<td>-0.59</td>
<td>-1.9422</td>
<td>-10.09</td>
<td>I/T</td>
<td>1st Difference</td>
</tr>
<tr>
<td>LnM2</td>
<td>-1.21</td>
<td>-2.8739</td>
<td>-17.87</td>
<td>I/T</td>
<td>1st Difference</td>
</tr>
<tr>
<td>MMR</td>
<td>-1.09</td>
<td>-2.8374</td>
<td>-4.15</td>
<td>I/T</td>
<td>Level I(0)</td>
</tr>
</tbody>
</table>

4.2 Lags Order choice Criteria

There are several methods to select the lag length of an ARDL model. In this study, we have used three powerful criteria to select the lag length criteria; namely AIC, SC, and HQ. All the methods are listed in table 3, which provides the mostly selected lag lengths under special information criterion. All these criteria present a different lag length. In this case we have to rely on the SC which is significant at lag (1,1) because at this lag length we would face less loss to degree of freedom. Thus our ARDL model (equation 3 above) is estimated at lag (1,1).

Table No. 3: Lags Order of Selection criterion.
### Table No. 4: Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>Y</th>
<th>CPI</th>
<th>NEER</th>
<th>M2</th>
<th>MMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>93.70319</td>
<td>89.57697</td>
<td>128.225</td>
<td>5720018</td>
<td>8.22909</td>
</tr>
<tr>
<td>Median</td>
<td>97.945</td>
<td>81.52735</td>
<td>113.162</td>
<td>4644518</td>
<td>8.775</td>
</tr>
<tr>
<td>Maximum</td>
<td>163.97</td>
<td>162.724</td>
<td>211.883</td>
<td>15931393</td>
<td>20.03</td>
</tr>
<tr>
<td>Minimum</td>
<td>41.89</td>
<td>40.601</td>
<td>79.0466</td>
<td>1221780</td>
<td>0.74</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>27.00944</td>
<td>42.05261</td>
<td>38.4414</td>
<td>4075962</td>
<td>3.22070</td>
</tr>
<tr>
<td>Skewness</td>
<td>-0.170055</td>
<td>0.34319</td>
<td>0.34107</td>
<td>0.826897</td>
<td>-0.11378</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>2.511192</td>
<td>1.529145</td>
<td>1.64634</td>
<td>2.62</td>
<td>3.10372</td>
</tr>
</tbody>
</table>

The test of Normality, Jarque-Bera results of ARDL.

<table>
<thead>
<tr>
<th>Jarque-Bera</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.427879</td>
<td>0.180155</td>
</tr>
<tr>
<td>25.46714</td>
<td>0.000003</td>
</tr>
<tr>
<td>22.2112</td>
<td>0.000015</td>
</tr>
<tr>
<td>27.83453</td>
<td>0.000001</td>
</tr>
<tr>
<td>0.60464</td>
<td>0.73910</td>
</tr>
</tbody>
</table>

### 4.4. Bounds test for Cointegration

To finds the long run relationship among the variables of different order of integration, there is a need to rely on Pessaran et. al. (2001) test, so-called Bounds test. The short run dynamic behaviour and relationship among economic variables are found through an underlying Error Correction Model and F-Statistics.

#### 4.4.1. Bounds Test for Existence of Long Run Relationship:

The value of F-statistics from estimated equations (F= 8.40) is greater than the lower and upper critical Bounds at 5 % and 10 % significance level respectively as shown in the table 4. It indicates that there is an existence of long run relationships between variables at the given significance level. The bounds test also indicates that, all variables have an equilibrium condition that keeps them in the long run.
### Table No. 5: Existence for long run relationship between Monetary Channels and IPI

<table>
<thead>
<tr>
<th>Test statistic (Y, CPI, M2, MMR, NEER)</th>
<th>Value</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-Statistics</td>
<td>8.4007</td>
<td>4</td>
</tr>
</tbody>
</table>

**Critical Value Bounds**

<table>
<thead>
<tr>
<th>Significance</th>
<th>I0 Bounds</th>
<th>II Bounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>10%</td>
<td>2.2</td>
<td>3.09</td>
</tr>
<tr>
<td>5%</td>
<td>2.56</td>
<td>3.49</td>
</tr>
</tbody>
</table>

Null Hypothesis: No long-run relationships exist at (5%)

### 4.4.1. Co-integration Results (Short Run Estimates)

Table 6 describes the co-integrated short run results for selected variables such as LnCPI, MMR, LnM2 and LnNEER. This indicates that the coefficients of prices and interest rate are negative and statistically significant. The short run results also show that the error correction term is negative (as predicted) and statistically significant. This suggests that there is a process of about three periods to correct towards the long run stable path. The coefficients of money supply and exchange rate are statistically equal to zero, referring to no short run impact of these variables on the output. The equilibrium in the system is corrected at the adjustment rate of 30.3% in each period.

### Table No. 6: Estimated Short run Error Correction Model [ARDL: 1, 1, 0, 1, and 0]

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficients</th>
<th>Std-Error</th>
<th>T-Statistic</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Δ(LN CPI)</td>
<td>-2.51107</td>
<td>0.57961</td>
<td>-4.332331</td>
<td>0.0000</td>
</tr>
<tr>
<td>Δ (LN M2)</td>
<td>-0.22300</td>
<td>0.35573</td>
<td>-0.626872</td>
<td>0.5314</td>
</tr>
<tr>
<td>Δ (MMR)</td>
<td>-0.00683</td>
<td>0.00314</td>
<td>-2.175385</td>
<td>0.0307</td>
</tr>
<tr>
<td>Δ (LN NEER)</td>
<td>0.05509</td>
<td>0.33914</td>
<td>0.162467</td>
<td>0.8711</td>
</tr>
<tr>
<td>Ect,-1</td>
<td>-0.30302</td>
<td>0.03971</td>
<td>-7.630796</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

Note: * Level of Significant at 5 percent.

### 4.4.2. Long Run Estimates

Table 7 shows the long run estimated coefficients and suggests that, the lnCPI and lnNEER has a negative and significant impact on industrial production; means in the long run the output is highly sensitive to prices and responses negatively. The depreciation (an increase in exchange rate in this case) reduces the output, by making imports cheaper and exports costlier. In Pakistan there is huge current account deficit which confirms that the long run impact of depreciation is negative on output. Moreover, Pakistan’s industrial sector produces primary and semi-manufacturing goods which do not generate high revenues in international market.

### Table No. 7: ARDL Coefficients for Long run [1, 1, 0, 1, 0,]

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficients</th>
<th>Std-Error</th>
<th>T-Statistic</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>LN CPI</td>
<td>-1.847283</td>
<td>0.32772</td>
<td>-5.63669</td>
<td>0.0000</td>
</tr>
<tr>
<td>LN M2</td>
<td>1.232038</td>
<td>0.13812</td>
<td>8.92007</td>
<td>0.0000</td>
</tr>
<tr>
<td>MMR</td>
<td>0.01507</td>
<td>0.00863</td>
<td>1.74623</td>
<td>0.0906</td>
</tr>
<tr>
<td>LN NEER</td>
<td>-0.789958</td>
<td>0.36438</td>
<td>-2.16790</td>
<td>0.0312</td>
</tr>
</tbody>
</table>
Thus depreciation which is sometimes an encouraging factors for exporters does not draw the attention of the producers. The money supply increases the output level and helps the produces to get easy loans. So, an expansionary monetary policy can play a role to boost the industrial sector. Although the sign of MMR is against the theoretical logic, however, this channel of monetary policy has statistically insignificant relationship at 5% level of significance and has very small numerical value.

4.5. Diagnostic Tests

The diagnostic test results are presented in the table 8. Jarque Bera test shows that there is normality is restored in the series of the model after log transformation. Similarly the Breusch-Pagan-Godfrey (B-P-G) and LM tests confirms the absence of serial correlation. Both these test also confirm through F-statistics that there is homoscedasticity in the residuals of the estimated model. This problem has been solved by including the white heteroscedasticity-consistent standard errors and covariance in ARDL model.

<table>
<thead>
<tr>
<th>Tests:</th>
<th>Jarque Bera</th>
<th>B-P-G</th>
<th>LM Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normality:</td>
<td>4.3822</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obs *R-squared Value</td>
<td>29.016</td>
<td>2.0267</td>
<td></td>
</tr>
<tr>
<td>F-Statistic</td>
<td>4.5764</td>
<td>1.9649</td>
<td></td>
</tr>
<tr>
<td>Prob Value:</td>
<td>0.1117</td>
<td>0.0001</td>
<td>0.1546</td>
</tr>
</tbody>
</table>

4.5.1 CUSUM Tests for Structural Break

Figure 1 shows that, the stability of the long run coefficients by using the Cumulative Sum of Recursive Residuals (CUSUM) test. Our results confirmed that the tested line falls between the critical lines at 5% level of significance. Therefore, it can be acceptable that our selected (ARDL) model is stable and there is no structural break in model.

Figure 1: Cumulative Sum of Recursive Residuals
5. Conclusion

This study has examined the impact of monetary policy variables in the presence of exchange rate and prices on the industrial production by employing monthly data from 1999M01 to 2018M04. The study aim was to explore whether the monetary policy channels are attractive for industrial productivity or not. The empirical findings proved that, the industrial manufacture product is co-integrated with consumer price index, money supply, money market rate and nominal effective exchange rate particularly in long run. The equilibrium in the system is corrected at the adjustment rate of 30%. The role of policy variables such as money market rate and money supply confirm the monetary policy channel. For industrial production we found that the money supply channel has shown more robust effects than the interest rate channel. Prices have a damaging effect on output in every period of our study. These results are consistent with Forni and Gambetti (2008) and Rabi and Waliullah (2011)

Our results imply that the expansionary monetary policy through money supply channel is more effective in the long run for industrial productivity and can further boost the economic growth. However, for impact period the interest rate channel is more effective; this may be because in short run the objective of the monetary policy is generally to control inflation instead of growth. Based on our conclusions, it can also be implied that the increase in prices should be tackled through monetary policy to help boost the output in long run.

References


Firm Life Cycle and Financial Performance: Evidence from Nigeria

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ABSTRACT

Purpose: There are limited scholarly works in Nigeria which examine the influence of firm life cycle on financial performance. This study has filled this gap by examining the effects of firm life cycle on financial performance of listed firms in Nigeria.

Design/Methodology/Approach: Correlational research design was used and data were extracted 91 listed firms over a ten-year period (2010-2019) and analyzed using descriptive statistics (mean, standard deviation, minimum mean and maximum mean) and inferential statistics (correlation coefficients and multiple regression analysis). Diagnostic checks such as normality, multicollinearity, heteroskedasticity, serial (auto) correlation and panel effects tests were carried out and the results were used to decide the appropriate methods of regression analysis.

Findings: We find maturity stage to have positive and significant effect on financial performance. However, we fail to find any significant effect at introductory, growth and shake-out stage.

Implications/Originality/Value: The study, therefore, concludes that the maturity phase is the most critical stage and recommends that managers should pay greater attention to their businesses, particularly during the period of maturity to avoid shakeout or decline.

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1. Introduction

A leading body of study has suggested that firms undergo life-cycle stages and that these stages are characterized by marked differences in financial performance (Inyiama & Nwankwo, 2016). The evidence suggests that changes in firm life cycle have notable influence on financial performance. However, little is known about the association with a firm’s financial performance at different stages of firm life cycle. This is particularly true in Nigeria where very little or no interest is shown by scholars in this regard.
In this study, we examine whether differences in firm life cycle affect financial performance. We focus on the introductory stage (start), growing stage, old age stage, decline stage and shakeout stage (restructure). We also focus on three proxies of financial performance (return on capital employed, internal rate of return and economic value added). Firm financial performance is critical to the health of any economy because government alone cannot provide the much needed employment for its citizens. Also, government derives revenue from taxes levied on corporations (e.g., corporate income tax, capital gains tax and education tax).

A healthy firm financial performance is also critical to communities because it is only then that firms would be in position to provide social amenities through corporate social responsibilities; such may include but not limited to donations, training and development, community development and building of town halls, roads, schools, elderly homes, social gardens, health, safety and environmental facilities.

While there are few prior literature that examined the link between firm life cycle and financial performance (Ashbaugh-Skaife et al., 2009; Ogneva et al., 2007), this study is one of the few attempts to interrogate the effects of firm life cycle on financial performance in Nigeria. consequently, the following hypotheses were developed and tested:

HO$_1$: Business introductory stage has no significant effect on financial performance of listed firms in Nigeria.
HO$_2$: Business growth stage has no significant effect on financial performance of listed firms in Nigeria.
HO$_3$: Business maturity stage has no significant effect on financial performance of listed firms in Nigeria.
HO$_4$: Business decline stage has no significant effect on financial performance of listed firms in Nigeria.
HO$_5$: Business shakeout stage has no significant effect on financial performance of listed firms in Nigeria.

The paper is significant in many respects. Stakeholders (managers, employees, creditors, governments, regulators, tax authorities, researchers, corporate promoters, angelic funds providers, business starters, entrepreneurs and dreamers) may gain from the findings of the study. Also, the study contributes to our understanding of concepts, empirics, theories, models and methods. Furthermore, the paper provides information for policy and performance improvements, more research and new body of knowledge. The remaining parts of the study are organized into literature review, methodology, results, conclusions and recommendations. Section two describes prior literature in terms of key concepts, empirics, theories, models and methods. Furthermore, the paper provides information for policy and performance improvements, more research and new body of knowledge. The remaining parts of the study are organized into literature review, methodology, results, conclusions and recommendations. Section two describes prior literature in terms of key concepts, empirics, theories, models and methods. Furthermore, the paper provides information for policy and performance improvements, more research and new body of knowledge. The remaining parts of the study are organized into literature review, methodology, results, conclusions and recommendations. Section two describes prior literature in terms of key concepts, empirics, theories, models and methods.

2. Literature Review
The goal of the firm is the maximization of shareholders’ wealth. This is achieved through strategies that enhance financial performance by increasing revenue and at the same reducing costs associated with generating such revenue. Thus, financial performance is an important phenomenon within the realm of corporate existence. While, it is true that the primary goal of the firm is to create customers, it is unimaginable that the firm will be able on sustainable basis deliver on this goal without sustainable delightful performance.

Financial performance measures the ability and capacity of the firm to add value to inputs and produce outputs that are measurable in monetary terms. It measures how well a firm is able to convert resources into wealth. A good financial performance is highly desirable among stakeholders. Government at all levels need firms to perform financially well in order to help create jobs and wealth with attendant
multiplier effects on the economy in terms of taxes, salaries, wages and pension payments. Firms are the macro unit of the economy, so a healthy firm contributes to a healthy economy.

Financial performance is often discussed in the context of several concepts such as return on capital employed (ROCE), internal rate of return (IRR), economic value added (EVA), return on assets (ROA), return on equity (ROE), return on investment (ROI), return on sales (ROS), earnings per share (EPS), dividend per share (DPS), share price (SP) and market value expressed as a percentage of book value of equity (Tobin'sQ). However, in this study, three concepts of firm financial performance were discussed, namely: ROCE, IRR and EVA. ROCE indicates the capacity of the firm to turn investment assets regardless of the supplier and the conditions attached to it to generate income. It is measured as profit before interest and taxes divided by capital employed.

IRR is a measure of return internal to each investment asset. This suggests that different investment assets have different rate of return given the specifics of each investment asset. One of the advantages of using the IRR is that it accounts for time in value of money by taking into consideration the rate of inflation in the economy. However, it fails to discriminate in terms of the size of the investment assets. It simply compares cash flows to the amount of initial investment assets without looking at the investment assets size. EVA is actually the excess value created from economic engagement. It is in a sense the excess value created over and above the internal rate of return or expected rate of return. It is the excess left after removing the cost of capital from profit made, after adjusting for taxes.

Firm financial performance is influenced by several factors. However, this study considers the effects of firm life cycle on financial performance. It is true that firms generally faced stiff competition among themselves in maximizing shareholders’ wealth. This is done yet undergoing changes in life cycle. A typical firm life cycle starts with introductory phase, growth phase, maturity phase and end with decline phase or shakeout (revival) phase.

Few empirical studies have examined the nexus between firm life cycle and firm financial performance. For example, Wahba and Elsayed (2014) examine both the theoretical and empirical evidence regarding the impact of firm life cycle on financial performance using econometric analysis of a sample of 84 Egyptian listed firms over the period 2005 to 2010. The result provided strong evidence and demonstrated that financial performance is negative in the inception stage; it has exerted a positive and significant coefficient on financial performance for those firms that are in the expansion stage, the maturity stage or the revival stage. Hossain (2014) examines the influence of firm life cycle on profitability of Australian firms (1990–2012). The study shows that the return on capital employed declines as the firm life cycle increases.

Gunu and Adamade (2015) empirically examine the association between corporate life cycle and financial performance. They use a pooled and disaggregated dataset for manufacturing companies in Nigeria. An inverse relationship was found existing between firm introductory stage and financial performance. Also, Oluwatayo et al. (2016) examine the influence of organisation’s life cycle on performance of architectural firms in Nigeria. The findings indicate that at maturity, organisation’s performance varies.

Zhou et al. (2016) interrogate the influence of firm life cycle on financial performance in China and find that performance varies with different stages. Habib and Hassan (2017) investigate the financial performance consequences of firms at different stages of firm life cycle. They find that financial performance is higher in the introduction and decline stages of the life cycle, but lower in the growth and mature stages. They also find that during introduction and decline stage (growth and maturity stage) affect future performance positively.

Gulec and Karacaer (2017) analyze the firm life cycle and financial performance indicators. They
develop five hypotheses that are related to firm size, profitability, stock returns, liquidity and risk of the firms for three different stages through using descriptive statistics and t test. Results show that matured firms are more profitable and get higher stock returns. Costa, et al. (2017) analyse the relation between firms' life cycles stages and financial ratios. They applied multinomial logistic regression analysis on a sample of 1,515 observations of public companies listed on BM&FBOVESPA between 2005 and 2012. The results show that return on equity is higher at growth and maturity stages.

Bayat and Noshahr (2018) examine the effect of firm life cycle on corporate performance, where firm growth was used as the independent variable and return on investment and capital expenditures as the dependent variable. The population was the firms listed in the Tehran Stock Exchange using systematic elimination sampling method, 130 firms were selected as the sample with study period of 2012-2016. Data collection method was library with multiple regressions, and panel data was used to test the hypotheses. The results indicated that firm growth of has a positive and significant effect on return on investment and capital expenditures. Khamak et al. (2018) examine the relationship between the stages of firm life cycle and performance using data extracted from the annual reports and accounts of 118 listed firms on the Tehran Stock Exchange over a period of seven years. The results indicate that there is positive association among start, growth and maturity phases and financial performance.

Chang and Ma (2019) investigate how different firm life stages influence firm performance and maturity stage to influence financial performance. Shahzad et al. (2019) examine the current and future performance of firms across the different firm life cycle stages. They find financial performance to be higher during the introduction and decline stages and lower during the mature and growth stages. Yoo et al. (2019) interrogate the influence firm life cycle has on performance and find significant effects. The next section describes the methodology of the study.

3. Methodology
This study uses correlational research design. The sample consists of 91 listed firms on the Nigerian Stock Exchange. The data were collected from the annual reports and accounts of the firms and analysed using both descriptive (mean, standard deviation, minimum mean and maximum mean) and inferential statistics (Pearson product moment correlation and multiple regression). Diagnostic checks and post estimation tests such as multicollinearity, normality, heteroskedasticity, serial (auto) correlation, stationarity and panel effect were carried out in order to ensure that appropriate regression models are applied. The following models were used:

\[
ROCE_{i,t} = \alpha + \beta_1 INT_{i,t} + \beta_2 GRW_{i,t} + \beta_3 MAT_{i,t} + \beta_4 SHK_{i,t} + \beta_5 DEC_{i,t} + \varepsilon_{i,t} \quad \text{(1)}
\]

\[
IRR_{i,t} = \alpha + \beta_1 INT_{i,t} + \beta_2 GRW_{i,t} + \beta_3 MAT_{i,t} + \beta_4 SHK_{i,t} + \beta_5 DEC_{i,t} + \varepsilon_{i,t} \quad \text{(2)}
\]

\[
EVA_{i,t} = \alpha + \beta_1 INT_{i,t} + \beta_2 GRW_{i,t} + \beta_3 MAT_{i,t} + \beta_4 SHK_{i,t} + \beta_5 DEC_{i,t} + \varepsilon_{i,t} \quad \text{(3)}
\]

Whereas:
ROCE = Return on capital employed, measured as earnings before interest and taxes divided by capital employed, which is total assets–current liabilities (Etale & Otuya, 2018; Madugba & Ogbonnaya, 2016).
IRR = Internal rate of return is the discount rate that makes the net present value of a project zero (Patrick & French, 2016; Magni, 2010).
EVA = Economic value added, measured as Net operating profit after taxes – [Invested Capital (Debt + capital leases + shareholders' equity) multiplied by Weighted average cost of capital] as used by Andrija and Filip (2017).
\[
\alpha = \text{Alpha (Constant)}
\]
\[
\beta_1 - \beta_5 = \text{Beta coefficients to be estimated}
\]
INT = Introductory stage as measured by Zhou et al. (2016)
GRW = Growth stage as measured by Zhou et al. (2016)
MAT = Maturity stage as measured by Zhou et al. (2016)
SHK = Shake out stage as measured by Zhou et al. (2016)
DEC = Decline stage as measured by Zhou et al. (2016)
i = Firm script (in this case, i = 91 firms)
t = Time script (in this case, t = 10 years)
ε = Idiosyncratic error term

It is useful to note that three control variables (firm size, firm age and financial leverage) were initially introduced into the three models in order to control financial performance so that the true effects of firm life cycle on financial performance can be correctly estimated. However, they were found not to be significant and therefore eliminated completely from the models.

4. Data Analysis and Interpretation
Section 4 displays and deliberates the findings of analyses conducted in the study (descriptive analysis, diagnostic checks and post estimation tests and inferential statistical analysis).

Table 1
Results of Descriptive Analysis

<table>
<thead>
<tr>
<th>Variables of Interest</th>
<th>No. of Observation</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Minimum Mean</th>
<th>Maximum Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROCE</td>
<td>910</td>
<td>.179</td>
<td>.784</td>
<td>-13.700</td>
<td>3.293</td>
</tr>
<tr>
<td>IRR</td>
<td>910</td>
<td>.105</td>
<td>.0318</td>
<td>.046</td>
<td>.143</td>
</tr>
<tr>
<td>EVA</td>
<td>910</td>
<td>.0767</td>
<td>.786</td>
<td>-13.843</td>
<td>3.175</td>
</tr>
<tr>
<td>INT</td>
<td>910</td>
<td>.001</td>
<td>.003</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>GRW</td>
<td>910</td>
<td>.0025</td>
<td>.004</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>MAT</td>
<td>910</td>
<td>.005</td>
<td>.005</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>SHK</td>
<td>910</td>
<td>.002</td>
<td>.004</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>DEC</td>
<td>910</td>
<td>.0003</td>
<td>.002</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: Authors’ Computations using STATA 13

As clearly shown in Table 1, the number of observations is 910 made up of 91 listed firms multiplied by the 10 year-period covered by the study. The mean statistic value of return on capital employed is 0.179, which means that for every one naira capital employed, the firms on the average generated 17.9 per cent. In the same context, the internal rate of return is 0.105, meaning that for every one invested, the project-specific IRR is 10.5%. Also, Table 1 shows that the economic value added is 0.0767, which means that for every one naira invested, the wealth addition is 7.67 per cent. Furthermore, the introductory stage shows mean value of 0.001, growth stage: 0.0025, maturity stage: 0.005, shakeout stage: 0.002 and decline stage is 0.0003.

Table 2 tests for the presence or absence of multicollinearity in the independent variables. The results shows that firm introductory stage is significantly negatively correlated with return on capital employed and economic value added. However, it has insignificantly negative association. Also, growth stage shows insignificant negative association with ROCE and EVA, while showing significant positive association with IRR. In addition, maturity stage shows significant positive effects on ROCE and EVA but insignificant positive association with IRR. In the same line, shakeout stage shows insignificant positive effects on ROCE and EVA but significant negative effect. Decline stage shows insignificant negative effects on ROCE, IRR and EVA.

Table 2
Results of Association Matrix

<table>
<thead>
<tr>
<th></th>
<th>ROCE</th>
<th>IRR</th>
<th>EVA</th>
<th>INT</th>
<th>GRW</th>
<th>MAT</th>
<th>SHK</th>
<th>DEC</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROCE</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IRR</td>
<td>-0.037</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.438</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EVA</td>
<td>0.999</td>
<td>-0.08</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.000</td>
<td>0.105</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
As clearly shown in Table 2, three of the coefficients are greater than 0.70 (introductory stage and IRR is .9923; shakeout and ROCE is .828; shakeout and EVA is .776). These results indicate the presence of multicollinearity among the 5 independent variables. Table 3 confirms the results in Table 2 on the presence of multicollinearity.

As clearly shown in Table 3, DEC has been automatically eliminated from the independent variables because of the presence of multicollinearity. The VIF figures for maturity, shakeout, growth and introductory stage are now within acceptable bracket of less than 10 as suggested by Gujarati (2003). Therefore, the results in Table 3 indicate that the multicollinearity level is mild and tolerable. Table 4 presents the results of normality test using Shapiro Wilk test.

### Table 3
Results of Multicollinearity Test

<table>
<thead>
<tr>
<th>Variables of Interest</th>
<th>Variance Inflation Factor</th>
<th>Tolerance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAT</td>
<td>8.99</td>
<td>0.111</td>
</tr>
<tr>
<td>SHK</td>
<td>6.29</td>
<td>0.159</td>
</tr>
<tr>
<td>GRW</td>
<td>5.41</td>
<td>0.185</td>
</tr>
<tr>
<td>INT</td>
<td>3.27</td>
<td>0.306</td>
</tr>
<tr>
<td>Mean VIF</td>
<td>3.88</td>
<td></td>
</tr>
</tbody>
</table>

Source: Authors’ Computations using STATA 13

Note: DEC is omitted because of collinearity

The results in Table 4 show the individual variable’s normality test values. All the prob>z values with the exception of maturity are significant even at 1 per cent. These imply that the variables are not normally distributed. This requires the use of robust standard errors instead of the normal standard errors in the multiple regression analysis as shown in the results in Table 8. However, it is instructive to note that maturity is normally distributed since the Prob > z value is greater than .05.

### Table 4
Results of Normality Test

<table>
<thead>
<tr>
<th>Variables of Interest</th>
<th>No. of Observation</th>
<th>W</th>
<th>V</th>
<th>z</th>
<th>Prob &gt; z</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROCE</td>
<td>910</td>
<td>0.343</td>
<td>197.770</td>
<td>12.638</td>
<td>0.000</td>
</tr>
<tr>
<td>IRR</td>
<td>910</td>
<td>0.852</td>
<td>44.592</td>
<td>9.078</td>
<td>0.000</td>
</tr>
<tr>
<td>EVA</td>
<td>910</td>
<td>0.344</td>
<td>197.586</td>
<td>12.636</td>
<td>0.000</td>
</tr>
<tr>
<td>INT</td>
<td>910</td>
<td>0.947</td>
<td>16.117</td>
<td>6.646</td>
<td>0.000</td>
</tr>
<tr>
<td>GRW</td>
<td>910</td>
<td>0.978</td>
<td>6.596</td>
<td>4.510</td>
<td>0.000</td>
</tr>
<tr>
<td>MAT</td>
<td>910</td>
<td>0.999</td>
<td>0.052</td>
<td>-7.047</td>
<td>1.000</td>
</tr>
<tr>
<td>SHK</td>
<td>910</td>
<td>0.986</td>
<td>4.364</td>
<td>3.522</td>
<td>0.0002</td>
</tr>
</tbody>
</table>

Source: Authors’ Computations using STATA 13
As clearly shown in Table 5, both ROCE and EVA models have Prob>F that is significant, meaning that the two models have serial (auto) correlation problem. This calls for the use of Newey regression analysis (Newey West standard errors). However, the results also show that the IRR model is free of serial (auto) correlation problem because p-value is greater than .05. Table 6 presents the results of unit root test, which tests for the presence or otherwise of stationarity in the variables of interest. Also, as shown in Table 5, the Prob>Chi² for ROCE and EVA are both significant even at 1 per cent. These results clearly indicate the presence of heteroskedasticity in the two models. However, the Prob>Chi² of the IRR model shows that the model is not significant. Table 6 presents the results of serial (auto) correlation analysis.

Table 6
Unit-Root Test

<table>
<thead>
<tr>
<th>Model</th>
<th>Statistic</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROCE</td>
<td>744.444</td>
<td>0.000</td>
</tr>
<tr>
<td>IRR</td>
<td>150.417</td>
<td>0.958</td>
</tr>
<tr>
<td>EVA</td>
<td>615.614</td>
<td>0.000</td>
</tr>
<tr>
<td>INT</td>
<td>44.936</td>
<td>1.000</td>
</tr>
<tr>
<td>GRW</td>
<td>73.408</td>
<td>1.000</td>
</tr>
<tr>
<td>MAT</td>
<td>137.562</td>
<td>0.994</td>
</tr>
<tr>
<td>SHK</td>
<td>66.794</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Source: Authors’ Computations using STATA 13

As clearly shown in Table 6, ROCE and EVA models failed unit root test. However, IRR, INT, GRW, MAT and SHK all passed the stationarity test.

Table 7
Results of Random Effects Test

<table>
<thead>
<tr>
<th>Model</th>
<th>Chi²</th>
<th>Prob&gt;Chi²</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROCE</td>
<td>0.48</td>
<td>0.244</td>
</tr>
<tr>
<td>IRR</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>EVA</td>
<td>0.43</td>
<td>0.256</td>
</tr>
</tbody>
</table>

Source: Authors’ Computations using STATA 13

Table 7 shows that the p-values of the models are greater than .05, leading to conclusion that the OLS (pooled model) is more appropriate than random or fixed effects. In other words, there are no firm-specific effects in the data.

Table 8
Results of OLS Regression

<table>
<thead>
<tr>
<th>Model Variable</th>
<th>Coefficient</th>
<th>t</th>
<th>P &gt; t</th>
<th>Coefficient</th>
<th>t</th>
<th>P &gt; t</th>
<th>Coefficient</th>
<th>t</th>
<th>P &gt; t</th>
</tr>
</thead>
<tbody>
<tr>
<td>INT</td>
<td>-36.510</td>
<td>-0.80</td>
<td>.424</td>
<td>-37.371</td>
<td>-0.82</td>
<td>.415</td>
<td>.861</td>
<td>.83</td>
<td>.407</td>
</tr>
<tr>
<td>GRW</td>
<td>10.057</td>
<td>1.43</td>
<td>.155</td>
<td>8.649</td>
<td>1.19</td>
<td>.238</td>
<td>1.408</td>
<td>1.51</td>
<td>.133</td>
</tr>
<tr>
<td>MAT</td>
<td>20.891</td>
<td>2.88</td>
<td>.005</td>
<td>19.929</td>
<td>2.69</td>
<td>.009</td>
<td>.961</td>
<td>1.10</td>
<td>.273</td>
</tr>
<tr>
<td>SHK</td>
<td>15.472</td>
<td>1.48</td>
<td>.143</td>
<td>15.062</td>
<td>1.41</td>
<td>.162</td>
<td>.410</td>
<td>0.44</td>
<td>.659</td>
</tr>
<tr>
<td>_cons</td>
<td>-13.976</td>
<td>-3.8</td>
<td>.707</td>
<td>-26.203</td>
<td>-0.71</td>
<td>.482</td>
<td>12.227</td>
<td>7.56</td>
<td>.000</td>
</tr>
<tr>
<td>Obs</td>
<td>442</td>
<td>442</td>
<td>442</td>
<td>442</td>
<td>442</td>
<td>442</td>
<td>442</td>
<td>442</td>
<td>442</td>
</tr>
<tr>
<td>F(7, 434)</td>
<td>2.79</td>
<td>1.69</td>
<td>2.77</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prob&gt;F</td>
<td>.011</td>
<td>.110</td>
<td>.012</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Authors’ Computations using STATA 13
The results in Table 8 as a consequence of the conclusion drawn from the results in Table 7, which show clearly that there are no panel effects in the three models and therefore there is no need to test for random effects or fixed effects using Hausman specification test. In order to avoid confusion in interpretation of the results, discussions of findings and testing of hypotheses, only one of the models is adopted, which is ROCE. The reasons are not farfetched; it has a better F-statistic, Prob>F and R². The ROCE model has a better model fitness with Prob>F of 0.011 and R-square of 3.9%. According to Cohen (1992), R² is low around 0.1, medium around 0.3 and large around 0.5. When compared with the R² of this study, which is 3.9%, it is large.

From the results in Table 8, introductory stage, growth stage and shakeout stage have no significant effects on financial performance. Thus, hypotheses one, two and four, which state that introductory stage, growth stage and shakeout stage have no significant effects on financial performance are herewith accepted. However, maturity stage shows positive and significant effect on firm financial performance. Thus, hypothesis three, which states that business maturity stage has no significant effect on financial performance is herewith rejected and the alternative hypothesis accepted.

These results when compared and contrasted against previous empirical results can be classified into three. The first group that agrees with the findings of this study are Wahba and Elsayed (2014), Hossain (2014), Gunu and Adamade (2015), Oluwatayo et al. (2016), Zhou et al. (2016), Gulec and Karacar (2017) and Costa et al. (2017). However, the second group completely disagrees with the findings of this study and they include Chang et al. (2017), Habib and Hassan (2017), Bayat and Noshahr (2018) and Shahzad et al. (2019). Finally, the third group had mix results when compared and contrasted with the findings of this study and the scholars include Khamak et al. (2018) and Chang and Ma (2019).

5. Conclusion and Recommendations
In this study, we empirically interrogate the influences of company life cycle on its financials. Our findings would have implications for stakeholders (managers, regulators, shareholders, creditors, employees, potential investors, governments, tax authorities, policy makers) in implementing measures, strategies and guidelines at the different phases. The findings will assist in order to avoid slipping into the next phase, which is decline or restructuring. The paper will help in policy and performance improvement, future research and body of knowledge. Based on the findings, the study recommends that managers should adopt extra measures to improve performance during the period of maturity in order to avoid their firms entering into shakeout or decline phase.

References


Identification of Stress Management Techniques used by Head Teachers in the Province of Punjab

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ARTICLE DETAILS

ABSTRACT

The basic purpose of this quantitative study was to identify the use of stress management techniques by head teachers of secondary schools in the province of the Punjab. All the head teachers of secondary schools in Punjab was the population of the study. A sample of 35 head teachers was selected through cluster sampling technique. A group of head teachers getting Promotion Linked Training (PLT) at Quaid e Azam Academy of Educational Development (QAED) was selected as cluster for data collection. A self-developed and validated questionnaire was used for data collection. The questionnaire comprised statements related to use of different stress management techniques. Five point likert type scale was used to get responses on statements. Descriptive statistics including t-test and ANOVA were used for data analysis. Mean and standard deviation were identified to assess the use of different stress management techniques by head teachers. Results showed that highly used stress management strategies included: doing prayers, going out for some enjoyment, watching TV, setting goals for future and sleeping quietly. Least used strategies included; doing exercise, deep breathing, finding own mistake, reading books, writing diary, going to watch movie and going to specialist for consultation etc. Recommendations were made on the basis of these findings.

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1. Introduction
Stress is a common element of daily life. Due to dealing with different people, situations, and circumstances, people feel themselves overwhelmed both physically and emotionally. It is common that people feel that they cannot deal with the stress they are experiencing or they have limited resources to deal with. Any situation or thought can make one stressful, frustrated, angry or anxious. It depends on one’s own perception about the situation and the technique to cope with the situation. Some situations may be stressful for one person but normal for the other one. One person’s reaction towards the situation determines its impact, not only on his health but also on his life. Excessive stress can cause health problems. According to Chen (1998), stress can affect ability to perform a task at the highest level. The destructive properties of stress can influence negatively the quality and performance of one’s life.

There are many effects of stress including high heart rate, fast breathing or seized breath, muscle stretching, detracting blood to the brain and other major muscles which cause digestion problems, hands/feet shivering, damaging reproductive organs, discharging of stress hormones (i.e. cortisol and adrenaline), causing the brain to be less thoughtful or more reactive, excessive perspiration, weaken immune system (Guglielmi & Tatrow, 1998). Moreover they mentioned the consequences of stress as “tension, aches, neck/back/shoulder pain, tight jaw, sleeping problems, fatigue, loss of concentration, increasing learning problems, irregular or rapid heart rate, migraine, poor blood circulation, Raynaud Syndrome, high blood pressure, sexual dysfunction (in either sex), digestive problems, upset stomach, ulcers, colitis, hormone imbalances, reduction of immune system function, over reaction by immune system (allergies or autoimmune diseases worse), increased asthma activity, increased aging rate, anxiety, depression, substance abuse, poor habit control, over-eating, low energy, prone to accidents or mistakes, impaired communication and poor performance” (Guglielmi & Tatrow, 1998).

As a matter of fact head teachers have profound effect on children’s’ lives. Along with supporting learning, they are also key mediators of developing, socializing, grooming their students to realize their goals and grow into sensible individuals. But, teaching profession has become highly stressful. No doubt it is one of the most successful occupations over the past few years all over the world, but it has become increasingly stressful.

Head teachers’ stress not only impacts their teachers’ well-being, health, job attitudes (e.g. “job satisfaction”), and retention but, it is also effects teachers’ performance and their students’ academic achievement. Head teachers are leaving their jobs due to high level of stress. It creates insecurity among teaching staff, students, and the parents. As a result these schools have to hire new head teachers who have less experience, which may be one of the major cause of students' low achievement. To control this phenomenon significant training is needed to make school systems effective and efficient.

This research paper examined the factors of head teachers’ stress, highlighted programs and policies that can control head teachers’ stress and enhance their performance and well-being. Four main sources of head teachers’ stress are; “First in School Organizations, it includes principal leadership; school climate and school environment; secondly, Job requirements including high-level testing, behavioral problems of students, and over conscious and highly demanding parents; thirdly, highly professional demands that reduce a head teacher’s independence and decision-making and fourth, head teachers’ emotional and social status that are very much linked with their personal and social life.

The negative consequences of head teachers’ stress affect their teachers’ mental and physical health. Most of the teachers reported feeling of high stress that continues to several days a week. According to a national survey in USA, forty-six percent of head teachers reported high level of routine stress within the school timings which is among the highest rate of routine stress among all the occupations, due to which they were tied with nurses, this ratio is higher than physicians. High level of stress may be one of the major cause of low new head teachers’ retention.
Head teacher stress is associated with poor performance of teachers and poor student outcomes. According to a longitudinal study, the teachers who have reported greater stress and show more indications of unhappiness create less conducive classroom environments which result in poor academic performance of students. The teachers who report more burnout have been facing more behavior problems in their classes. When students find their teachers highly stressed, they begin to have problem in social adjustment and academic performance.

According to Cox (1978) environmental factors of teachers’ stress may be divided into three broad areas; “factors intrinsic to teaching, cognitive factors affecting the individual vulnerability of teachers and systemic factors operating at the institutional and political level”. Systemic denotes a large cluster of organizational aspects that are not basic component of teaching, but are related to the organizational culture of any of specific institution or broader education context and political intervening. According to Travers and Cooper (1997) the greatest sources of stress for head teachers included: “lack of government support”, “lack of information about changes”, “constant change” and “the demands of the National Curriculum” etc. Jennings and Kennedy (1996) extended these factors to “systemic factors” embedded into the nature of individual organizations.

To ensure increased access and quality of primary and secondary schooling, a great demand has been laid on head teachers, especially after the introduction of “Free Primary Education” in 2003. Pressure on head teachers has been increased due to which head teachers are working under stress, in congested classrooms and decrepit buildings without the necessary learning facilities. Keeping in view all the negative effects of head teachers’ stress this study was conducted to identify underlying stress factors inside and outside school.

According to Kyriacou (2001), each head teacher has different stress factors which are unique to him/her, most of the time depends on the nature of interaction between their personality, values, skills, and circumstances. Many environmental factors and personality traits can affect perception and reactions in stressful situations which as a result affect teachers’ emotional behaviors and life quality. This background provides an overview of stress factors and its consequences among the head teachers. There is a huge responsibility upon secondary school teachers because secondary school is considered as one of the important and terminal stage of students’ life. So, head teachers have to face many pressures and other social factors which cause stress among heads. There is scarcity of research which can provide stress management techniques used by head in secondary schools. It leaves the canvas incomplete, so on the basis of this background present study was design to find out the stress management techniques used by heads of secondary schools in the province of Punjab.

2. Research Objectives
The general objective of the study was to find the causes of stress among head teachers of public secondary schools in the province of Punjab. However, the study specifically aimed to:
1. Identify the stress management techniques used by head teachers in Punjab.
2. Identify the difference in stress management techniques used by male and female head teachers.
3. Identify the difference in stress management techniques used by head teachers in urban and rural areas.
4. Identify the difference in stress management techniques of head teachers on the basis of their experience.
5. Find out the difference in stress management techniques of head teachers on the basis of their qualification.
6. Explore the difference in stress management techniques of head teachers on the basis of their districts.
3. **Hypotheses**
The following hypotheses were formulated for the study:

1. There is significant difference between stress management techniques used by male and female head teachers.
2. There is significant difference between stress management techniques used by rural and urban areas’ head teachers.
3. There is significant difference among stress management techniques of head teacher’s experience.
4. There is significant difference in stress management techniques of head teachers on the basis of their qualification.
5. There is significant difference in stress management techniques of head teachers on the basis of their districts.

4. **Methodology**
This section entails the details about population, the sample and sampling techniques, instrument development and validation, data collection and data analysis techniques. Following procedures were followed to conduct the study:

4.1 **Population**
All the teachers of secondary schools in the district of Sahiwal, Multan, Muzaffargarh, Bahawalpur, and Faisalabad constituted the population of study.

4.2 **Sample and Sampling Technique**
Sample of the study was selected through simple random sampling technique. List of all the schools were obtained from district head quarter of each district and schools were selected through using table of random numbers. From each district, seven schools were selected to obtain data from head teachers. The sample consisted of 35 head teachers. Table 1 shows the details of all the variables of study in this research.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Category</th>
<th>Numbers</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>12</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>Age range</td>
<td>38-55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schools</td>
<td>High</td>
<td>17</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>Higher Secondary</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Designation</td>
<td>18</td>
<td>18</td>
<td>35</td>
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<tr>
<td></td>
<td>19</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Area</td>
<td>Rural</td>
<td>15</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>Urban</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Experience</td>
<td>Less than 10</td>
<td>5</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>10-20</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td></td>
<td>More than 20</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Districts</td>
<td>Multan</td>
<td>5</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>Faisalabad</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sahiwal</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Muzaffargarh</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>
Figure 1: Graph of male and female head teachers

Figure 2: Graph of head teachers in urban and rural areas
4.3 Instrument

A self-developed and validated instrument was used to get head teachers’ responses for their stress management techniques. Questionnaire comprised two sections: one to identify respondents’ demographic information that is age, gender, school, district, experience, designation, academic and professional qualification and the second containing statements related to stress management techniques. The stress management techniques included: catharsis; sharing; going out; consultation; going to psychologist; taking medicine; scolding; meditation; exercise; breathe deeply; watching TV programs; finding out reasons; blaming oneself; writing diary and reading books etc.

5. Data Analysis

The data were analysed through employing suitable stats. Descriptive statistics were used to identify head teachers’ stress management techniques according to different factor, $t$-test was applied to see mean difference in teachers’ stress management techniques on the basis of gender, area, and designation. Analysis of Variance (ANOVA) test was applied to assess mean difference of head teachers’ responses
on the basis of district, school, years of experience, academic and professional qualification. The group of researchers personally collected data from the respondents.

**Table 2: Descriptive statistics of the questionnaire**

<table>
<thead>
<tr>
<th>Sr.#</th>
<th>Statements</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>When I am in stress I do catharsis.</td>
<td>3.5</td>
<td>0.24</td>
</tr>
<tr>
<td>2</td>
<td>When I feel stressed I share with my colleagues.</td>
<td>3.56</td>
<td>0.44</td>
</tr>
<tr>
<td>3</td>
<td>When I am in stress I share with my family members.</td>
<td>3.74</td>
<td>0.26</td>
</tr>
<tr>
<td>4</td>
<td>When I am in stress I share with my friends.</td>
<td>3.88</td>
<td>0.12</td>
</tr>
<tr>
<td>5</td>
<td>When I am in stress I take help from my seniors.</td>
<td>2.84</td>
<td>0.16</td>
</tr>
<tr>
<td>6</td>
<td>When I am in stress I go for shopping.</td>
<td>3.54</td>
<td>0.46</td>
</tr>
<tr>
<td>7</td>
<td>When I am in stress I go to my relatives.</td>
<td>3.7</td>
<td>0.3</td>
</tr>
<tr>
<td>8</td>
<td>When I am in stress I go to watch movie.</td>
<td>1.76</td>
<td>0.24</td>
</tr>
<tr>
<td>9</td>
<td>When I am in stress I consult with my father/mother/elder.</td>
<td>3.74</td>
<td>0.26</td>
</tr>
<tr>
<td>10</td>
<td>When I am in stress I go to consult with a specialist in the field.</td>
<td>1.52</td>
<td>0.48</td>
</tr>
<tr>
<td>11</td>
<td>When I am in stress I consult with my friends.</td>
<td>4.54</td>
<td>0.46</td>
</tr>
<tr>
<td>12</td>
<td>When I am in stress I consult with my relatives.</td>
<td>2.32</td>
<td>0.68</td>
</tr>
<tr>
<td>13</td>
<td>In stress I become realistic.</td>
<td>2.9</td>
<td>0.1</td>
</tr>
<tr>
<td>14</td>
<td>I set my goals in future when I am in stress.</td>
<td>3.88</td>
<td>0.12</td>
</tr>
<tr>
<td>15</td>
<td>I go to psychologist when I am in stress.</td>
<td>0.78</td>
<td>0.22</td>
</tr>
<tr>
<td>16</td>
<td>I follow psychologist's instructions to manage my stress.</td>
<td>0.78</td>
<td>0.2</td>
</tr>
<tr>
<td>17</td>
<td>I take medicine when I am unable to overcome stress.</td>
<td>2.8</td>
<td>0.2</td>
</tr>
<tr>
<td>18</td>
<td>I go for outing when I am in stress.</td>
<td>3.9</td>
<td>0.1</td>
</tr>
<tr>
<td>19</td>
<td>I scold my juniors when I am in stress.</td>
<td>3.66</td>
<td>0.34</td>
</tr>
<tr>
<td>20</td>
<td>I scold my subordinates when I am in stress.</td>
<td>3.6</td>
<td>0.4</td>
</tr>
<tr>
<td>21</td>
<td>I offer prayers when I am in stress.</td>
<td>4.66</td>
<td>0.34</td>
</tr>
<tr>
<td>22</td>
<td>I ask others to pray for me when I am in stress.</td>
<td>4.92</td>
<td>0.08</td>
</tr>
<tr>
<td>23</td>
<td>I do exercise when I am in stress.</td>
<td>1.84</td>
<td>0.16</td>
</tr>
<tr>
<td>24</td>
<td>I go for some enjoyment when I am in stress.</td>
<td>3.96</td>
<td>0.04</td>
</tr>
<tr>
<td>25</td>
<td>I use relaxing techniques when I am in stress.</td>
<td>2.8</td>
<td>0.2</td>
</tr>
<tr>
<td>26</td>
<td>I breathe deeply to relax myself when I feel stressed.</td>
<td>1.88</td>
<td>0.12</td>
</tr>
<tr>
<td>27</td>
<td>I sleep quietly when I am stressed.</td>
<td>3.84</td>
<td>0.16</td>
</tr>
<tr>
<td>28</td>
<td>I watch my favorite TV program when I am in stress.</td>
<td>4.00</td>
<td>0.22</td>
</tr>
<tr>
<td>29</td>
<td>I leave everything on Allah when I cannot manage my stress.</td>
<td>3.88</td>
<td>0.12</td>
</tr>
<tr>
<td>30</td>
<td>I weep to manage my stress.</td>
<td>4.24</td>
<td>0.18</td>
</tr>
<tr>
<td>31</td>
<td>I try to find out the reason of my stress to control it.</td>
<td>2.74</td>
<td>0.26</td>
</tr>
<tr>
<td>32</td>
<td>I try to find out my mistake when I am in stress.</td>
<td>3.78</td>
<td>0.22</td>
</tr>
<tr>
<td>33</td>
<td>I always accept my fault to manage my stress.</td>
<td>1.8</td>
<td>0.2</td>
</tr>
<tr>
<td>34</td>
<td>I write diary to manage my stress.</td>
<td>0.80</td>
<td>0.32</td>
</tr>
<tr>
<td>35</td>
<td>I read books when I am stressed.</td>
<td>1.10</td>
<td>0.1</td>
</tr>
</tbody>
</table>
Table 2 shows the mean and standard deviation of the statements to identify stress management techniques of head teachers.

![Factor wise Stress Management Techniques of Head Teachers](image)

Table 3: Independent Sample t-test to Identify Mean Difference in Male and Female Teachers' Stress Management Techniques

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>df</th>
<th>M</th>
<th>t-value</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>12</td>
<td>34</td>
<td>43.19</td>
<td>.361</td>
<td>.007</td>
</tr>
<tr>
<td>Female</td>
<td>23</td>
<td>48.04</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3 shows the results of independent sample t-test to identify mean difference in male and female teachers' stress management techniques. Table values depict that the mean difference in stress management techniques of male ($M = 43.19$) and female ($M = 48.04$) was statistically significant $t (34) = .361$, $p = .007$. So, on the basis of these results research hypothesis that" there is significant difference between male and female head teachers' stress management techniques" is accepted and it is concluded that female head teachers use more stress management techniques than male head teachers.

Table 4: Independent Sample t-test to Identify Mean Difference in Head teachers' Stress Management Techniques Appointed in Rural and Urban Areas

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>df</th>
<th>M</th>
<th>t-value</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>15</td>
<td>34</td>
<td>49.19</td>
<td>.301</td>
<td>.000</td>
</tr>
<tr>
<td>Urban</td>
<td>20</td>
<td>41.04</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4 shows the results of independent sample t-test to identify mean difference in head teachers' stress management techniques appointed in rural and urban areas. Table values show that the mean difference in the stress management techniques of head teachers appointed in rural areas ($M = 49.19$) and in urban Areas ($M = 41.04$) was statistically significant $t (34) = .301$, $p < .05$. So, on the basis of these results research hypothesis that" there is significant difference in head teachers' stress management techniques appointed in rural and urban areas" is accepted and it is concluded that head teachers working in rural areas use more stress management techniques than head teachers working in urban areas.
Table 5: ANOVA to Identify Mean Difference in Stress Management Techniques of Head teachers on the Basis of their Experience

<table>
<thead>
<tr>
<th>Variables</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within Group</td>
<td>2120.725</td>
<td>2</td>
<td>706.908</td>
<td>4.293</td>
<td>.011</td>
</tr>
<tr>
<td>Between Group</td>
<td>5928.250</td>
<td>34</td>
<td>164.674</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>8048.975</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5 is illustrating the results of ANOVA to identify mean difference in stress management techniques of head teachers on the basis of their experience. It is evident that mean difference is significant $F (2) = 4.293, p < .05$ in stress management techniques of head teachers on the basis of their experience. On the basis of these results the research hypothesis that "there is significant difference in stress management techniques of head teachers on the basis of their experience" is accepted and it is concluded that head teachers with different job experience use different stress management techniques.

Table 6: ANOVA to Identify Mean Difference in Stress Management Techniques of Head teachers on the Basis of their Qualification

<table>
<thead>
<tr>
<th>Variables</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within Group</td>
<td>993.516</td>
<td>2</td>
<td>331.172</td>
<td>6.964</td>
<td>.001</td>
</tr>
<tr>
<td>Between Group</td>
<td>1711.984</td>
<td>34</td>
<td>47.555</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2705.500</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6 is illustrating the results of ANOVA to identify mean difference in stress management techniques of head teachers on the basis of their qualification. It is evident that mean difference is significant $F (2) = 4.293, p < .05$ in use of stress management techniques of head teachers on the basis of their qualification. On the basis of these results the research hypothesis that "there is significant difference in stress management techniques of head teachers on the basis of their qualification" is accepted and it is concluded that head teachers with different academic qualifications have different stress management techniques. Moreover, the head teachers having higher qualifications use more stress management techniques than other head teachers.

Table 7: ANOVA to identify Mean Difference in Stress Management Techniques of Head teachers on the basis of Districts

<table>
<thead>
<tr>
<th>Variables</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within Group</td>
<td>1165.824</td>
<td>4</td>
<td>388.608</td>
<td>3.858</td>
<td>.017</td>
</tr>
<tr>
<td>Between Group</td>
<td>3626.151</td>
<td>34</td>
<td>100.726</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4791.975</td>
<td>38</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 7 is illustrating the results of ANOVA to identify mean difference in stress management techniques of head teachers on the basis of districts. It is evident that mean difference is significant $F (4) = 3.858, p < .05$ in stress management techniques of head teachers on the basis of districts. On the basis of these results the research hypothesis that "there is significant difference in stress management techniques of head teachers on the basis of their districts" is accepted and it is concluded that head teachers serving in different districts use different stress management techniques.
6. Findings and Conclusion
Most of the head teachers told that they do catharsis when they are in stress. Majority heads do sharing with colleagues, family members, friends and some of them do share with their seniors. A number of heads told that they go for shopping and to their relatives in face of stress. Some of the heads go to watch movie, whereas majority of the heads told that they consult with their father/mother/elder. All of the heads except few told that they go to consult with a specialist in the field, whereas many consult with their friends and close relatives. Many heads were of the opinion that they become realistic in a stressful situation. Majority of the heads told that they set their future goals when they in stress. Few of the heads go to psychologist and follow psychologist’s instructions to manage my stress. Many of the heads have to take medicine when they are unable to overcome stress. I go for outing when they are in stress. Many heads scold their juniors and subordinates in stress. All the heads except few offers prayers in stress while majority told that they ask others to pray for them when they are in stress. Few heads do exercise when they are in stress. A number of heads responded that they go for some enjoyment in case of stress. Many of them use relaxing techniques and use to breathe deeply to relax themselves when they feel stressed. Majority of the heads like to sleep quietly when they stressed and most of them watch their favorite TV program when in stressed situation. Majority heads told that they leave everything on Allah when they cannot manage their stress. Few of the heads use to weep to manage their stress. Majority heads responded they try to find out the reasons of stress to control it. Many of the heads told they try to find out their mistakes when they feel stress. Few heads always accept their fault to manage stress. There were only few heads who write diary and read books to manage their stress.

The identified stress management techniques for the school administrators and the head teachers may help the ministry, departments and agencies responsible for developing training for the head teachers of schools (school administrators) to have a point of reference in preparing the training and professional development programs. In so doing, the programs will be effective since they would meet the needs of school head teachers to give training on stress management techniques so as to improve the school performance. With effective stress management techniques that will be attained by the school head teachers, outstanding students’ academic performance at the school and national level can be attained.

7. Recommendations
Following recommendations are made:

- There is a need to introduce training sessions regarding stress management techniques for the head teachers of Punjab.
- There should be a proper allocation of budget for head teachers’ stress management trainings.
- Stressors need to be eradicated at all levels. For this purpose, procedures and rules need to be implemented and monitored effectively.
- Head teachers should be motivated through financial and other social benefits. So, that financial stress factors may be controlled.
- There must be some recreational programs for head teachers in order to control their anxiety.
- There should be a mechanism to help out the newly selected head teachers by the senior head teachers at their tehsil and district level.

Numerous stress reduction programs and policies have been proven to be helpful to reduce head teachers’ stress, improve their well-being and enhance students’ outcomes, and ultimately reduce financial burden on schools and state. These programs include: “Mentoring and Induction Programs for Beginning Head teachers” which can increase head teachers’ level of satisfaction and rate of retention, which will culminate into enhanced student academic achievement. “Workplace Wellness Programs” have been proved to reduce “health risk”, “health care costs”, and “head teacher absenteeism”. “Social Emotional Learning” programs have improved “students’ behavior” which also help to reduce head teachers stress and head teacher may engage positively with their teachers and students. “Organization Individual Interface” is a “Mindfulness/stress management program” which can help head teachers in
developing coping skills and awareness to decrease “anxiety”, “depression”, and “improved health”. At organizational level especially there is a dire need to reduce the head teacher stress, for this purpose basic research is required to find out context specific ways to manage head teacher stress and support them in improving their health and well-being, to avoid negative outcomes that negatively impact, students, teachers, parents, school systems and communities ultimately.

References
**Questionnaire**

**Demographic Information about the Respondents**

Gender: Male/Female           Area: Rural /Urban         School ___________________    District _______________________________

Experience_________________________   Qualification____________________        Designation__________________________

Age(in years): 18-22, 23-27, 28-32, 33-37, above 38

**Instructions:** Please read each sentence carefully and put a checkmark on appropriate response.

**Strongly agree = SA, Agree= A, Undecided=UD, Disagree = D and Strongly Disagree = SD**

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Statements</th>
<th>SD</th>
<th>D</th>
<th>UD</th>
<th>A</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sharing</strong></td>
<td></td>
<td>----</td>
<td>---</td>
<td>----</td>
<td>---</td>
<td>----</td>
</tr>
<tr>
<td>1.</td>
<td>When I am in stress I catharsis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>If I feel stress I share with my colleagues</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>When I am in stress I share with my family members</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>When I am in stress I share with my friends</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>When I am in stress I take help from my seniors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Recreation</strong></td>
<td></td>
<td>----</td>
<td>---</td>
<td>----</td>
<td>---</td>
<td>----</td>
</tr>
<tr>
<td>6.</td>
<td>When I am in stress I go for shopping</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>When I am in stress I go to my relatives</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Description</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----</td>
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<td>8.</td>
<td>When I am in stress I go to watch movie</td>
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<td>9.</td>
<td>When I am in stress I consult with my father/mother/elder</td>
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<td>10.</td>
<td>When I am in stress I go to consult specialist in the field</td>
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<td>11.</td>
<td>When I am in stress I consult with my friends</td>
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<td><strong>Consultancy</strong></td>
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<td>12.</td>
<td>When I am in stress I consult with my</td>
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<td>13.</td>
<td>In stress a become realistic</td>
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<td>14.</td>
<td>I set my goals in future when I am in stress</td>
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<td>15.</td>
<td>I go to psychologist when I am in stress</td>
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<td>16.</td>
<td>I follow psychologist's instructions to manage my stress</td>
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<td>17.</td>
<td>I take medicine when I am unable to overcome stress</td>
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<td>18.</td>
<td>I go for outing when I am in stress</td>
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<td>19.</td>
<td>I scolded my juniors when I am in stress</td>
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<td>20.</td>
<td>I scolded my subordinates when I am in stress</td>
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<td><strong>Inclination towards religion</strong></td>
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<td>21.</td>
<td>I do prayer when I am in stress</td>
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<td>22.</td>
<td>I ask others to pray for me when I am in stress</td>
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<td>23.</td>
<td>I do exercise when I am in stress</td>
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<td><strong>Shout</strong></td>
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<td>24.</td>
<td>I go for some enjoyment when I am in stress</td>
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<td>25.</td>
<td>I use relaxing techniques when I am in stress</td>
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<td><strong>Exercise</strong></td>
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<td>26.</td>
<td>I breath deeply to relax myself when I feel stress</td>
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<td>27.</td>
<td>I sleep quietly in the time of stress</td>
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<td>28.</td>
<td>I watch my favorite tv program when I am in stress</td>
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<td><strong>Self-Analysis</strong></td>
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<td>29.</td>
<td>I leave everything on Allah when I can not manage my stress</td>
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<td>30.</td>
<td>I weep to manage my stress</td>
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<td>31.</td>
<td>I try to find out the reason of my stress to control it</td>
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<td>32.</td>
<td>I try to find out my mistake when I am in stress</td>
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<td>33.</td>
<td>I always accept my fault to manage my stress</td>
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<td>34.</td>
<td>I write diary to manage my stress</td>
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<td>35.</td>
<td>I read books in the time of stress</td>
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Grade Inflation and Human Capital Accumulation among Pakistani University Students

1Anwar Ul Haq, 2Sadaf Mahmood, 3 Zahira Batool, 4 Muhammad Shabbir

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ARTICLE DETAILS

ABSTRACT

The central objective of current study was exploring the level of school acquired human capital. To understand the human capital and grade inflation, 2 Focus Group Discussions (FGDs) were conducted. To measure school based human capital students were asked to write an essay on a given topic. These essays, FGDs and a brief questionnaire about background constituted the data for this study. This data was analyzed using mixed-methods content analysis. Data analysis generated four important themes related to human capital that are Grade inflation and quality of learning, General Knowledge abilities, Presentation and coherence and Writing skills. It was found that performance of students with CGPA more than group mean perform like those below the group mean. The mean values of group CGPA were also high as 3.46 for Punjab University and 3.77 for Government college University Faisalabad. The content analysis disclosed that similar mistakes are made by students in both categories. This raised serious reservations on the human capital of the students. This also shows the problem of grade inflation. In order to overcome these problems assessment systems, need reforms where actual capabilities of the students can be measured.

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1. Introduction

Scholars vary on definition of human capital. It dates to Adam Smith (Kucharčíková, 2011) however, contemporary work on human capital was begun by Theodore Schultz. In 1981 He defined human
capital as innate and acquired skills of a person form his/her human capital (Schultz, 1961). In another study human capital was defined as the intelligence, skills, and expertise of human beings in the organization. This capital is the human component of an organization and gives it a distinctive character. Davenport defined it as people's natural abilities, nurtured abilities, behaviors, and personal energy which they bring to the workplace with them (Davenport, 1999). Current definition of human capital combines all these features. It is defined as skills, knowledge, experiences, abilities, and other characteristics that are essential for economic activity. Human capital can be categorized into two types. One, the capital accumulated in the school and second, life cycle human capital. This study explores the human capital accumulated in the universities. Higher educational institutes play a vital role in formation of human capital. Higher education has become an essential component in contemporary societies. Sociology of higher education evaluates educational processes in universities and their influence on society and vice versa (Gumport, 2007). Higher education is increasing globally as well as in Pakistan. This increase in the number of institutions, students and workforce employed by higher education institutions (HEIs) has a huge effect on socio-economic structure of the society (Tight, 2019). Universities are not only important for sociologists to understand because of their size, but also because they produce human capital, scholarship in various fields and often provide the teachers, who then socialize the younger generations, which has a tremendous impact on society. Keeping this ubiquity and need of higher education in context, social scientists of various fields are concerned about the quality of education, systems of assessment and learning standards (Brimble, 2016). This concern is globally shared, but in Pakistan, when combined with other factors the situation demands a thorough investigation. Questions related to quality of university education are always part of “rhetoric of education reforms” (Hoodbhoy, 2009; Akhtar, Rafi, Ahmed, & Rauf, 2011). Concerns related to quality of education, often generate discussions related to quality of human capital produced by the universities. This argument is prominent in debates, research papers, newspaper articles and electronic media (Hoodbhoy, 2015; Academia, 2019; Murti, Leghari, Battacharya, Mayana, & Atta, 2012). These two concerns blend with each other and are referred to in the same vein.

Higher education plays a vital role in development of human capital. By providing knowledge, skills, habits, and values higher education enables the students for the workforce (Becker, 1993). Considering the importance of human capital development and tertiary education’s role in it, “quality of education” is always a matter of concern. Literally, every education related newspaper article, television program, academic discussion, and educational workshop, refer to the worsening quality of learning in our universities (Hoodbhoy, 2009). Concerns related to employability (Acadia, 2019), skills and abilities (Hoodbhoy, 2015) subject Knowledge (Zubaire, 2018) civic sense (Hussain, 2007) and General Awareness and creativity (Raza, Mehmood, & Jaleel, 2019) all resonate with human capital. So, worries related to quality of education are basically uncertainties about human capital produced by the universities. There are multiple factors behind this disadvantaged situation, which include but are not limited to shortage of funds and resources (Higher Education Commission, 2019), access to university education (Qutoshi, 2015), lack of good quality faculty, poor system of assessment, disadvantaged location, digital divide, poor infrastructure of universities, quantity of universities, and overcrowded classrooms bureaucratic hurdles etc. Besides all these problems a major problem that emerged in the last few years is grade inflation. Grade inflation in simple words is defined as an “increase in grades of students without an increase in the performance”. This means that students acquire grades for the performance which does not deserve those marks or not deserved in the past (Merriam Webster, 2020). As the basic purpose of assessment is to test the knowledge, understanding and learning, subject matter and rank the students (Baker & Strout, 2017). Grade inflation becomes a problem for education systems as higher marks are achieved for lower performance in all these skills. Students who are ranked higher by the universities are not well equipped with adequate skills that are demanded of that credential (Slavov, 2013). Higher education is a great step towards development of human capital. In the institutes of higher education, students accumulate knowledge, skills and habits that are useful for the economy and country at large. Tertiary education also called higher education has a positive relationship with national development as well as with human capital development. More will be the human capital and
Tertiary education; national development will be more (Olayiwola, Dada, & Olawale, 2016). This trend is reflected in various studies and even if other background factors are checked human capital has its influence towards positivity.

1.1 Education System in Pakistan
As Pakistan got independence from Britain in 1947, its education system was almost similar to Britain. Still Pakistani education system follows the trend. There are various stages of education in Pakistan. It begins with primary schooling until class five. Then comes the matric or secondary school certificate (SSC) which is equal to O-level in the Cambridge system. The education till matric is called school education. After that for two years there is college education. Colleges offer Higher Secondary School Certificate (HSSC) which is equal to A-level in the Cambridge system. For both the SSC and HSSC there are designated boards of education in every division of each province. After the completion of higher secondary education there are two streams of education. One is universities which offer two-year or four-year degrees. While the other stream is colleges which offer two-year degree programs and four-year degree programs. These colleges are affiliated with universities. So, technically all degrees are awarded by the universities. Colleges mostly offer two-year degree programs while Universities offer four years degree programs. In Pakistan requirements for most of the prestigious government jobs are usually 16 years of education. Education for MS and PhD are offered at university level.

1.2 Objectives
There were two primary objectives of the study
1. To assess the quality of human capital produced by the universities
2. To understand grade inflation among students from their performance on human capital

2. Methodology
This research uses qualitative methods of Focus group discussion as a source of data collection. Data related to students' human capital and grade inflation was collected using a creative approach. Students were asked to fill a brief background questionnaire and write an essay of six lines on “rivers in Pakistan”. As there are five main rivers in Pakistan and this information is taught to students at different levels, so familiarity with this topic is an indicator of general knowledge. Similarly, this writing will highlight students' writing abilities, task understanding and academic integrity. These focus group discussions were conducted with students from three universities. The data collected from two universities was combined into a single file with students CGPA, Gender and academic integrity. This Data was analyzed using mix methods content analysis. Content analysis was applied to essays to identify the problems in students writing. Codes that were developed from data provided the themes. Important themes related to problems that emerged were writing skills, general knowledge skills, presentation skills and coherence skills.

3. Data Analysis and Discussions
The process of data analysis began with transcription of data and compilation of data into a single file. The content analysis yielded four key themes related to human capital. One, grade inflation and quality of human capital, two, student’s language abilities, three students’ general knowledge skills and fourth the coherence and argument building abilities. It was found that students are weak in all these abilities.

3.1 Grade Inflation and Quality
Grade inflation as mentioned earlier means students acquiring more grades than they deserve. Evidence in favor of grade inflation has been reported in the previous studies. It can be seen from data that students' grades vary between 2.98 to 3.98. Only one student got the low grades of 2.98. All other students who were asked to write the essay had CGPA more than 3. It was found that there is no significant difference in writing skills and general knowledge ability between the good grade students and low-grade students. The language mistakes made by students were almost similar. One thing more that cheating behavior among the students was similar. Even good students copied from the mobile.
Only 7 to 9 students observed neutrality and did not copy from any source. Even after copying students’ skills with good grades and low grades were equal. The mean CGPA for Punjab University was 3.46 and mean for Government college University Faisalabad was 3.77 out of 4. These grades automatically prove that there is grade inflation. The second problem that was identified in student’s writing was “writing skill”.

3.2 Writing Skills
During the FGDs students were asked to write a minimum six lines essay about “Rivers in Pakistan”. The first analysis and transcription of these essays uncovered various language problems. This situation can be categorized into three main problems. One, lack of academic writing, two grammatical mistakes and three no consistency in language. The academic writing was missing. Students have no concept of academic writing. All the students were in 7th or 8th semester but none of them showed a comprehensive academic writing. They did not bother to create any background except for one essay. The essays began without any background and were random lines. There was no argument building. Around three students tried to build the argument in favor of Pakistan being the agricultural country. Otherwise, no other student builds any argument. These points are more elaborated in the coherence section. Second there were obvious grammatical mistakes. There were only 3 essays which did not contain any obvious grammatical mistake. As English is a second language in Pakistan, so, the problems of the second language cannot be eradicated. However, English language is taught to Pakistani students for at least 14 years in school, college, and university. After that much training and education, the writing skills exhibited by the students are questionable. It was found that students made spelling mistakes. In around 6 essays students had no concept of capitalization. Sentences in the middle have been capitalized. Almost all students lack punctuation skills. Errors related to subject-verb agreement were also found. It was also found that most students are not familiar with appropriate prepositions. However, most students used the articles in a suitable way. As many of them also copied whole sentences from the mobile phones so these skills are not important in that sense. Third problem that was found in writing was there is no consistency in writing. It was even identified that there is no consistency in spelling or English language used in Pakistan. Some students followed American spellings while others used British spelling. In this regard there was a lack of consistency. Similarly, the way words were used, and the lines were arranged, no sense of consistent and coherent writing emerged. These problems are discussed in detail below in the coherence section.

3.3 Coherence and Presentation Skills
As the essays were related to rivers in Pakistan, students wrote six lines in different ways. Two students wrote less than six lines. Three students wrote more than six lines. There was no coherence in almost all essays except 4 essays. For example, if the first line is about agriculture the second line contains information about river names. The third line mentions hydel resources and fourth mentions water tussle between India and Pakistan. One student even mentioned Sindh province, Sindhi cap and Ajrak also. One thing that was observed clearly is that there is no concept of self-reading or second reading among students after writing. Most essays showed that mistakes could have easily been avoided upon second reading. Three students had no concept of essay writing and wrote six separate lines copied from the mobile phone. The essays were not only a test of writing skills. They were also supposed to test the general knowledge abilities of the students. The details related to general knowledge abilities is given below.

3.4 General Knowledge Abilities
The essays written by students were also a reflection of their general knowledge abilities. Most students demonstrated very feeble general knowledge skills and copied from mobile or others. Around 8 students copied either from mobile phones or one another. Similarly, the interesting things were observed in the essays of those students who wrote themselves. Six students who wrote their essays on their own did not mention the names of the rivers. As there are five famous rivers in Pakistan and this information is always taught in the curriculum again and again. In this regard six students who wrote themselves did
not mention names of the rivers. They only wrote essays in a general sense. Around three of them mentioned agriculture and its importance without making any context. Similarly, two students mentioned fish and traditional dresses. This clearly indicates that students lack general knowledge. Even those who mentioned these things did not refer to specific sites. Most only mentioned Indus is the biggest river in Pakistan. It was also found that even after copying 3 students wrote wrong information. One student mentioned Sindh and Punjab as rivers but suddenly realized her mistake and corrected it. Another student mentioned two names of a single river and considered them as separate. These concerns related to wrong information among those who copied from mobile highlight another problem that search skills of the students are weak. Students are less comfortable in finding knowledge even online.

4. Conclusion
This study focused on understanding the lack of human capital and grade inflation. The grade inflation was clearly observed among students that around 8 students out of 17 had more CGPA than the mean and those who had higher CGPA demonstrated equal amount of knowledge and writing skills as students with lower CGPA. Using content analysis four major themes were identified. These themes are the problems of school human capital produced by the universities. These four problems are grade inflation and quality of education. In this problem it was found that Students abilities fluctuate less with difference in grades. Second, the major theme was writing skills. Students demonstrated overall weak writing skills which contained obvious mistakes like capitalization and subject-verb agreement. Third theme identified was argument building and coherence. Most students need this skill. Finally, another indicator of human capital is ability to search independently and general knowledge. Most students fall short on the general knowledge abilities. They demonstrated weak general knowledge abilities. As more than half copied information from mobile phones, this is a sign of weak general knowledge. Overall, it can be established from the results that grade inflation is clearly present and human capital produced in terms of Language abilities and General knowledge is of impoverished quality. To overcome these problems, some of the recommendations are as below,

5. Recommendations
First recommendation is that Pakistan must officially adopt a system of English either British or American. In some universities British English standards are followed while at others American English is followed. Second, there is a dire need to incorporate language skills into our curriculum. Languages skills must be assessed using multiple techniques and not only written work. Written work should also be assessed using creative questioning and creative writing. Finally, students should be encouraged to visit the libraries and read materials other than course.

References


Interest Rate Spread and the Efficacy of Commercial Banks’ Loans and Advances in Nigeria

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ARTICLE DETAILS

ABSTRACT

The cardinal objective of this research is to analyze the impact of interest rate spread on the efficacy of commercial banks’ lending in Nigeria. Data employed in this study were elicited from Central Bank of Nigeria Statistical bulletin, 2018 and International Monetary Fund, International Financial Statistics and data files. Unit root test result showed that the variables were integration of 1(0) and 1(1), the Autoregressive Distributed Lag (ARDL) Model was employed to analyze data. Several diagnostic tests were carried out and they all confirmed the goodness of fit and validity of the model employed. The findings elicited from this study showed that: commercial banks’ loans and advances responded positively and significantly to the impact of interest rate spread in Nigeria. The study concludes that interest rate spread had a positive impact on loans and advances of commercial banks’ within the scope of this study. The study recommend that commercial banks in Nigeria should maintain their current interest rate spread strategy, since it is yielding profit and helping them realize a high demand for their loans and advances in Nigeria.

Keywords

Loans and advances of commercial banks’, interest rate spread, liquidity ratio, monetary policy rate, exchange rate and inflation rate

JEL Classification

M40, M41

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1. Introduction

The cardinal objective of commercial banks in any economy is financial intermediation. That is, the facilitation of the channeling of funds from surplus economic unit to deficit economic unit. Financial intermediation is enhanced if a higher percentage of the population in a financial system is included financially. Financial inclusion brings so many prospective banks’ customer into the banking net and enable commercial banks realize more customers which would ultimately lead to increase liquidity for
the banks for on lending to borrowers seeking out loan facilities. Depositors are paid certain rate to encourage them to save their money with the banks and such saved funds are lend out to investors for a higher interest rate than that paid to the depositors.

The difference arrived at when you deduct lending rate from deposit rate is what is referred to as interest rate spread. Interest rate spread is that figure arrived at once you deduct the rate of interest charged to borrowers from that rate of interest which is paid to depositors (Maureen and Joseph, 2014). Efficient financial intermediation is achieved when the depositor or saver receives the highest expected return for his savings while also providing funds for borrowers or investors at the lowest interest rate possible. When efficient intermediation is arrived at in the economy, this will be highly beneficial to the real economy since it will bring about enhanced or higher streams of income to the savers (depositors) and in the same time, provide investible funds for an optimal interest rate. (Quaden, 2004).

Akmal, Khalid and Muhammad (2012) opined that higher interest rate spread discourages potential savers and is an obstacle for a prospective investor; since the cost of intermediation between the saver and the investor have strong correlation and synergy in financial intermediation and capital mobilization. Inefficiencies associated with financial intermediation causes higher intermediation cost and increase loss of productive funds in the process of intermediation, this will further culminate to loss in savings, lending and profitability of the banks and by extension economic growth and development in that economy.

However, (Dollente, 2005) opined that high interest rate spread shows the problem in the regulatory institutions or agencies of banks and information asymmetry. According to him, higher interest rate can improve profitability of banking system. (Nazarian and Hashumi 2010) argued that high interest spread can be said to be as a result of inefficiency or reduced efficiency of the banking system and lack of competition in the market for investors seeking for funds to borrow and savers seeking out borrowers. On the other hand, they agreed with the assertion of (Dollente, 2005) that high amount of the variable indicates inadequate regulation, lack of depth in the financial system and a high level of information asymmetry.

Several authors have disclosed above have taken different positions either in support or in negation that high interest rate spread leads to profitability of the banks. It is against this backdrop that this study attempts to analyze the impact of interest rate spread on commercial banks’ loans and advances in the Nigerian financial system.

1.1 Hypotheses
H01: There is no significant impact of interest rate spread on commercial banks’ loans and advances in Nigeria.
H02: There is no significant impact of monetary policy rate on commercial banks’ loans and advances in Nigeria.
H03: There is no significant impact of statutory reserve on commercial banks’ loans and advances in Nigeria.
H04: Inflation rate has no significant impact on commercial banks’ loans and advances in the Nigerian financial system.
H05: There is no significant impact of exchange rate on commercial banks’ loans and advances in Nigeria.

2. Literature Review
Conceptual Review - Factors that Influences Interest Rate Spread
2.1 Legal Reserves
the major commodity of commercial banks is money, the trade money to make profit in form of loans to investors. Legal or statutory reserve influences interest rate spread in the sense that commercial banks are by law required to keep some percentage of their deposits with the central bank; that proportion of funds tight down in the vault of the central bank would have been utilized for on lending to investors. When the reserve ratios are increased, the banks are left with fewer funds to lend to investors which will in turn increase interest rate spread.

2.2 Bank Performance
the performance of a bank can determine its interest rate spread, a commercial bank that has lots of customers that are repaying their loans and advances as at when due, won’t have problem of reducing its interest rate spread since the bank is doing well, but in a situation where a bank is not doing well and their stock of bad debt is piling up, such bank won’t have any reason to reduce their interest rate spread, instead their spread would be on the increase in order to cover up lost funds.

2.3 Inflation Rate
the rate of inflation in the financial system is capable of influencing interest rate spread; this is so because once there is inflation, there is a sharp drop in the value of money in circulation in that economy. Therefore, commercial banks will increase the lending rate which will in turn increase interest rate spread so as to meet up the value of the declining currency in circulation.

3. Empirical Review
Varaldzo and Asiat (2018) in their paper captioned the impact of interest rate spread on the banking system efficiency in South Africa; the researchers utilized total banking asset as the dependent variable while gross domestic product (GDP), interest rate spread, non-performing loans and real exchange rate (ZAR/US$) as the explanatory variables. This study used Nonlinear Auto Regressive Distributed Lag Model (NARDL) approach was adopted and their findings revealed that non-performing loans was significant in reducing the effectiveness of the South African banking system while interest rate spread has a negative and significant impact on banking system efficacy in South Africa.

In another study, Muine and Essau (2012) undertook a study titled Determinants of commercial banks’ interest rate spread in Namibia. This study employed a panel data analysis approach and used ordinary least squares regression technique to analyze data between 2004 and 2011. Net interest margin (NIM) was employed as the explained variable while liquidity ratio, non-performing loans, banks’ core capital, tax paid by commercial banks and deposit market shares were utilized as independent variables. The study deduced that deposit market share and cost efficacy ratio narrow interest rate spread.

In a similar study, Arezoo and Malihe (2016) studied the determinant of interest rate spread in banking industry in Iran. The authors identified non-performing loans, demand deposit, non-interest income and capital adequacy ratio as the core determinants of interest rate spread and concluded that all the above mentioned variables were significant in influencing interest rate spread in the Iran financial system. However, limited attention has been focused on the empirical understanding of the impact of interest rate spread on commercial banks’ lending efficacy in the Nigeria banking system.

Felix, Ihuoma and Odim (2015) employed the classical least squares method for their study and examined empirically the effect of interest rate deregulation on commercial banks’ lending operations in Nigeria from 1970 to 2013. The researchers divided the period of study into two; the period that interest rate was regulated spanning from 1970 to 1986 and another period where interest rate was not regulated spanning from 1987 to 1986. The Chow test was utilized to analyze to ascertain if there exist a significant change in the relationship that existed between interest rate for the two periods earlier mentioned and commercial banks’ lending in the Nigerian financial system. The empirical result elicited from this study from the interest rate regulated era revealed that interest rate spread recorded a
significant and negative effect on the volume of commercial banks’ loans, while for the deregulation era, the result further revealed that interest rate spread was found to be positive and significantly impacted on commercial banks’ loans and advances for the period.

4. Methodology
4.1 Research Design
The *ex-post facto* research design was adopted for this study since these types of research deals on events that had already taken place. As such, secondary data which were readily available were collected for analysis. The model adopted in this study was estimated using the Auto-Regressive Distributed Lag (ARDL) Model.

4.2 Source of Data Collection
In this study, data were elicited from Central Bank of Nigeria Statistical Bulletin of 2018 and International Monetary Fund, International Financial Statistics and data files. The study period covers 1981 through 2018.

5. Method of Data Analysis
This study utilized pre-estimation test, diagnostic tests and Auto Regressive Distributed Lag (ARDL) Model in testing hypotheses formulated for this study. The statistical package used for data analysis was E-view 9.0 version.

5.1 Model Specification
This research utilizes a primary model formulated by the authors; the model for this research is built or structured to establish the functional relationship between interest rate spread and the efficacy of commercial banks lending in Nigeria, 1981 - 2018. The model tested in this study is a multiple regression model stated below:

\[
\text{LOGCBLA} = F(\text{IRS, MPR, SR, IFR, EXR})
\]

By modifying the functional model in equation (1) into econometric model (semi-log):

\[
\text{LOGCBLA} = \beta_0 + \beta_1 \text{IRS}_t + \beta_2 \text{MPR}_t + \beta_3 \text{SR}_t + \beta_4 \text{IFR}_t + \beta_5 \text{EXR}_t + \mu_t 
\]

Where \(\beta_0, \beta_1, \beta_2, \beta_3, \beta_4\) and \(\beta_5\) are the parameters

CBLA = Commercial banks’ loans and advances in Nigeria
IRS = Interest rate spread (Lending rate - Deposit rate)
MPR = Monetary policy rate
SR = Statutory reserve (liquidity ratio)
IFR = Inflation rate
EXR = Exchange rate
\(\mu_t\) = Stochastic term
LOG = Natural logarithm

5.2 A Priori Expected Results
Interest rate spread is expected to have a negative impact on commercial banks’ loans and advances in Nigeria.
Monetary policy rate is expected to have a negative impact on commercial banks’ loans and advances in Nigeria.
Statutory reserve is expected to have a negative impact on commercial banks’ loans and advances in Nigeria.
Inflation rate is expected to have a negative impact on commercial banks’ loans and advances in Nigeria.
Exchange rate is expected to have a negative impact on commercial banks’ loans and advances in Nigeria.

6. Data Analysis and Results Interpretation
6.1 Pre-estimation Test Result (Unit Root Test)
Unit root test was carried out to establish the order of integration. The results of the Augmented Dickey-Fuller based unit root test are as summarized in Table 1 below:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Level</th>
<th>First difference</th>
<th>Order of integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG(CBLA)</td>
<td>1.690842{0.9994}</td>
<td>-4.050866{0.0033}***</td>
<td>I(1)</td>
</tr>
<tr>
<td>IRS</td>
<td>-2.154500{0.2256}</td>
<td>-6.380394{0.0000}***</td>
<td>I(1)</td>
</tr>
<tr>
<td>MPR</td>
<td>-3.212879{0.0271}**</td>
<td></td>
<td>I(0)</td>
</tr>
<tr>
<td>LR</td>
<td>-3.589969{0.0108}**</td>
<td></td>
<td>I(0)</td>
</tr>
<tr>
<td>IF</td>
<td>-2.885282{0.0567}</td>
<td>-5.592820{0.0000}***</td>
<td>I(1)</td>
</tr>
<tr>
<td>EXR</td>
<td>1.335249{0.9984}</td>
<td>-3.537770{0.0125}**</td>
<td>I(1)</td>
</tr>
</tbody>
</table>

Note: ** and *** denote significance @ 5% and 1% respectively

Based on the results of the Augmented Dickey-Fuller unit root test in Table 1, all the variables are integrated of order I(1) except MPR and LR which are integrated of order I(0). Being that the variables are of mixed integration, that is, I(0) and I(1), the Autoregressive Distribution Lag (ARDL) approach to ordinary least squares (OLS) was used for the empirical analysis.

6.2 Descriptive Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>CBLA</th>
<th>IRS</th>
<th>LR</th>
<th>MPR</th>
<th>IFR</th>
<th>EXR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>3662.065</td>
<td>6.323158</td>
<td>46.87828</td>
<td>13.06579</td>
<td>19.33263</td>
<td>104.4552</td>
</tr>
<tr>
<td>Median</td>
<td>446.9264</td>
<td>6.960000</td>
<td>46.22500</td>
<td>13.25000</td>
<td>12.55000</td>
<td>111.1675</td>
</tr>
<tr>
<td>Maximum</td>
<td>16117.20</td>
<td>11.06000</td>
<td>65.10000</td>
<td>26.00000</td>
<td>72.84000</td>
<td>306.1000</td>
</tr>
<tr>
<td>Minimum</td>
<td>8.582900</td>
<td>0.320000</td>
<td>29.10000</td>
<td>6.00000</td>
<td>5.38000</td>
<td>4.536700</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>5284.304</td>
<td>2.804789</td>
<td>9.691184</td>
<td>4.100381</td>
<td>17.25014</td>
<td>78.39935</td>
</tr>
<tr>
<td>Skewness</td>
<td>1.236060</td>
<td>-0.591343</td>
<td>0.232822</td>
<td>0.669171</td>
<td>1.743174</td>
<td>0.719999</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>3.088449</td>
<td>2.579050</td>
<td>2.459034</td>
<td>4.231054</td>
<td>4.839820</td>
<td>3.421495</td>
</tr>
<tr>
<td>Jarque-Bera</td>
<td>9.688733</td>
<td>2.495245</td>
<td>0.806658</td>
<td>5.255259</td>
<td>24.60431</td>
<td>3.564487</td>
</tr>
<tr>
<td>Probability</td>
<td>0.007873</td>
<td>0.287187</td>
<td>0.668092</td>
<td>0.072966</td>
<td>0.000005</td>
<td>0.168260</td>
</tr>
<tr>
<td>Sum</td>
<td>139158.5</td>
<td>240.2800</td>
<td>1781.374</td>
<td>496.5000</td>
<td>734.6400</td>
<td>3969.298</td>
</tr>
<tr>
<td>Sum Sq. Dev.</td>
<td>1.03E+09</td>
<td>291.0732</td>
<td>3475.005</td>
<td>622.0855</td>
<td>11009.99</td>
<td>227418.9</td>
</tr>
<tr>
<td>Observations</td>
<td>38</td>
<td>38</td>
<td>38</td>
<td>38</td>
<td>38</td>
<td>38</td>
</tr>
</tbody>
</table>

Source: Author’s analysis using e-view 9 output

The table above presents the descriptive statistics of this study. The table shows that CBLA has the highest mean value of 3662.065, followed by EXR which has 104.4552, then LR with 46.87 while IFR, MPR and IRS have 19.33, 13.06 and 6.323 respectively. From the analysis, CBLA has the highest Standard Deviation as it recorded 5284.304, implying that it is the most volatile variable in the model as it has the highest percentage of dispersion from the mean. Four variables, IRS, LR, EXR and MPR with -0.591343, 0.232822, 0.719999 and 0.669171 respectively, are skewed a little to the left, while CBLA and IFR which have 1.236060 and 1.743 respectively are skewed to the right.

From Table 2 above, CBLA, MPR, IFR and EXR are peaked or leptokurtic because they have values of 3.08, 4.23, 4.83 and 3.42 respectively, while IRS and LR have a values of 2.57 and 2.45 are said to be flat or platykurtic.
It is important to note that although skewness and kurtosis points out the level of departure from normality, such positions are not concrete enough to discredit the overall goodness of fit of the dataset. The number of observation of 38 depicts the duration of the study.

6.3 ARDL Model Result

<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>LOG(CBLA(-4))</td>
<td>0.320372</td>
<td>0.193278</td>
<td>1.657570</td>
<td>0.1213</td>
</tr>
<tr>
<td>IRS(-2)</td>
<td>0.063883</td>
<td>0.029121</td>
<td>2.193713</td>
<td>0.0470</td>
</tr>
<tr>
<td>MPR(-4)</td>
<td>0.037255</td>
<td>0.011624</td>
<td>3.204950</td>
<td>0.0069</td>
</tr>
<tr>
<td>LR(-2)</td>
<td>-0.007669</td>
<td>0.007154</td>
<td>-1.071918</td>
<td>0.3033</td>
</tr>
<tr>
<td>IFR(-3)</td>
<td>-0.010299</td>
<td>0.003857</td>
<td>-2.670071</td>
<td>0.0193</td>
</tr>
<tr>
<td>EXR</td>
<td>-0.001053</td>
<td>0.001117</td>
<td>-0.942444</td>
<td>0.3632</td>
</tr>
<tr>
<td>C</td>
<td>0.755930</td>
<td>0.892872</td>
<td>0.846627</td>
<td>0.4125</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mean dependent</th>
<th>S.D. dependent</th>
</tr>
</thead>
<tbody>
<tr>
<td>R-squared</td>
<td>0.998464 var</td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.996102 var</td>
</tr>
<tr>
<td>S.E. of regression</td>
<td>0.155148 criterion</td>
</tr>
<tr>
<td>Sum squared resid</td>
<td>0.312922 criterion</td>
</tr>
<tr>
<td>Log likelihood</td>
<td>31.45482 crier.</td>
</tr>
<tr>
<td>F-statistic</td>
<td>422.5910 stat</td>
</tr>
<tr>
<td>Prob(F-statistic)</td>
<td>0.000000</td>
</tr>
</tbody>
</table>

Source: Author’s analysis using e-view 9 output

From the ARDL Model result above in table 3, the result revealed that the R-squared was 99%, this means that the independent variables accounted for about 99% variations in the dependent variable while the remaining 1% may be attributed to variables not included in the model. Put differently, all the independent or explanatory variables accounted for about 99% changes in commercial banks’ loans and advances in Nigeria, while the remaining 1% could be attributed to stochastic term.

The result revealed that IRS had a positive and significant impact on CBLA such that a unit increase in IRS would bring about a 0.06 percent increase in CBLA. MPR had a positive and significant impact on CBLA such that a percentage increase in MPR would bring about a 0.03 percent increase in CBLA. LR recorded a negative and insignificant impact on CBLA such that a percentage increase in LR would bring about a 0.007 percent decrease in CBLA. IFR was found to have a significant negative impact on CBLA such that a unit increase in IFR would bring about a 0.01 percent decrease in CBLA. Furthermore, EXR was observed to record a negative yet insignificant impact on CBLA such that a unit increase in EXR would bring about a 0.01 percent decrease CBLA.

The result further revealed that the overall model was a good fit owing to the f-statistic value of 422.5910 and its corresponding p-value of 0.000000 which shows that the model is significant at 5% level of significance. Durbin Watson Statistic of 2.24 showed that the variables were free from autocorrelation since it is within the region of 2.
Figure 1: (Top 20 Models)

The figure above reveals the top 20 models. It reveals the best model selected by ARDL Model analysis as being (4, 2, 4, 2, 3, and 0) and interpreted in table 3 above. This was done in order to further proof the validity and reliability of the selected model.

6.4 Diagnostic Test
Test for Heteroskedasticity

Table 4: Heteroskedasticity Test: Breusch-Pagan-Godfrey

<table>
<thead>
<tr>
<th>Test statistic</th>
<th>Prob. F(20,13)</th>
<th>Prob. Chi-</th>
<th>Obs*R-squared</th>
<th>Prob. Chi-</th>
<th>Scaled explained SS</th>
<th>Prob. Chi-</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-statistic</td>
<td>0.716318</td>
<td></td>
<td></td>
<td></td>
<td>17.82514Square(20)</td>
<td></td>
</tr>
</tbody>
</table>

Source: Author’s analysis using e-view 9 output

The Heteroskedasticity test above suggests that the variables are free from the problem of Heteroskedasticity since the p-values of F-stat. and Obs*R-squared are > 5% significance level. This outcome is further strengthened by the p-value of approximately 1.00 for the Scaled explained SS which also suggest the absence of Heteroskedasticity.
6.5 Test of Normality

Source: Author’s analysis using e-view 9 output

This test is conducted to ensure that the data employed in this study are normally distributed. Observing from the normality diagram in the figure above, as well as the Jarque-Bera value of 0.20 and its corresponding p-value of 90% which is >5% significant level confirms that the data are normally distributed.

6.6 Test for Auto Correlation

Table 5: Correlogram Q-statistic

<table>
<thead>
<tr>
<th>Autocorrelation</th>
<th>Partial Correlation</th>
<th>AC</th>
<th>PAC</th>
<th>Q-Stat</th>
<th>Prob*</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image.png" alt="Diagram" /></td>
<td><img src="image.png" alt="Diagram" /></td>
<td>1</td>
<td>0.6202</td>
<td>0.431</td>
<td></td>
</tr>
<tr>
<td><img src="image.png" alt="Diagram" /></td>
<td><img src="image.png" alt="Diagram" /></td>
<td>2</td>
<td>0.7834</td>
<td>0.676</td>
<td></td>
</tr>
<tr>
<td><img src="image.png" alt="Diagram" /></td>
<td><img src="image.png" alt="Diagram" /></td>
<td>3</td>
<td>0.9482</td>
<td>0.814</td>
<td></td>
</tr>
<tr>
<td><img src="image.png" alt="Diagram" /></td>
<td><img src="image.png" alt="Diagram" /></td>
<td>4</td>
<td>7.0410</td>
<td>0.372</td>
<td></td>
</tr>
<tr>
<td><img src="image.png" alt="Diagram" /></td>
<td><img src="image.png" alt="Diagram" /></td>
<td>5</td>
<td>9.6907</td>
<td>0.287</td>
<td></td>
</tr>
<tr>
<td><img src="image.png" alt="Diagram" /></td>
<td><img src="image.png" alt="Diagram" /></td>
<td>6</td>
<td>9.8045</td>
<td>0.367</td>
<td></td>
</tr>
<tr>
<td><img src="image.png" alt="Diagram" /></td>
<td><img src="image.png" alt="Diagram" /></td>
<td>7</td>
<td>9.8511</td>
<td>0.454</td>
<td></td>
</tr>
<tr>
<td><img src="image.png" alt="Diagram" /></td>
<td><img src="image.png" alt="Diagram" /></td>
<td>8</td>
<td>10.929</td>
<td>0.449</td>
<td></td>
</tr>
<tr>
<td><img src="image.png" alt="Diagram" /></td>
<td><img src="image.png" alt="Diagram" /></td>
<td>9</td>
<td>13.022</td>
<td>0.367</td>
<td></td>
</tr>
<tr>
<td><img src="image.png" alt="Diagram" /></td>
<td><img src="image.png" alt="Diagram" /></td>
<td>10</td>
<td>13.050</td>
<td>0.444</td>
<td></td>
</tr>
<tr>
<td><img src="image.png" alt="Diagram" /></td>
<td><img src="image.png" alt="Diagram" /></td>
<td>11</td>
<td>13.894</td>
<td>0.458</td>
<td></td>
</tr>
<tr>
<td><img src="image.png" alt="Diagram" /></td>
<td><img src="image.png" alt="Diagram" /></td>
<td>12</td>
<td>14.151</td>
<td>0.514</td>
<td></td>
</tr>
</tbody>
</table>
This test is carried out to further test for auto correlation and to consolidate on the result of Durbin Watson Stat in table 3. The result of Correlogram Q-Statistic in table 5 above, suggest that the variables are free from auto correlation, since the correlogram Q-Stat. table indicates that all p-values were >5% hence, the conclusion that the model was free from auto correlation.

6.6 Test for Serial Correlation

In line with the rule, the Breusch-Godfrey Serial Correlation LM Test table above shows that the probability values of 0.55 indicates that the variables are free from serial correlation. Also, F-statistic and Obs*R-squared of 0.61 and 3.43 respectively further strengthen the assertion of no serial correlation amongst the variables. The probability values are statistically insignificant at 5% level of significance. Hence, the null hypothesis that there is serial correlation in the model is rejected. Thus, the model is said to be free from serial correlation.

Stability diagnostic test

Table 7: Ramsey RESET Test

| Specification: UNTITLED | LOG(CBLA) | LOG(CBLA(-1)) | LOG(CBLA(-2)) | LOG(CBLA(-3)) | LOG(CBLA(-4)) | IRS | IRS(-1) | IRS(-2) | MPR | MPR(-1) | MPR(-2) | MPR(-3) | LR | LR(-1) | LR(-2) | IFR | IFR(-1) | IFR(-2) | IFR(-3) | EXR | C |
|-------------------------|-----------|----------------|----------------|----------------|----------------|-----|---------|---------|-----|---------|---------|---------|----|-------|-------|-----|---------|---------|--------|----|

<table>
<thead>
<tr>
<th>Omitted Variables: Squares of fitted values</th>
<th>Value</th>
<th>df</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>t-statistic</td>
<td>1.652938</td>
<td>12</td>
<td>0.1242</td>
</tr>
<tr>
<td>F-statistic</td>
<td>2.732203</td>
<td>(1, 12)</td>
<td>0.1242</td>
</tr>
</tbody>
</table>

From the Ramsey reset test result in table 7 above, the t-statistic of 1.65 and its corresponding p-value of 0.12 suggest that the model is correctly specified, so null hypothesis of linear specification not rejected at 5% level of significance, since the p-value is >5%.

6.7 Test of Hypotheses
6.7.1 Test of Hypothesis One

H0: There is no significant impact of interest rate spread on commercial banks’ loans and advances in Nigeria.
Since the p-value for interest rate spread (IRS) of 0.047 (4.7%) is within the acceptable significance level of 5%, that is, < 5%, we fail to accept the null hypothesis that interest rate spread has no significant impact on commercial banks’ loans and advances in the Nigerian financial system.

**6.7.2 Test of hypothesis two**

H0: There is no significant impact of monetary policy rate on commercial banks’ loans and advances in Nigeria.

<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>LOG(CBLA(-4))</td>
<td>0.320372</td>
<td>0.193278</td>
<td>1.657570</td>
<td>0.1213</td>
</tr>
<tr>
<td>MPR(-4)</td>
<td>0.037255</td>
<td>0.011624</td>
<td>3.204950</td>
<td>0.0069</td>
</tr>
</tbody>
</table>

Source: Extracted from table 3

Since the p-value for monetary policy rate (MPR) of 0.0069 (0.069%) is within the acceptable significance level of 5%, that is, < 5%, we fail to accept the null hypothesis that monetary policy rate has no significant impact on commercial banks’ loans and advances in the Nigerian financial system.

**6.7.3 Test of Hypothesis Three**

H0: There is no significant impact of statutory reserve on commercial banks’ loans and advances in Nigeria.

<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>LOG(CBLA(-4))</td>
<td>0.320372</td>
<td>0.193278</td>
<td>1.657570</td>
<td>0.1213</td>
</tr>
<tr>
<td>LR(-2)</td>
<td>-0.007669</td>
<td>0.007154</td>
<td>-1.071918</td>
<td>0.3033</td>
</tr>
</tbody>
</table>

Source: Extracted from table 3

Since the p-value for lending rate (LR) of 0.30 (30%) is >5% level of significance, the null hypothesis that statutory reserve has no significant impact on commercial banks’ loans and advances in the Nigerian financial system is not rejected.

**6.7.4 Test of Hypothesis Four**

H0: Inflation rate has no significant impact on commercial banks’ loans and advances in the Nigerian financial system.

<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>LOG(CBLA(-4))</td>
<td>0.320372</td>
<td>0.193278</td>
<td>1.657570</td>
<td>0.1213</td>
</tr>
<tr>
<td>IFR(-3)</td>
<td>-0.010299</td>
<td>0.003857</td>
<td>-2.670071</td>
<td>0.0193</td>
</tr>
</tbody>
</table>

Source: Extracted from table 3

Since the p-value for inflation rate (IFR) of 0.0193 (1.93%) is within the significance acceptable level of 5%, that is, < 5%, we fail to accept the null hypothesis that inflation rate has no significant impact on commercial banks’ loans and advances in the Nigerian financial system.

**6.7.5 Test of Hypothesis Five**

H0: There is no significant impact of exchange rate on commercial banks’ loans and advances in Nigeria.

<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>LOG(CBLA(-4))</td>
<td>0.320372</td>
<td>0.193278</td>
<td>1.657570</td>
<td>0.1213</td>
</tr>
<tr>
<td>EXR</td>
<td>-0.001053</td>
<td>0.001117</td>
<td>-0.942444</td>
<td>0.3632</td>
</tr>
</tbody>
</table>
Source: Extracted from table 3
Since the p-value for exchange rate (EXR) of 0.36 (36%) is >5% level of significance, the null hypothesis that exchange rate has no significant impact on commercial banks’ loans and advances in the Nigerian financial system is not rejected.

Table 8: A priori expectation verification

<table>
<thead>
<tr>
<th>Variables</th>
<th>Expected Signs</th>
<th>Actual Signs</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRS</td>
<td>Negative (-)</td>
<td>Positive (+)</td>
<td>Do not conform</td>
</tr>
<tr>
<td>MPR</td>
<td>Negative (-)</td>
<td>Positive (+)</td>
<td>Do not conform</td>
</tr>
<tr>
<td>LR</td>
<td>Negative (-)</td>
<td>Negative (-)</td>
<td>Conform</td>
</tr>
<tr>
<td>IFR</td>
<td>Negative (-)</td>
<td>Negative (-)</td>
<td>Conform</td>
</tr>
<tr>
<td>EXR</td>
<td>Negative (-)</td>
<td>Negative (-)</td>
<td>Conform</td>
</tr>
</tbody>
</table>

7. Summary of Findings
The following findings were deduced from the results of the analysis above:
1. Interest rate was found to have a positive and significant impact on commercial banks’ loans and advances in Nigeria. This could be as a result of the effectiveness and efficiency of the Nigerian financial system in financial intermediation; depositors are paid the highest return possible for their deposits, while investors are provided credit facilities for the least cost possible, which made interest rate spread fair and moderate for investors to keep taking loans and advances of commercial banks in Nigeria. This assertion is in support of the postulations of Quadal, 2007 who advocated for an efficient intermediation process owing to a moderate interest rate spread charged by commercial banks.

2. Monetary policy rate was also found to have a significant positive impact on commercial banks’ loans and advances in Nigeria; this could possibly be attributed to stability of the Nigerian financial system and the effectiveness of the regulatory institutions in terms of fixing a moderate monetary policy rate that the market responds positive to.

3. Liquidity ratio recorded a negative and insignificant impact on commercial banks’ loans and advances in Nigeria. This result was in consonance with A priori expectation, since a huge amount of funds (deposits) that was supposed to be given out as loans by commercial banks are required by law to be kept in the banks’ vault as stored liquidity of the banks; this reduces the banks’ prowess of making new money.

4. Inflation rate recorded a negative and significant impact on commercial banks’ loans and advances in Nigeria, supporting A priori expectation that high inflation would discourage borrowings from commercial banks in Nigeria.

5. Exchange rate recorded a negative yet insignificant impact on commercial banks’ loans and advances in Nigeria, the possible reason for the insignificance of exchange rate on commercial banks’ loans and advances in Nigeria may be because of the fact that commercial banks in Nigeria did not really engage much in international transactions enough to be really influenced by exchange rate even though a negative impact was recorded.

8. Conclusion
In summary, this study was carried out to ascertain the impact of interest rate spread on commercial banks’ loans and advances in Nigeria between 1981 and 2018. Auto-regressive Distributed Lag ARDL Model was employed and several diagnostic tests were carried out and all pointed towards the same conclusion that interest rate spread was significant in impacting positively on commercial banks’ loans and advances in Nigeria within the period under review.

9. Recommendations
From the foregoing, this study proffers the following recommendation:
1. Commercial banks in Nigeria should maintain their current interest rate spread strategy, since its working well for them and helping them realize a high demand for their loans and advances in Nigeria.

2. The monetary authorities in Nigeria should also maintain the level of monetary policy rate charged to the commercial banks in Nigeria in order to allow the commercial banks fix a moderate and competitive interest rate spread.

3. The Central Bank of Nigeria should continue ensuring that commercial banks maintain adequate liquidity in consonance with the statutory reserve requirement of the monetary authorities.

4. The monetary authorities in Nigeria should put economic mechanisms in place to fight and curb high inflation, since high inflation reduces the volume of commercial banks’ loans and advances in Nigeria.

5. Proper exchange rate policies have to be formulated and implemented by the Central Bank of Nigeria to check excessive high exchange rate between the Naira and the US Dollar.

References
Impact of Perceived Corporate Social Responsibility on Banks’ Financial Performance and the Mediating Role of Employees’ Satisfaction and Loyalty in Pakistan

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ARTICLE DETAILS

ABSTRACT

Inspired by the global increase in awareness of corporate social responsibility (CSR), this paper is an attempt to explore the influence of CSR on bank employees’ satisfaction and loyalty and banks’ financial performance. It was assumed there could be differences in the perception of CSR among employees toward the CSR initiatives being undertaken by the banks they work for. Employees’ level of awareness and extent of involvement with various CSR activities could affect their satisfaction and loyalty. This study used regression analysis for hypothesis testing. Its findings reveal that CSR positively affects employee satisfaction and loyalty as well as banks’ financial performance; employee satisfaction positively affects employee loyalty; and employee loyalty positively affects banks’ financial performance. Hence, bank management should focus on CSR from the perspective of employees to contribute to employee satisfaction and loyalty, and ultimately, to enhanced financial performance. Suggestions and inferences for future research and banking sector practices are suggested based on these results.
ineptness on the part of commercial banks, and so tarnished the reputation of financial institutions and public trust toward banks. To redeem their damaged reputations and the public trust, banks and financial intermediaries started implementing ethical, legal and social practices under the umbrella of CSR. Thus, the concept of CSR was operationalised, marking its implementation in the banking sector.

The corporate business world is progressively transforming from being concerned only with profit to being entities that care for their communities, encompassing many diverse stakeholders. In the present business milieu, firms and financial institutions comprehend that they cannot succeed by ignoring their immediate society (Maqbool & Zameer, 2018). Since each business is cognitively, if not practically, using resources of society, it becomes obligatory for them to reciprocate and return something in the form of community development. Dahlsrud (2008) states that even those businesses who are producers of economic wealth cannot flourish by pursuing only economic feats. They also must undertake various social, cultural and community development measures. CSR can be defined as a measure used to assess how much a socially responsible firm has a positive impact on the adjacent society (Salma Sairally, 2013).

Banks now consider CSR an important facet of their strategy to remain viable and attractive. The CSR activities of commercial banks are generally intended to support good financial performance in addition to considering the environmental, ethical and social responsibilities of the business. They are spending considerable amounts, in terms of both cash and in-kind donations, on various social and welfare programs, as well as employees’ training and formation of volunteer cadres (Luo & Bhattacharya, 2006). However, the main dimensions of their CSR strategies remain economic and social.

The linchpin in social–economic processes are shareholders and a few important stakeholders. Hence, banks are carrying out extensive CSR activities are perceived to have a better reputation among the public as well as their suppliers, employees and customers. Once banks meet the demands of key stakeholders by maintaining a fine balance between primary stakeholders and shareholders, they enjoy a good reputation among the public, which leads to sustainable development and improved financial performance (Dusuki & Abdullah, 2007).

The prime objective of each business is to generate revenue; different social and welfare activities are subsidiary activities, suitably tailored to achieve the main goal (Shum & Yum, 2010). The relationship between CSR and financial performance may be positive, negative, or insignificant, depending on several intermingling factors and boundary conditions. Most CSR activities are considered to have a positive impact; however, such activities can “boomerang” and fail to generate the desired results.

Although the impact of CSR on financial performance in the banking sector has been extensively studied, very little research is available on the impact of CSR on employee satisfaction, in terms of its impact on employee loyalty and banks’ financial performance. This paper is an attempt to empirically substantiate the impact of perceived CSR on employee satisfaction, employee satisfaction on employee loyalty, and employee loyalty on financial performance. The significance of this study is its contribution to the limited literature on this subject by developing separate questionnaires, as well as a theoretical framework for the employee model by adapting and adopting constructs and items of earlier research work undertaken these topics.

2. Theoretical Background/Literature Review and Hypotheses

2.1 CSR and its Dimensions

The definition and concept of CSR can be traced back to that of Howard Bowen, though a number of definitions and concepts have been introduced since. Bowen (1953, as cited in Carroll, 1991) defined CSR as:

...an obligation of businessmen to follow and implement those policies, to make those decisions, or to undertake those actionable thrust lines which are desirable and in line with objectives and also create
values in our society.

CSR encompasses philanthropic or charitable, economic, legal and ethical responsibilities that society expects from any firm at a certain time (Carroll, 1991). There has been a divergent view of whether CSR is a shareholder’s responsibility or a social obligation. CSR as social obligation is explained through stakeholder theory, which advocates that a corporation, as well as its shareholders, must also consider the interest of other stakeholders. Social contract theory accentuates this, and states that, as society provides firms with the resources to operate, firms should adhere to societal norms and values in return, and also contribute to the community through various social welfare programs.

2.2 CSR and Employee Satisfaction
Heathfield (2019) defines employee satisfaction (ES) as “whether employees are happy and fulfilling their desires and needs at work.” Numerous measures profess that ES is a factor in employee motivation, employee goal achievement, and positive employee morale in the workplace (Heathfield, 2019). Employee attitudes usually demonstrate the morale of the company. Contented employees are crucial for enhanced customer service and sales because they personify the company to the public (Shetrone, 2011).

ES is a personal perception or appraisal and can be described as fit between employee and the firm. Employees who are satisfied with their jobs are more likely to have an exemplary attitude and behavior toward customers, and to treat customers with greater energy and devotion. Gounaris and Boukis (2013) describe that employee job satisfaction is paramount importance to enhance the customer retention and loyalty. Notably, CSR is a measure that can improve the quality of life of not only community but also its work force—employees and their families (Aguilera-Caracuel et al., 2015). It can be premised that ES and CSR are interrelated, where ES significantly affect overall CSR (Khartabiel & Saydam, 2014). ES is considered as an asset, as well as a resource for an organization; hence, banks should make efforts to enhance ES and motivation. One study has emphasized that CSR initiatives by organizations increase ES and consequently increases employees’ commitment (H. R. Kim et al., 2010).

H1. Employees’ perception of CSR positively influences ES

2.3 CSR and Employee Loyalty
DeFranzo (2012) defines employee loyalty (EL) as meaning employees are “devoted to the success of their organization and believe that being an employee of this organization is in their best interest.” Loyalty not only means that they intend to stay with the firm, but that they do not pursue alternate job opportunities (DeFranzo, 2012). Sturt and Nordstrom (2019) state that:

Loyalty just might be one of the most elusive concepts to grasp—for organizations, leaders, and employees. It’s one of those things that is obvious when it exists, crystal clear when it doesn’t, and sadly, nearly impossible to pinpoint when it lands somewhere in the gray area. Ironically, that’s where most people fall—in the gray.

Collins (2019) describes a loyal employee as someone who is passionate and engaged in the success of the company, even if it means renouncing/forgoing their own personal time and interest. Loyalty towards any organization increases the length or duration of employee retention with an organization. EL is an employee’s psychological commitment towards their company.

Kim and Wright (2011) argued that ES is essential for an organization to build employee commitment. EL is attained through the inculcation of trust, creation of an enhanced working environment and acknowledgement of employees’ effort (Garlick, 2010). Loyalty can be viewed as the psychological and emotional resolve of employees toward their firm (Paulík et al., 2015). To increase EL, organizations should pursue CSR as a culture. It should be shored up by its employees. It is posited that CSR activities glorify a firm/bank, which can help it to attract and retain loyal, committed and skilled employees. With reduced employee turnover, recruiting and training costs will be reduced, which will affect overall FP.
Adewale et al. (2018) emphasized that effective communication of CSR activities, including economic, social and environmental initiatives, not only enhance the reputation of firm, but also glorify their brand, which helps to attract and retain loyal, committed and skilled employees. Zhu et al. (2014) claimed that firms must enhance ES through CSR in order to enhance EL.

**H2.** Employees’ perception of CSR positively influences EL

**H3.** ES positively influences EL

### 2.4 CSR and Financial Performance

A number of research studies have been conducted in the last three decades to understand the relationship between CSR and financial performance (FP) by testing its direction and strength. No universal conclusion can be drawn for specific sectors or industries, as studies have found that the correlation between CSR and FP can be significantly positive or negative, and in some cases, non-significant, depending on the context (Platonova et al., 2018). Such inconsistency is partially ascribed to a lack of understanding regarding the channels through which CSR influences FP (Margolis & Walsh, 2001), and may be partially due to inappropriate model specification and choice of methodology (McWilliams & Siegel, 2000).

Islam et al. (2012) described CSR as a long-term strategy that contributes to long-term value for shareholders, which increases sustainability and builds a company’s reputation. In addition, CSR is not taken only as a road to a social responsibility, but as a means to increase a multi-faceted business’s profit and return. Kanwal et al. (2013), concluded that costs spent on CSR activities influence long-term development, and hence patience is required to witness the positive outcomes. CSR also enhances companies’ competitiveness through improving relationships with all stakeholders, including working relationships, and by creating new business opportunities (Maqbool & Zameer, 2018).

**H4.** Employees’ perception of CSR positively influences the FP of banks

### 2.5 Effect of ES and EL on FP

ES is a product of employee motivation achieved through better addressing their needs, and once ES achieved, it results in high quality services. Banks should make efforts to enhance ES, and so costs incurred in the course of enhancing ES is to be referred as strategic investment, which is likely to produce high returns. Higher ES positively affects retention of employees by increasing EL (Paulík et al., 2015).

ES helps firm to enhance employee retention, loyalty and productivity. Once employees are satisfied, they will be more likely to provide quality care and service to customers. Employees’ perception of CSR initiatives undertaken by banks is likely to impact ES, and result in enhanced employee effort and better job performance (Carmeli et al., 2007). Employees can drop the intention to leave an organization if provided with opportunities for personal development, evaluation of their individual performance, ability to express themselves, and rewards for their work. This will make employees feel that they are an integral part of the organization and encourages them to achieve the organization’s goal of profit maximization (Hallowell, 1996).

Loyalty behaviors include relationship continuance, increased scale or scope of relationship, and recommendation (word of mouth advertising). Loyalty, in one or more of these forms, creates increased profit through enhanced revenues, and reduced costs through less staff turnover and amount spent on training of new staff (Suhe et al., 2017). They also stressed that loyal employees work more efficiently and provide quality services to clients. Based on extant literature reviews and employee-related policies, Zhu et al. (2014) developed items to measure employee perception of CSR. Their results emphasized that CSR activities undertaken by companies are perceived favorably by employees. Companies must build ES through CSR initiatives if they want to improve EL. A more committed staff performs well, attracts more customers, avoids wasting time, and remains motivated and loyal to banks’ objective of
profit.

H5. ES leads to an increase in FP
H6. EL leads to an increase in FP
H7. ES mediates the relationship between CSR and FP
H8. EL mediates the relationship between CSR and FP

3. Methodology
3.1 Questionnaire Development and Data Collection
Carroll (1991), Ehsan et al. (2018) and Xie et al. (2017) developed customized questionnaires for their studies. Since no preexisting questionnaire was available for adoption for this study, a customized questionnaire was developed by adapting questions from Carroll (1991), Ehsan et al. (2018) and Xie et al. (2017). A seven-point Likert scale was used to collect responses. A combination of physical delivery and collection and web-based submission and collection through e-mail was used. Pilot testing was performed on a sample of 100 respondents to access the relevancy and efficacy of the questionnaire. This pilot sample was not included in the final sample for the study. The questionnaire was then modified, and the revised questionnaire submitted to experts (professors and bank managers) for assessment of its design. Seven sub-variables chosen with reference to the literature were used to measure CSR in this study.

The questionnaire was distributed in randomly selected clusters, and out of the 400 questionnaires printed and emailed, 335 questionnaires (83%) were returned. Multivariate outliers were tested using data from these 335 respondents. Using the Mahalanobis distance (Drumond et al., 2019; Rousseeuw & van Zomeren, 1990), 25 responses were identified as outliers and deleted, leaving a final sample of 310 responses used for this study. The descriptive analysis of this sample is presented in Table 1.

<table>
<thead>
<tr>
<th>Cluster</th>
<th>%</th>
<th>Work Experience (years)</th>
<th>%</th>
<th>Age</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bahawalpur</td>
<td>12.9</td>
<td>2</td>
<td>10.6</td>
<td>Up to 25 years</td>
<td>17.1</td>
</tr>
<tr>
<td>Bahawalnagar</td>
<td>11.6</td>
<td>3</td>
<td>22.6</td>
<td>26–35</td>
<td>49</td>
</tr>
<tr>
<td>Rahim Yar Khan</td>
<td>8.1</td>
<td>4</td>
<td>13.5</td>
<td>36–45</td>
<td>26.8</td>
</tr>
<tr>
<td>Lahore</td>
<td>11.3</td>
<td>5</td>
<td>14.2</td>
<td>46 and above</td>
<td>7.1</td>
</tr>
<tr>
<td>Multan</td>
<td>10</td>
<td>&gt;5</td>
<td>39</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lodhran</td>
<td>10.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vehari</td>
<td>10.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Sample Profile

<table>
<thead>
<tr>
<th>Education</th>
<th>Gender</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate</td>
<td>Male</td>
<td>36.2</td>
</tr>
<tr>
<td>Masters</td>
<td>Female</td>
<td>54.2</td>
</tr>
<tr>
<td>Post-graduate</td>
<td>Female</td>
<td>9.6</td>
</tr>
</tbody>
</table>

N = 310

3.2 Preliminary Tests
3.2.1 Normality Test
The impact of small skewness and kurtosis vanishes as sample size exceeds 200. Based on a sample size of 310, any skewness and kurtosis will have little effect on overall results. The skewness and kurtosis are below the maximum acceptable standard of 1 and 3, respectively (Bai & Ng, 2005) (Table 2).

<table>
<thead>
<tr>
<th>N</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Statistic</td>
<td>Value</td>
</tr>
<tr>
<td>CSR</td>
<td>310</td>
<td>-.517</td>
</tr>
<tr>
<td>ES</td>
<td>310</td>
<td>-.528</td>
</tr>
<tr>
<td>EL</td>
<td>310</td>
<td>-.498</td>
</tr>
<tr>
<td>FP</td>
<td>310</td>
<td>-.785</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>310</td>
<td></td>
</tr>
</tbody>
</table>

3.2.2 Multicollinearity Test
The tolerance values for CSR, ES and EL reveal that no multicollinearity exist among the IVs (Table 3). Moreover, the VIF values for CSR, ES and EL are well within the acceptable standard of 5 proposed by Hair et al. (2010).

<table>
<thead>
<tr>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSR</td>
<td>0.734</td>
</tr>
<tr>
<td>ES</td>
<td>0.734</td>
</tr>
<tr>
<td>EL</td>
<td>0.623</td>
</tr>
<tr>
<td>Dependent Variable: FP</td>
<td></td>
</tr>
</tbody>
</table>

3.2.5 Reliability Analyses
The value of Cronbach’s alpha for the sampling frame based on 37 distinctive items is 0.915, far above the minimum acceptable standard of 0.7 (Ursachi et al., 2015).

3.3 Inferential Analysis
3.3.1 Pearson’s Correlation Coefficient Analysis
Pearson’s correlation coefficient identifies the strength of association among IVs and DV. All IVs—CSR, ES and EL—are significantly correlated with FP (Table 4).

<table>
<thead>
<tr>
<th>Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td>FP</td>
</tr>
<tr>
<td>FP</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
### 3.3.2 Regression Analysis

The results of regression analysis, presented in Table 5, reveal that the hypothesized relationships between variables in this study are significant. Hypotheses are accepted if the p-value is less than 0.05.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Variable s</th>
<th>Model Summary</th>
<th>ANOVA</th>
<th>Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H1</td>
<td>CSR ➔ FP</td>
<td>0.293</td>
<td>1</td>
<td>127.712</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.541</td>
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<td>.066</td>
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<td></td>
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<td>11.301</td>
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<td>.000</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Supported</td>
</tr>
<tr>
<td>H2</td>
<td>CSR ➔ ES</td>
<td>0.377</td>
<td>1</td>
<td>186.406</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<td>0.614</td>
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<td>.050</td>
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<td></td>
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<td></td>
<td>13.653</td>
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<td></td>
<td>.000</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Supported</td>
</tr>
<tr>
<td>H3</td>
<td>CSR ➔ EL</td>
<td>0.266</td>
<td>1</td>
<td>111.868</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>0.516</td>
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<td>.058</td>
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<td>10.577</td>
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<td>.000</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Supported</td>
</tr>
<tr>
<td>H4</td>
<td>ES ➔ EL</td>
<td>0.284</td>
<td>1</td>
<td>122.023</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<td>0.000</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Supported</td>
</tr>
<tr>
<td>H5</td>
<td>ES ➔ FP</td>
<td>0.179</td>
<td>1</td>
<td>67.268</td>
</tr>
<tr>
<td></td>
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<td>.000</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Supported</td>
</tr>
<tr>
<td>H6</td>
<td>EL ➔ FP</td>
<td>0.211</td>
<td>1</td>
<td>82.333</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.000</td>
</tr>
<tr>
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<tr>
<td>H7</td>
<td>CSR ➔ ES ➔ FP</td>
<td>0.306</td>
<td>2</td>
<td>67.806</td>
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<tr>
<td>H8</td>
<td>CSR ➔ EL ➔ FP</td>
<td>0.337</td>
<td>2</td>
<td>78.090</td>
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<td></td>
<td></td>
<td></td>
<td>Supported</td>
</tr>
</tbody>
</table>
The results presented in Table 5 indicate that all correlations investigated are significant at the 5% level; thus, all hypotheses formed are supported by the data and validated. Hypotheses 7 and 8, that ES mediates the relationship between CSR and FP, and EL mediates the relationship between CSR and FP, respectively, were further verified using the Sobel test (Table 6). Both mediations are supported by the results.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Variables</th>
<th>Sobel test</th>
<th>Aroian test</th>
<th>Mediation established?</th>
</tr>
</thead>
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<tr>
<td></td>
<td></td>
<td>Test statistic</td>
<td>p-value</td>
<td>Test statistic</td>
</tr>
<tr>
<td>H7</td>
<td>CSR → ES → FP</td>
<td>2.370</td>
<td>0.018</td>
<td>2.361</td>
</tr>
<tr>
<td>H8</td>
<td>CSR → EL → FP</td>
<td>4.195</td>
<td>0.000</td>
<td>4.181</td>
</tr>
</tbody>
</table>

4. Conclusions and Implications
The study has achieved its objective by empirically substantiating the impact of CSR on FP through mediation by ES and EL. The model was tested through regression analysis and Sobel tests. The development of a new questionnaire and research models are also contributions to the existing literature, which can be further refined by future studies. This study reveals that ES and EL, enhanced by CSR activities, contribute to a better organizational culture and leads to better FP. Banks must use their resources to undertake CSR activities in ways that produce benefits for employees in order to attract and retain them.

As far as policy implications are concerned, there is an important role for government in promoting and enforcing CSR in banking sector. Government should apply a two-pronged strategy: first, motivating the banking sector to implement CSR initiatives with incentives, and second, ensuring strict implementation of CSR rules and guidelines. The publicity around various CSR activities and banks’ outreach to customer and employees is vital for enhancing public awareness. There is a lack of consensus on what activities should be included or excluded from the umbrella of CSR. Consequently, some firms may exaggerate their CSR activities to improve their image, while others may underreport CSR activities as they consider it “only” charity. Therefore, there is a need to more clearly define the various dimensions and activities that constitute CSR. The uniformity of CSR definitions can be increased in concert with international organizations.

5. Limitations and Recommendations
This study has the limitations inherent to cross-sectional research design, which was adopted primarily due to time and resource constraints. A future longitudinal and multi-method study that includes both quantitative and qualitative data collection may provide further theoretical details. This study examines CSR practices only in the banking sector and only in Pakistan. Future research may be conducted in other contexts, for instance, a wider region with a greater number of banks.

References


Board Gender Diversity as Corporate Governance Variable: The Influence on Audit Quality

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JEL Classification
M 4, G34, M42, G30

ABSTRACT

Purpose: This paper focused on the influence of gender diversity on audit quality of manufacturing companies that are listed on the Nigeria Stock Exchange for the period 2010 – 2018. The study investigates the influence of gender diversity as corporate governance variable on audit quality of listed manufacturing companies in Nigeria. The study recommends that firms should endeavor to diversify their board along gender line in order to appropriate the benefit of female directors.

Design/Methodology/Approach: Secondary data were collected from the audited annual reports of fifty eight (58) manufacturing companies that are listed on the Nigerian Stock Exchange and binary regression models (logit, probit and gombit) were used for the testing of the hypothesis. Findings: The result revealed that gender diversity has a positive and significant influence on audit quality for the full sample. Implications/Originality/Value: The study recommends that firms should endeavor to diversify their board along gender line in order to appropriate the benefit of female directors.

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1. Introduction

Corporate governance is the mechanism of directing and controlling the affairs of corporate institutions for effective managerial ability. “Corporate government is the combination of mechanism to ensure that the management (the agent) runs the firm for benefit of one or several stakeholders (principal), such may cover stakeholders, and other different types of stakeholders (mainly the large shareholders and minority shareholders) in prevention or migration of these conflicts of interest” (Ejeagbasi, Nweze, Ezeh & Nze, 2015, p. 18).

Corporate governance has several variables that can influence audit quality of listed companies. One of such variable is the gender diversity of the corporate board. Gender diversity is all about the proportion of female members on the board or females directors in the firms. The percentage of female members on
corporate board to a large extent may or may not influence the quality of auditor the company is to employed. The auditor of a corporate board determines the quality of the audited financial statement of the company that the potential investors are to rely on in order to ascertain the strength and weakness of the company. And this influences their investment decision on the firm. However, this work is going to properly examine the influence of gender diversity on audit quality of companies that are listed in Nigeria.

1.1 Statement of problem
Studies have been done on corporate governance variables on audit quality across the globe. However, very few has utilize board gender diversity as corporate governance variable on audit quality (Farouk & Hassan, 2014; Enofe, Mgban & Edegware, 2014; Ilaboya & Ohiokha, 2014; Okaro, Okafor & Okoye, 2015; Ejeagbasi, Nweze & Nze, 2015; Peel & Makepeace, 2002; Puthenpurachal & Upadhijay, 2009; Ruiz-Barbadilo, Gomez-Aquilar, Fruentes-Barbra & Garcia-Ben 2004, Adams & Ferreira, 2009; Ho & Kang, 2013). In order to fill this gap in the literature, this research was motivated to explore gender diversity influence on audit quality of manufacturing companies that are listed in Nigeria.

1.2 Objective of the study
The main objective of this study is to examine the influence of gender diversity on audit quality of listed companies in Nigeria. However, the specific objective is to determine the effect of gender diversity on audit quality of listed manufacturing companies in Nigeria.

1.3 Research Question
What influence does gender diversity has on audit quality of companies that are listed in Nigeria?

1.4 Research Hypothesis
The hypothesis is stated in null and alternative form.

H₀: Gender diversity does not have a significant relationship with audit quality of companies that are listed in Nigeria.

H₁: Gender diversity has significant relationship with audit quality of companies that are listed in Nigeria.

1.5 Scope of the Study
The study focus on gender diversity influences on audit quality of listed manufacturing companies in Nigeria for the period 2010 - 2018. The fifty eight (58) manufacturing companies that are listed on the Nigeria Stock Exchange were used for this study, i.e. health sector, ten companies; agricultural sector, five companies; consumer goods sector, twelve companies; oil and gas, twelve companies; natural resources sector, four companies and conglomerate sector six companies.

2. Methodology
2.1 Research Design
A robust design of panel data was utilized in this study and this may be seen as a combination of both the time series and cross-sectional design properties. Panel analysis permits the researcher to study the change dynamics with short time series.

2.2 Population of the Study
The study population is made up of the fifty eight (58) manufacturing companies that are listed on the Nigerian Stock Exchange (NSE) floor as at December, 2018.

2.3 Sample Size and Sampling Techniques
The entire fifty eighty (58) manufacturing firms quoted on the Stock Exchange of Nigeria were selected. As observed, the researcher intends to consider the entire population as sample size because the number of listed manufacturing firms is not in-exhaustive and that the data could be accessed.
2.4 Sources of Data
Secondary data were employed in this study. The secondary data were sourced from the audited annual report of manufacturing companies that are quote on the Nigerian Stock Exchange between the periods 2010-2018.

2.5 Method of Data Analysis
The binary regression analysis was used in this study. The choice of the binary regression analysis is centered on the ground that the dependent variable is binary, which is 0 and 1. The Logit, Probit and Gompit are the three binary regression models used in this study. The choice of this tool is that it has the aim of attaining a functional association which exists between the transformed qualitative variable known as logit, probit or gompit as well as the predictor variable that can either be qualitative or quantitative. Also, the failure of the multiple regression models to give way to coefficients that are reliable as well as inference statistic in a condition where the dependent variable is binary also necessitated the use of binary regression method.

2.6 Model Specification
This study adopts Ilaboya and Ohiokha (2014) model. The model for Ilaboya and Ohiokha (2014) is stated below:

\[ \text{AUDQUL}_{it} = \alpha_0 + \alpha_1 \text{AUDTEN}_{it} + \alpha_2 \text{AUDIND}_{it} + \alpha_3 \text{AUDSIZE}_{it} + \alpha_4 \text{COYSIZE}_{it} + \alpha_5 \text{BODIND}_{it} + \mu_{it} \]  

Where,
AUDQUL = Audit Quality
AUDTEN = Audit Tenure
AUDIND = Auditor Independence
AUDSIZE = Audit Firm Size
COYSIZE = Company Size
BODIND = Board Independence
\( \mu \) = Error term.

Premised on the model above, the functional form of the current study derives its model thus:

\[ AQ = f (BGD) \]  

(i)

Where:
BGD = Board Gender Diversity

In order to account for variable omission bias, the study will use audit tenure, as control variable. When this control variable is incorporated into the model above, the functional form of the model will be:

\[ AQ = f (BGD, ATEN) \]  

(ii)

Where:
ATEN - Audit Tenure

However, the equation above could be restated in a binary regression form as:

Logit\((AQ)\) = \( \ln \left( \frac{P(AQ)}{1-P(AQ)} \right) = \gamma_0 + \gamma_1 BGD + \gamma_2 ATEN + \mu \)  

(iii)

Probit\((AQ)\) = \( \ln \left( \frac{P(AQ)}{1-P(AQ)} \right) = \gamma_0 + \gamma_1 BGD + \gamma_2 ATEN + \mu \)  

(iv)

Gompit\((AQ)\) = \( \ln \left( \frac{P(AQ)}{1-P(AQ)} \right) = \gamma_0 + \gamma_1 BGD + \gamma_2 ATEN + \mu \)  

(v)

\( \gamma_0 \) = Constant
\( \gamma_1, \gamma_2 \) = Unknown coefficients of the variables
\( \mu \) = Error term

Decision
The decision rule is for the null hypothesis to be rejected and the alternate hypothesis to be accepted, where the value of the probability is less than 0.05 or accept the null hypothesis (H0) and reject the
alternate hypothesis (HA) where, the value of the probability is equal to or greater than 0.05.

### 2.7 Measurement of Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Measurement</th>
<th>Nature</th>
<th>Notation</th>
<th>Source/Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audit Quality</td>
<td>The size of the audit firm (Big 4 or non-Big 4) is been used as a proxy for audit quality.</td>
<td>Dependent</td>
<td>AQ</td>
<td>Enofe et al. (2014)</td>
</tr>
<tr>
<td>Board Gender Diversity</td>
<td>Number of females on the board</td>
<td>Independent</td>
<td>BGD</td>
<td>Post and Byron (2015)</td>
</tr>
<tr>
<td>Audit Tenure</td>
<td>Length of auditor-client relationship ‘1’ if 3 years and ‘0’ if otherwise</td>
<td>Control</td>
<td>ATEN</td>
<td>Nwanyanwu (2017)</td>
</tr>
</tbody>
</table>

Source: Researcher, 2020

### 3.1 Presentation and Analysis of Data

#### Table 3.1: Descriptive Statistics

<table>
<thead>
<tr>
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<th>BGD</th>
<th>ATEN</th>
</tr>
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<tr>
<td><strong>FULL SAMPLE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>0.521</td>
<td>0.093</td>
<td>4.743</td>
</tr>
<tr>
<td>Maximum</td>
<td>1.000</td>
<td>0.670</td>
<td>13.000</td>
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<tr>
<td>Minimum</td>
<td>0.000</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>0.500</td>
<td>0.117</td>
<td>2.739</td>
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<td>Jarque-Bera</td>
<td>84.168</td>
<td>796</td>
<td>24.572</td>
</tr>
<tr>
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<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Obs.</td>
<td>505</td>
<td>505</td>
<td>505</td>
</tr>
<tr>
<td><strong>CONSUMER GOODS SAMPLE</strong></td>
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<td></td>
<td></td>
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<tr>
<td>Mean</td>
<td>0.705</td>
<td>0.118</td>
<td>4.757</td>
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<tr>
<td>Maximum</td>
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<td>0.400</td>
<td>13.000</td>
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<td>Minimum</td>
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<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>0.457</td>
<td>0.101</td>
<td>2.849</td>
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<tr>
<td>Jarque-Bera</td>
<td>33.565</td>
<td>9.794</td>
<td>11.065</td>
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<td>Probability</td>
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<td>0.004</td>
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<td>Obs.</td>
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<td>173</td>
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<td><strong>OIL &amp; GAS AND NATURAL RESOURCES SAMPLES</strong></td>
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<tr>
<td>Mean</td>
<td>0.375</td>
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<td>4.861</td>
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<tr>
<td>Maximum</td>
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<td>0.670</td>
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<td>Minimum</td>
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<td>0.000</td>
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<tr>
<td>Std. Dev.</td>
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<td>0.152</td>
<td>2.818</td>
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<td>Jarque-Bera</td>
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<td>9.593</td>
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<tr>
<td>Mean</td>
<td>0.486</td>
<td>0.071</td>
<td>4.631</td>
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<tr>
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<td>0.380</td>
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<tr>
<td>Minimum</td>
<td>0.000</td>
<td>0.000</td>
<td>1.000</td>
</tr>
</tbody>
</table>
Where; AQ = Audit Quality; BGD = Board Gender Diversity; ATEN = Audit Tenure.

The above Table 3.1 shows the outcome of the descriptive statistics for the various variables. As indicated in the full sample, AQ measured by using 1 if the sampled firms used big-4, otherwise 0 is used. The descriptive statistics show a mean value of approximately 1 (0.521) which indicates that on the average, the sample firms used big-4 audit firms which indicates that more of the sample firms are audited by industry specialized audit firm. The standard deviation is 0.500, indicating the extent of dispersion of the mean from the distribution. BGD measured as ratio of female directors to the total number of the board size with the mean value of 0.093 which indicates that 9.3% of the board size consists of female directors with a standard deviation of 0.117. On the control variable, ATEN measured by the number of years the audit firm has been engaged shows a mean value of 4.743 which indicates that on the average, the auditor-audittee length of relationship for the sampled firms is about 4 years with a standard deviation of 2.739. The probability Jarque-Bera statistics values being less than 0.05 for all variables respectively indicates the absence of outliers, therefore there is evidence of normality.

On the sub-samples, for consumer goods sector, AQ shows a mean value of approximately 1 (0.705) which indicates that on the average, the consumer goods sector firms used big-4 audit firms which indicates that more of the sampled firms are audited by industry specialized audit firm with a standard deviation of 0.457. BGD that is having the mean value of 0.118 indicates that 11.8% of the consumer sector firm’s board size consists of female directors with a standard deviation of 0.101. On the control variable, ATEN shows a mean value of 4.757 which indicates that on the average, the auditor-audittee length of relationship for the consumer sector firms is about 4 years with a standard deviation of 2.849. The probability Jarque-Bera statistics values being less than 0.05 for all variables respectively indicates the absence of outliers, therefore there is evidence of normality.

For oil & gas and other natural resources sector, AQ shows a mean value of 0.375 which indicates that on the average, the oil & gas and other natural resources sector firms used non-big-4 audit firms which indicates that more of the oil & gas and other natural resources sector sampled firms are audited by non-industry specialized audit firm with a standard deviation of 0.486. BGD has a mean value of 0.095 which indicates that about 9.5% of the oil & gas and other natural resources sector sampled firms board size consists of female directors with a standard deviation of 0.152. On the control variable, ATEN shows a mean value of 4.861 which indicates that on the average, the auditor-audittee length of relationship for oil & gas and other natural resources sector sampled firms is about 4 years with a standard deviation of 2.818.

For conglomerate, health and agricultural sectors, AQ shows a mean value of 0.486 which indicates that on the average, the conglomerate, health and agricultural sectors firms used non-big-4 audit firms which indicates that more of the conglomerate, health and agricultural sectors firms are audited by non-industry specialized audit firm with a standard deviation of 0.501. BGD has a mean value of 0.071 which indicates that about 7.1% of the conglomerate, health and agricultural sectors firms’ board size consists of female directors with a standard deviation of 0.094. On the control variable, ATEN shows a mean value of 4.631 which indicates that on the average, the auditor-audittee length of relationship in the conglomerate, health and agricultural sectors firms is about 4 years with a standard deviation of 2.594. The probability Jarque-Bera statistics values being less than 0.05 for all variables respectively indicates the absence of outliers, therefore there is evidence of normality.
Table 3.2: Correlation Result

<table>
<thead>
<tr>
<th></th>
<th>AQ</th>
<th>BGD</th>
<th>ATEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>FULL SAMPLE</td>
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<tr>
<td>AQ</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BGD</td>
<td>0.198*</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ATEN</td>
<td>0.002</td>
<td>0.074</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>(0.955)</td>
<td>(0.097)</td>
<td></td>
</tr>
<tr>
<td>CONSUMER GOODS SAMPLE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AQ</td>
<td>1</td>
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</tr>
<tr>
<td>BGD</td>
<td>0.280*</td>
<td>1</td>
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<tr>
<td></td>
<td>(0.000)</td>
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<tr>
<td>ATEN</td>
<td>0.100</td>
<td>-0.028</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>(0.186)</td>
<td>(0.717)</td>
<td></td>
</tr>
<tr>
<td>OIL &amp; GAS AND NATURAL RESOURCES SAMPLE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AQ</td>
<td>1</td>
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<td></td>
</tr>
<tr>
<td>BGD</td>
<td>-0.145</td>
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<tr>
<td></td>
<td>(0.083)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ATEN</td>
<td>-0.202*</td>
<td>0.093</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>(0.015)</td>
<td>(0.266)</td>
<td></td>
</tr>
<tr>
<td>CONGLOMERATE, HEALTH AND AGRICULTURAL SAMPLE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AQ</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BGD</td>
<td>0.459*</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ATEN</td>
<td>0.087</td>
<td>0.162*</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>(0.248)</td>
<td>(0.030)</td>
<td></td>
</tr>
</tbody>
</table>

Source: Researcher’s compilation, 2020

The above table 3.2 examined the coefficients of correlation of the various variables. The focus of our analysis here is how the dependent variable (Audit quality) correlates with the other variables. For the full sample, we ascertained that AQ is found to have a positive correlation with BGD ($r = 0.198$), ATEN ($r = 0.002$). For the consumer goods sector sample, we deduced that AQ is found to have a positive correlation with, BGD ($r = 0.280$), ATEN ($r = 0.100$), with exception to ATEN, all other variables exhibit significant relationship with AQ at 5% level of significance. For the oil and gas as well as other natural resources sector sample, we noticed that AQ is found to be negatively correlated with BGD ($r = -0.145$), ATEN ($r = -0.202$). Finally, for the consumer goods sector sample, we found that AQ is also noticed to have a correlation that is positive with BGD ($r = 0.459$), ATEN ($r = 0.087$) with exception to ATEN, all other variables exhibit significant relationship with AQ at 5% level of significance.

### 3.2 Binary Regression Results

Logit, Probit and Gompit are the three binary regression models that are mostly used were adopted in the study. The difference in the models is centered on the assumptions of the types of their probability distribution. The cumulative logistic probability distribution is followed by the Logit binary regression, the cumulative normal distribution is assumed by the binary Probit while the generalized extreme value distribution is followed by the Gompit binary regression. The Probit as well as the Logit regressions uses the symmetric link function while the Gompit regression make use of the asymmetric link function that is known to have been given by quartile function of the generalized extreme value random variable. The obtained binary regression results are presented in Table 3.3.
### Table 3.3: Binary Regression Results (Full sample)

<table>
<thead>
<tr>
<th></th>
<th>Model 3 (Binary Logit)</th>
<th>Model 4 (Binary Probit)</th>
<th>Model 5 (Binary Gompit)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
<td>A</td>
</tr>
<tr>
<td><strong>C</strong></td>
<td>-4.577*</td>
<td>-7.562*</td>
<td>-2.658*</td>
</tr>
<tr>
<td></td>
<td>(-6.025) {0.000}</td>
<td>(-6.703) {0.000}</td>
<td>(-6.137) {0.000}</td>
</tr>
<tr>
<td><strong>BGD</strong></td>
<td>5.594*</td>
<td>5.204*</td>
<td>3.314*</td>
</tr>
<tr>
<td></td>
<td>(6.018) {0.000}</td>
<td>(5.033) {0.000}</td>
<td>(6.050) {0.000}</td>
</tr>
<tr>
<td><strong>ATEN</strong></td>
<td>-0.067</td>
<td>-0.036</td>
<td>-0.036</td>
</tr>
<tr>
<td></td>
<td>(-1.510) {0.131}</td>
<td>(-1.406) {0.160}</td>
<td>(-1.744) {0.081}</td>
</tr>
<tr>
<td><strong>McFadden R-Squared LR Statistics</strong></td>
<td>0.287</td>
<td>0.370</td>
<td>0.286</td>
</tr>
<tr>
<td></td>
<td>(204.289) {0.000}</td>
<td>(259.035) {0.000}</td>
<td>(203.391) {0.000}</td>
</tr>
<tr>
<td><strong>Probability distribution</strong></td>
<td>513</td>
<td>505</td>
<td>513</td>
</tr>
<tr>
<td><strong>N Obs with Dep = 0</strong></td>
<td>248</td>
<td>242</td>
<td>248</td>
</tr>
<tr>
<td><strong>Obs with Dep = 1</strong></td>
<td>265</td>
<td>263</td>
<td>265</td>
</tr>
</tbody>
</table>

Note: (1) Parentheses () are Z-statistic; {} are probability values
(2) * 5% significance level respective
(3) a: model without control variables; b: model with control variables
Source: Researchers Compilation, 2020

All the three estimations (Logit, Probit and Gompit) are observed in table 3.3 above. To choose from the models, the LL known as the Log Likelihood was adopted adequately. The concurrence is that, the higher the LL value, the better the results becomes. The techniques of other selected model were not considered. When the goodness-of-fits for these models is been compared, the Akaike Information Criterion (AIC) was really not used for the control of the parameters since all of them have the parameters that are the same. The Bayesian Information Criterion (BIC) was as well not used for the control of the number of observations, given that all the three models employed full samples of 513, 180 sample companies (consumer goods sample), 144 samples companies (oil & gas and natural resources sample) and 180 sample companies (conglomerate, health and agricultural sample). Each of the binary model were estimated: first excluding control variable; and second including control variable (ATEN). The result appears better in each of the model with the inclusion of control variable because the various explanatory variables jointly explain more changes in the dependent variable (AQ). The McFadden R-squared value that appears to be from the three binary regression results with the inclusion of the control variable (column b in Logit, Probit and Gompit models) indicate that, using the Logit estimation, about 37% was explained in the model, the model also explain about 37.3% when the Probit estimation was.
used and using the Gompit estimation, 38.3% result of dependent variable were explained in the model. Looking at the three models, the LR statistics in the models shows that all of them were found to be statistically significant and fit in giving explanation to the dependent variable result. The specifics outcome of the three binary regression models was based on Maximum Likelihood Huber/White Heteroskedasticity-consistent standard errors a covariance. This means that the reported binary regression outcome is free from the problem of Heteroskedasticity which is commonly related with cross-sectional data. In giving analysis of the marginal effects of the selected independent variables, it is ascertained that BGD appears to have a significant (@ 5%) and positive effect (Logit output, $\beta_4 = 5.204$, Probability = 0.000; Probit output; $\beta_4 = 3.059$, Probability = 0.000; Gompit output; $\beta_4 = 3.438$, Probability = 0.000) on the likelihood that a firm has audit quality. On the control variable, ATEN appears to have an insignificant (@ 5%) and negative effect (Logit output, $\beta_7 = -0.067$, Probability = 0.131; Probit output; $\beta_7 = -0.036$, Probability = 0.160; Gompit output; $\beta_7 = -0.052$, Probability = 0.081) on the likelihood that a firm has audit quality.

Table 3.4: Binary Regression Results (Consumer Goods Sample)

<table>
<thead>
<tr>
<th>Model 3 (Binary Logit)</th>
<th>Model 4 (Binary Probit)</th>
<th>Model 5 (Binary Gompit)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td><strong>C</strong></td>
<td>-7.562*</td>
<td>(-4.833)</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
</tr>
<tr>
<td><strong>BGD</strong></td>
<td>6.448*</td>
<td>(2.868)</td>
</tr>
<tr>
<td></td>
<td>(0.004)</td>
<td>(0.012)</td>
</tr>
<tr>
<td><strong>ATEN</strong></td>
<td>-0.025</td>
<td>(-0.279)</td>
</tr>
<tr>
<td></td>
<td>(0.781)</td>
<td>(0.781)</td>
</tr>
<tr>
<td><strong>McFadden R-Squared</strong></td>
<td>0.341</td>
<td>0.461</td>
</tr>
<tr>
<td><strong>LR Statistics</strong></td>
<td>76.099*</td>
<td>96.792*</td>
</tr>
<tr>
<td><strong>Probability distribution</strong></td>
<td>Logistic</td>
<td>Logistic</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>180</td>
<td>173</td>
</tr>
<tr>
<td><strong>Obs with Dep = 0</strong></td>
<td>56</td>
<td>51</td>
</tr>
<tr>
<td><strong>Obs with Dep = 1</strong></td>
<td>124</td>
<td>122</td>
</tr>
</tbody>
</table>

Note: (1) Parentheses ( ) are Z-statistic; { } are probability values
(2) * 5% significance level respective
(3) a: model without control variables; b: model with control variables
Source: Researchers Compilation (2020)

In Table 3.4, we observed that the binary regression results for the consumer goods sector sample. The
value of the McFadden R-squared from the outcome of the three binary regression results indicates that the model explains about 46.1% when using the Logit estimation, about 46.2% was also explained in the model when the Probit estimation was used and using the Gompit estimation, the model then explains about 48.4% of the dependent variable result.

Looking at the three models, the LR statistics in the models shows that all of them were found to be statistically significant and fit in giving explanation to the dependent variable result. In giving the analysis of marginal effects of the explanatory variables that are selected, it is ascertained that BGD appears to have a positive and significant \( @ 5\% \) effect (Logit output, \( \beta_4 = 7.005 \), Probability = 0.012; Probit output; \( \beta_4 = 4.046 \), Probability = 0.010; Gompit output; \( \beta_4 = 6.313 \), probability = 0.008) on the likelihood that a firm has audit quality. On the control variable, ATEN appears to have a negative and insignificant \( @ 5\% \) effect (Logit output, \( \beta_7 = -0.025 \), Probability = 0.781; Probit output; \( \beta_7 = -0.009 \), Probability = 0.861; Gompit output; \( \beta_7 = -0.050 \), Probability = 0.482 on the likelihood that a firm has audit quality.

### Table 3.5: Binary Regression Results (Oil & Gas and Natural Resources Samples)

<table>
<thead>
<tr>
<th></th>
<th>Model 3 (Binary Logit)</th>
<th>Model 4 (Binary Probit)</th>
<th>Model 5 (Binary Gompit)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
<td>A</td>
</tr>
<tr>
<td>C</td>
<td>1.729</td>
<td>(-1.964)</td>
<td>0.839</td>
</tr>
<tr>
<td></td>
<td>(0.771)</td>
<td>(0.551)</td>
<td>(0.652)</td>
</tr>
<tr>
<td>BGD</td>
<td>-1.086</td>
<td>(-0.592)</td>
<td>-0.439</td>
</tr>
<tr>
<td></td>
<td>(-0.477)</td>
<td>(0.554)</td>
<td>(-0.383)</td>
</tr>
<tr>
<td>ATEN</td>
<td>-1.141</td>
<td>(-1.401)</td>
<td>0.072</td>
</tr>
<tr>
<td></td>
<td>(-1.061)</td>
<td>(0.161)</td>
<td>(-1.261)</td>
</tr>
<tr>
<td>McFadden R-Squared</td>
<td>0.456</td>
<td>0.534</td>
<td>0.458</td>
</tr>
<tr>
<td>LR Statistics</td>
<td>86.937*</td>
<td>101.748*</td>
<td>87.305*</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
</tr>
<tr>
<td>Log Likelihood (LL)</td>
<td>51.796</td>
<td>-44.391</td>
<td>-51.612</td>
</tr>
<tr>
<td>Probability distribution</td>
<td>Logistic</td>
<td>Logistic</td>
<td>Normal</td>
</tr>
<tr>
<td>N</td>
<td>144</td>
<td>144</td>
<td>144</td>
</tr>
<tr>
<td>Obs with Dep = 0</td>
<td>90</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td>Obs with Dep = 1</td>
<td>54</td>
<td>54</td>
<td>54</td>
</tr>
</tbody>
</table>

Note: (1) Parentheses ( ) are Z-statistic; { } are probability values
(2) * 5% significance level respective
(3) a: model without control variables; b: model with control variables
Source: Researchers Compilation (2020)

In Table 3.5, we observed the binary regression results for the oil & gas and natural resources sector sample. The McFadden R-squared value from the three binary regression output revealed that about 53.4% of the model was explains when using the Logit estimation, using the Probit estimation, about 53.8% was explained in the model and when the Gompit estimation was used, the model then explains
about 53.9% of the dependent variable result. Looking at the three models, the LR statistics in the model shows that all of them were found to be statistically significant and fit in giving explanation to the dependent variable result. When analyzing the marginal effects of the independent variables that are selected, it is ascertained that BGD appears to have a negative and insignificant [@ 5%] effect (Logit output, $\beta_4 = -1.945$, Probability = 0.554; Probit output; $\beta_4 = -0.895$, Probability = 0.625; Gompit output; $\beta_4 = 0.033$, Probability = 0.985) on the likelihood that a firm has audit quality. On the control variable, ATEN appears to have an insignificant [@ 5%] and negative effect (Logit output, $\beta_7 = -0.141$, Probability = 0.161; Probit output; $\beta_7 = 0.072$, Probability = 0.207; Gompit output; $\beta_7 = -0.064$, Probability = 0.337) on the likelihood that a firm has audit quality.

### Table 3.6: Binary regression results (Conglomerate, Health and Agriculture Sample)

<table>
<thead>
<tr>
<th></th>
<th>Model 3 (Binary Logit)</th>
<th>Model 4 (Binary Probit)</th>
<th>Model 5 (Binary Gompit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>-2.166</td>
<td>-14.528</td>
<td>-1.356</td>
</tr>
<tr>
<td></td>
<td>(-1.030)</td>
<td>(-3.584)</td>
<td>(-1.084)</td>
</tr>
<tr>
<td></td>
<td>(0.308)</td>
<td>(0.000)</td>
<td>(0.278)</td>
</tr>
<tr>
<td>B</td>
<td>-14.528</td>
<td>15.689</td>
<td>-8.386*</td>
</tr>
<tr>
<td></td>
<td>(-3.584)</td>
<td>(4.524)</td>
<td>(-3.695)</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
</tr>
<tr>
<td>C</td>
<td>-1.356</td>
<td>9.314*</td>
<td>-1.469</td>
</tr>
<tr>
<td></td>
<td>(-1.084)</td>
<td>(6.123)</td>
<td>(-1.139)</td>
</tr>
<tr>
<td></td>
<td>(0.278)</td>
<td>(0.000)</td>
<td>(0.255)</td>
</tr>
<tr>
<td>B</td>
<td>9.314*</td>
<td>9.005*</td>
<td>11.809*</td>
</tr>
<tr>
<td></td>
<td>(6.123)</td>
<td>(4.943)</td>
<td>(5.585)</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
</tr>
<tr>
<td>ATEN</td>
<td>-0.163</td>
<td>-0.099</td>
<td>-0.103</td>
</tr>
<tr>
<td></td>
<td>(-1.632)</td>
<td>(-1.727)</td>
<td>(-1.321)</td>
</tr>
<tr>
<td></td>
<td>(0.103)</td>
<td>(0.084)</td>
<td>(0.186)</td>
</tr>
<tr>
<td>B</td>
<td>-0.163</td>
<td>-0.099</td>
<td>-0.103</td>
</tr>
<tr>
<td></td>
<td>(-1.632)</td>
<td>(-1.727)</td>
<td>(-1.321)</td>
</tr>
<tr>
<td></td>
<td>(0.103)</td>
<td>(0.084)</td>
<td>(0.186)</td>
</tr>
<tr>
<td>McFadden R-Squared LR Statistics</td>
<td>0.362</td>
<td>0.541</td>
<td>0.361</td>
</tr>
<tr>
<td></td>
<td>90.358*</td>
<td>134.203*</td>
<td>90.010*</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
</tr>
<tr>
<td>N Obs with Dep = 0</td>
<td>180</td>
<td>179</td>
<td>180</td>
</tr>
<tr>
<td>N Obs with Dep = 1</td>
<td>93</td>
<td>92</td>
<td>93</td>
</tr>
</tbody>
</table>

Note: (1) Parentheses () are Z-statistic; { } are probability values
(2) * 5% significance level respective
(3) a: model without control variables; b: model with control variables
Source: Researchers Compilation (2020)

In Table 3.6, we observed the binary regression results for the conglomerate, health and agriculture sector sample. The McFadden R-squared value from the three binary regression results indicates that using the Logit estimation, about 53.4% was explained in the model, using the Probit estimation, about 53.8% was explained in the model and using the Gompit estimation, 53.9% of the outcome of the dependent variable was also explains in the model. Looking at the three models, the LR statistics in the model shows that all of them were found to be statistically significant and fit in giving explanation to the dependent variable result. In investigating the marginal effects of the selected independent variables, it is ascertained that BGD appears to have a positive and significant [@ 5%] effect (Logit output, $\beta_4 = 15.689$, Probability = 0.000; Probit output; $\beta_4 = 9.005$, Probability = 0.000; Gompit output; $\beta_4 = 12.829$, Probability = 0.000).
Probability = 0.000) on the likelihood that a firm has audit quality. On the control variable, ATEN appears to have an insignificant {@ 5%} and negative effect (Logit output, β7 = -0.163, Probability = 0.103; Probit output; β7 = -0.099, Probability = 0.084; Gompit output; β7 = -0.103, probability = 0.186 on the likelihood that a firm has audit quality.

3.3 Test of Hypothesis and Discussion of the Result
In the discussion of the result, the full sample estimation result is utilized.

3.4 Board Gender Diversity and Audit Quality
The empirical estimates from our evaluation of the relationship between board gender diversity and the quality of audit revealed a relationship that is positive. Board gender diversity appears to have a significant {@ 5%} and positive effect (Logit output, β4 = 5.204, Probability = 0.000; Probit output; β4 = 3.059, Probability = 0.000; Gompit output; β4 = 3.438, Probability = 0.000) on the likelihood that a firm has audit quality. Consequently, we reject the null hypothesis (H0) that board gender diversity does not have a significant relationship with audit quality. The reason for the positive relationship between board gender diversity and that of audit quality is because of the reputational effect that is associated with the presence of female at the board level (Brammer et al., 2008). In the same vein, boards with women directors have lower director attendance problems and the Chief Executive Officer (CEO) turnover in such firm is more sensitive to firm performance, consistent with more effective monitoring (Adams & Ferreira, 2009).

4. Conclusion
The progression of well-publicized cases of inappropriateness around the world, particularly those of Enron and WorldCom, and the indictment of the external auditors in these cases raised doubt about the quality of audited financial statement. This has stirred the regulatory organizations as well as professional to recommend reforms that will improve how entities are directed and controlled. For instance, in the United States, the Public Investors Protection Acts (2002) was passed. Nigeria was not left out in this global trend, several codes of corporate governance were issued by regulatory bodies like the Securities and Exchange Commission (SEC) codes on corporate governance (SEC, 2003, 2011, 2014) and the most recent code issued by Financial Reporting Council of Nigeria (FRCN, 2018). These innovations were aimed at forestalling subsequent corporate scandals. These have effects in diverse areas of corporate entities such as reporting and audit quality. In the light of the above, this paper aimed to critically examine the association existing between the corporate governance and audit quality in Nigeria. Specifically, the study looked at the effects of board gender diversity on the quality of audit.

Board gender diversity appears to have a significant and positive influence on audit quality for the full sample, consumer goods sector, conglomerate, health and agricultural sector using the three estimation techniques (Logit, Probit and Gompit). For oil & gas and natural resource sample, the result showed inverse insignificant relationship with audit quality using Logit and Probit estimation technique while positive insignificant relationship using the Gompit estimation technique.

5. Recommendation
The study therefore recommend that: female director exhibit significant impact, therefore, firm should endeavor to diversify their board along gender line in order to appropriate the benefits female directors bring to corporate board. The importance of board gender diversity is also supported by the FRCN (2018) that corporate board should be diversified along several factors and one of such is gender diversity.

6. Acknowledgement
This article is part of my Ph.D research theses titled effects of corporate governance on audit quality of manufacturing companies that are listed on the Nigerian stock exchange. I also acknowledge my Thesis supervisor Prof Emma I. Okoye.
References


HR Practices and Employee Retention in the Banking Sector of Pakistan

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ARTICLE DETAILS

ABSTRACT

Purpose: Human Resource is one of the most valuable resources in any organization and its contribution is massive everywhere in the world. Human Resources (HR) practices can be helpful to retain valued employees. This study examines the role and association between HR practices and employee retention. HR practices include training & development, compensation, job security, working environment, leadership and culture & policies. Major objective of this study is indentify the roele and effect of HR practices on employee retention in banking sector of Pakistan. Design: The population of this study consists of 8 major banks of Pakistan including public, private, Islamic and foreign banks. The mixed-method was employed to get the data through interviews and questionnaires. Simple random sampling and stratified random were used for interviews and questionnaires respectively. Findings: Findings of the study indicate that compensation; job security, training & development, working environment and leadership practices have a significant association with employee retention. These variables also play a very imperative role in employee retention except job security. The culture & policies have no significant association and role on employee retention. Value: The research findings may help the policymakers to prioritize the areas of instant concerns and invest resources as per the local requirement of staff for their retention in the banking sector of Pakistan.

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1. Introduction

Human Resources are the most imperious element in any organization. Although an organization has substantial economic and technological resources, yet it cannot endure without an efficient workforce. The organization can achieve its objectives by improving the performance and productivity of staff by implementing the best HR practices. Therefore in the recent era, many modern organizations invest
more in HR to get better and efficient consequences. The retention of employees and building their commitment to the organization always remain a challenge for every organization and manager. Thus, organizations are exerting energies and efforts at their full length for satisfaction and retention of staff. Employee retention has not only become a challenge for the organizations in the current era but also posing a great peril in financial terms as well. To manage this phenomenon is important for all types of organizations especially for the services sector because it has a direct relation with their customers. The turnover impact and pattern would differ from one sector to another but it is more important for the service sector. The turnover should be reduced in all sectors because it curtails productivity and output. There is a need to develop and implement the comprehensive plan and strategies to attract, develop and retain the staff in the organization for the long term (Shahid, 2017). The quality for customer service is very important in the service sector and bank staff plays a vibrant role to provide quality services to the clients. The manager should take necessary measures for the retention of staff to deliver efficient and consistent quality services to the clients (George & Zakkariya, 2015).

Stavrou-Costea (2005) argues that effective HR practices are the base to retain the employees and finds a significant association between HR practices and employee retention. Abeysekera (2007) states that an organization can reduce employee turnover by implementing the best HR practices.

The banking industry is playing a vibrant role in the economy of Pakistan. The Government of Pakistan is facilitating the foreign investor for motivation and attraction for investment in the banking sector. The multinational banks also flourishing in the country by providing alternative opportunities to experienced staff. Currently, there is a tendency to hire talented/capable and trained employees with professional skills to compete in the market. Bilal et al. (2015) state that turnover is a major problem for all firms especially for the banks and due to competitive pressure it is challenging for the banks to retain brilliant staff. The major objectives of the study are as under.

1. To determine the factors effecting employee retention in the banking sector.
2. To identify an association and role between selected HR practices and employee retention?

2. Literature Review
Various evidence is available in the literature that indicates that HRM plays a very vibrant role to raise employee retention in the organization. Many techniques, strategies and methods are available to get competitive advantages in the market and one of the best methods for the organization to implement effective HR practices (Narsimha, 2000). Dei Mensah (2014) states that HRM practices are mandatory for the financial sector particularly for the banking sector due to competition and the global financial system. Thus, there is a dire need of a proactive and strategic approach to retain and motivate the employees for a long period.

2.1. Training & Development
The dearth of training & development practices has a significant effect on staff high intention to leave the firms (Chew, 2004; Shoaib 2009). The staff feels that their strengths and abilities have been increased due to training which contributes positively to employee retention (Waleed, 2011). Ngethe (2013) concludes that in the current competitive and global era, employee retention and productivity can be increased with the help of comprehensive training programs. Neog and Barua (2015) state that if the organization is providing the training and development breaks to the staff, it will increase their retention rate. In light of the above discussions, the following hypothesis can be developed.

**H 1**: There is a significant relationship and role between Training & development and employee retention in the banking sector of Pakistan.

2.2. Compensation Practices
The major objective of the compensation practices is to attract, motivate and retain the staff for the success and improvement in productivity of the firm (Armstrong, 2010). Attractive remuneration is one of the major and basic factors for employee retention because it fulfills the material and monetary desires of the staff to maintain their standard of living and status (Shoaib et al., 2009). Kotachachu
 concludes from his study, the turnover rate of staff is high when the compensation is less than the market and other competing firms in the industry. One of the basic reasons regarding lower retention level of staff is lower incentives, allowances and salary offered by the firm.(Chikaji et al.,2016). In light of the above discussions, the following hypothesis can be developed.

**H 2:** There is a strong relationship and role between compensation and employee retention in the banking sector of Pakistan.

### 2.3. Job Security

The job security of staff in the public and private sectors including the banking sector has a significant and positive association with employee retention (Samuel and Chipunza, 2009). The continuity and security of work is a significant and major contributor to staff retention and satisfaction (Milne, 2007). The staff will be more committed and motivated with the work in case of job security. The research indicates that job security is a major and vital factor to enhance employee retention (Alzayed and Murshid, 2017). It is the need of the current era because some employees cogitate it more imperative than compensation and promotion. In light of the above discussion, the following hypothesis can be developed.

**H 3:** There is significant relationship and role between job security and employee retention in the banking sector of Pakistan.

### 2.4. Leadership

Leadership is very important because the leader’s behaviour can build or ruin the organization. Taylor (2004) posits that the firms should not depend on the HR department to resolve the issue of staff retention rather this obligation should be given to the leaders/managers for its proper and easy solution. Paille et al., (2013) state in their study, if the staff has confidence on the supervisor and also has support from him then the retention rate of staff is very high and vice versa. Nwokocha and Iheriohanma (2015) conclude from their study, staff performance and retention could be enlarged with the support of appropriate leadership practices. The authors also stated that leadership is also helpful for appropriate business strategies to escalate employee morale and motivation. The leadership practices are important and main factors to decide whether staff will leave or stay in the firms (Azeez, 2017). In light of the above discussions, the following hypothesis can be developed.

**H 4:** There is significant relationship and role between leadership and employee retention in the banking sector of Pakistan.

### 2.5. Working Environment

The working environment is one of the major contributors to employee intention to stay for the long term in the organization (George & Jones 2008). Neog and Barua (2015) argue that staff attitudes are positive when the working environment is good and there is a strong relationship between employees’ retention and working environment. The organization should build such kind of environment, which will fulfill the staff’s future and present needs. The employees are so comfortable in the environment, they do not leave the firm even alternative job opportunity is available (Winterton, 2011). Irshad (2009) finds that the working environment is one of the main factors for staff retention and many employees leave the firm due to a poor working environment. In light of the above discussions, the following hypothesis can be developed.

**H 5:** There is significant relationship and role of Working Environment on employee retention in the banking sector of Pakistan.

### 2.6. Organizational Culture

The employees will stay for a long period with those organizations where they perceive that there is a positive and good which is fit with the employees’ behaviour, attitudes, orientation and interest (DiPietro and Milman, 2004). According to Zhao et al., (2007) culture is more imperative than reward and salary because if the staff are comfortable in the culture, it will attract to stay for a long period in the firm. The culture of the organization is an important factor to increase staff retention, performance and
adaptability (Chia, Lee, et al., 2014). The culture of an organization is the binding stick to minimize the gap between management and employees. In favourable culture, the staff feels that the organization is their second home. On the basis of the above discussions, the following hypothesis can be developed. 

**H 6:** There is significant relationship and role between organizational culture & policies and employee retention in the banking sector of Pakistan.

### 2.7. Schematic diagram

On the basis of the literature review, the following schematic diagram is developed. HR practices are divided into two sets i.e. HR and organizational factors. The reason to distinguish between HR and organizational factors is to offer greater clarity between management and organizational related activities and shreds of evidence are available in support of this concept (Chew, 2004; Ashraf & Joarder 2012).

**Figure 1:** Schematic Diagram

### 3. Research Design

The data is collected with the help of a mixed-method approach to find out the role of HR and organizational factors with employee retention in the banking sector of Pakistan. This approach is used for a better understanding of the issue because it is a better technique when one method is not adequate to address the problem efficiently and effectively (Creswell, 2008). The population of this study entails 8 major banks of the Pakistani banking sector including public, private, Islamic and foreign banks. Two banks are selected from each sector based on assets worth and data is collected from the staff of HBL, UBL, NBP, Punjab, Meezan, Albarka, SCB and samba bank. For the qualitative study, interviews are taken from 24 HR managers including 3 mangers from each bank on the basis of the purposive sampling method. For the questionnaires, multi-stage sampling was used. The questionnaire was adopted which had already been used by many researchers. The sample size was 480 respondents by selecting 60 respondents from each institution based on stratified random sampling. The strata based on designation, job status and institution. Simple random sampling was used on the second stage. Pilot testing was also made. The reliability test was conducted by using the value of Cronbach alpha which was greater than
0.7 of each variable which indicates it was reasonable and consistent. The response rate was 79%. For qualitative analysis, nodes and themes were used and for quantitative analysis factor analysis, descriptive statistics, correlation, reliabilities, multiple Regression were used. The NVivo, MS excel, SPSS 20.0 (software) were used for data analysis.

3.1 Qualitative Analysis
The brief finding of the qualitative analysis is as under.
The interview questions are asked from the HR managers regarding training activities and its effect on staff retention. The respondents state that training provides the basic knowledge to the staff regarding job requirements, organizational rules & regulation to perform work efficiently. The bank is spending a massive amount on training/ development practices on an annual basis. The managers of the public and foreign banks responded that training & development facilities are regular features in their bank. The retention rate of foreign bank staff is high because the training facilities in this bank are very comprehensive and proper. In the public sector banks, at the beginning of the year, the program of the training is being issued to all the branches. The bank also offered the facility of the good food, a five-star hotel, and a prominent scholar for delivering the lecture in the training session. It is concluded that training & development play a very imperative role in employee retention. The major role of training & development is given below in figure 2.

**Figure 2: Important role of training & Development**

For long term retention of staff, compensation is one of the major factors. If the basic needs of the staff are not fulfilled after working more than 10 hours in the bank then the staff has a high turnover intention. The HR managers respond during the interview preceding that compensation is one of the major factors for staff retention. The staff working in the bank always compares the salary with the other colleagues performing the same duties in the same bank and other banks. If the staff feels that there is an
inequity in the compensation then turnover intension of the staff is very high. The compensation structure of the bank is better than the other sector. It is concluded that the compensation system plays a very vital role in staff retention. The Important factor for the compensation system is shown in figure 3.

Figure 3: Important factor for compensation

As per the interview analysis of HR managers, it is observed that job security plays a very vibrant role in employee retention. The retention level of permanent staff is high as compare to contractual or third party staff. Job security is one of the very important factors for the higher retention rate in the public sector banks. Even the contractual employees feel secure in public sector banks as compare to other banks. The mangers state that the benefits of the permanent staff are more as parallel to contractual staff. The contractual employees will leave the bank if any new opportunity with little benefits is available to him but the permanent employee will serve for a longer period. It is concluded that job security plays a very important role in employee retention. The managers of the banking sector respond that leadership practices play a very imperative role in staff retention. The respondents state that mostly, employee leaves the bank due to poor leadership practices. The leaders’ behaviour, practices, relationship, style and attitude is very important for the employee and it is often said that people do not change job, people change boss. The leaders focus on staff monitoring, mentoring, coaching and counseling to keep them on track. The retention level will be high if the leader coordinates with the staff member and understands their issue and try to resolve them. The following are the major Leadership practices effecting employee turnover as shown in figure 4.

Figure 4: Leadership practices effecting employee turnover
The participants state that culture & policy play a very vital role because the staff is attuned in a positive and flexible culture. The retention level is high in encouraging and positive culture and the retention rate is lower in case of poor and negative culture & policies. The culture and policies of the public sector and foreign banks are very effective and employees oriented as compared to private and Islamic banks thus the retention rate of staff in public and foreign banks is higher as compared to private and Islamic banks based on this factor. HR managers respond that the banking environment has a substantial effect on staff retention. The managers state that the employee has to spend major time of life in two places, i.e. workplace and home. If the working environment of the place is caring, supportive and good, then the staff will remain in the firm for a long time as compared to a poor working environment. The staff can work in a poor culture but they cannot work in a poor and rigid working environment. The working environment of the public sector bank has also been improved over time. The HR manager of the foreign bank is of the view that the working environment of their bank is very effective and good which is helpful to enhance employee retention.

4. Quantitative Analysis
The finding of quantitative analysis is given below.

4.1. Factor Analysis (FA)
The factor analysis is performed to measure the factor loading and correlation among variables. There are several methods to extract the factors but in the current study Principal component method with varimax rotation is applied for measurement scales. The values are sorted by excluding a small coefficient by suppressing the value up to 0.40. The principal component factor with varimax rotation extracted the 7 variables which explained the maximum variance. Some items factor loading value is less than 0.40 which is excluded from the pattern matrix. In the final rotated component factors matrix, 3 questions are deleted T5, WE1 and CP1. The following table 1 shows the factor loading of each item.

<table>
<thead>
<tr>
<th>Items</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
<th>Factor 4</th>
<th>Factor 5</th>
<th>Factor 6</th>
<th>Factor 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>C3</td>
<td>0.915</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C4</td>
<td>0.899</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C5</td>
<td>0.889</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C2</td>
<td>0.888</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C1</td>
<td>0.853</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ret3</td>
<td>0.905</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ret5</td>
<td>0.905</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ret1</td>
<td>0.900</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ret4</td>
<td>0.660</td>
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<td></td>
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<tr>
<td>Ret2</td>
<td>0.411</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WE2</td>
<td></td>
<td>0.780</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WE1</td>
<td></td>
<td>0.764</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WE3</td>
<td></td>
<td>0.749</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WE4</td>
<td></td>
<td>0.677</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WE5</td>
<td></td>
<td>0.675</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>J2</td>
<td></td>
<td></td>
<td>0.771</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J1</td>
<td></td>
<td></td>
<td>0.747</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>J3</td>
<td></td>
<td></td>
<td>0.738</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J4</td>
<td></td>
<td></td>
<td>0.677</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L2</td>
<td></td>
<td></td>
<td></td>
<td>0.777</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.745</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.695</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.674</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4.2. Eigenvalue and Variance
EFA is performed and Eigenvalue is greater than 1.0 explaining the cumulative variance of 68.466%. The Eigenvalue of the extracted factors in this study ranged from 8.521 to 1.192. Factor 1 compensation practices, is identified as the strongest factor because % of the variance is 8.521. The following table explained the total variance of the components.

<table>
<thead>
<tr>
<th>Component</th>
<th>Eigenvalues</th>
</tr>
</thead>
<tbody>
<tr>
<td>T2</td>
<td>0.823</td>
</tr>
<tr>
<td>T1</td>
<td>0.804</td>
</tr>
<tr>
<td>T4</td>
<td>0.788</td>
</tr>
<tr>
<td>T3</td>
<td>0.787</td>
</tr>
<tr>
<td>CP2</td>
<td>0.773</td>
</tr>
<tr>
<td>CP1</td>
<td>0.728</td>
</tr>
<tr>
<td>CP3</td>
<td>0.673</td>
</tr>
<tr>
<td>CP4</td>
<td>0.538</td>
</tr>
</tbody>
</table>

Table 2: Total variance explained.

<table>
<thead>
<tr>
<th>Component</th>
<th>Total</th>
<th>% of Variance</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8.521</td>
<td>27.488</td>
<td>27.488</td>
</tr>
<tr>
<td>2</td>
<td>4.005</td>
<td>12.918</td>
<td>40.406</td>
</tr>
<tr>
<td>3</td>
<td>2.694</td>
<td>8.690</td>
<td>49.096</td>
</tr>
<tr>
<td>4</td>
<td>1.668</td>
<td>5.381</td>
<td>54.477</td>
</tr>
<tr>
<td>5</td>
<td>1.656</td>
<td>5.343</td>
<td>59.820</td>
</tr>
<tr>
<td>6</td>
<td>1.489</td>
<td>4.802</td>
<td>64.622</td>
</tr>
<tr>
<td>7</td>
<td>1.192</td>
<td>3.844</td>
<td>68.466</td>
</tr>
</tbody>
</table>

4.3. Kaiser-Meyer-Olkin(KMO)
The sample adequacy is sufficient because the value of KMO is greater than the cut off value 0.5 as anticipated by the Hair et al. (2010). The value of Bartlett’s Test of Sphericity is significant which endorse that data is not identical. The following table 3 shows the value of KMO.

Table 3. KMO and Bartlett's Test

| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | .880 |
| Approx. Chi-Square | 8602.710 |
| Bartlett's Test of Sphericity | Df | 465 |
| Sig. | .000 |

4.4. Collinearity Statistics
The tolerance value and variance inflation factor (VIF)” is used to confirm whether there is any issue of multicollinearity in the model. The following table 4 clearly indicates that the tolerance value of each independent variable is greater than the cut point 0.2 and the value of VIF of each variable is less than cut point 5, thus the researcher concluded that there is no chance of occurrence of multicollinearity in the model.

Table 4: Collinearity Statistics

<table>
<thead>
<tr>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training compensation</td>
<td>.975</td>
</tr>
<tr>
<td>Job security</td>
<td>.745</td>
</tr>
<tr>
<td>Leadership</td>
<td>.785</td>
</tr>
<tr>
<td>Working env</td>
<td>.586</td>
</tr>
<tr>
<td>Culture &amp; policies</td>
<td>.653</td>
</tr>
<tr>
<td></td>
<td>.977</td>
</tr>
</tbody>
</table>

4.5. Descriptive Statistics
The following table 6 displays the descriptive statistics.

**TABLE: 6 Descriptive Statistics**

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training</td>
<td>380</td>
<td>4.042</td>
<td>.70678</td>
</tr>
<tr>
<td>Compensation</td>
<td>380</td>
<td>3.426</td>
<td>.91735</td>
</tr>
<tr>
<td>Job security</td>
<td>380</td>
<td>3.4095</td>
<td>.97049</td>
</tr>
<tr>
<td>Leadership</td>
<td>380</td>
<td>3.7474</td>
<td>.80196</td>
</tr>
<tr>
<td>Working. Env</td>
<td>380</td>
<td>3.6026</td>
<td>.82985</td>
</tr>
<tr>
<td>Culture &amp; policies</td>
<td>380</td>
<td>2.4447</td>
<td>1.23690</td>
</tr>
</tbody>
</table>

The mean score of training & development, leadership and working environment near to four (agree stage) which means that the respondents are satisfied with these HR and organizational factors. The average score of compensation and job security is near to three (neutral stage). The mean score of culture & policies is near to two (disagree stage) as per the questionnaire which means that the workforce is not satisfied with this variable.

### 4.5. Correlation Analysis

The following table 7 displays the correlations between the HR practices and employee retention.

**Table 7: Correlations matrix**

<table>
<thead>
<tr>
<th></th>
<th>Ret</th>
<th>Tra</th>
<th>Com</th>
<th>JS</th>
<th>Lead</th>
<th>WE</th>
<th>CP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ret</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tra</td>
<td>0.163**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Com</td>
<td>0.474**</td>
<td>-0.008</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JS</td>
<td>0.392**</td>
<td>0.066</td>
<td>0.078</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lead</td>
<td>0.525**</td>
<td>0.119*</td>
<td>0.466**</td>
<td>0.297**</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WE</td>
<td>0.505**</td>
<td>0.049</td>
<td>0.383**</td>
<td>0.322**</td>
<td>0.527**</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>CP</td>
<td>0.061</td>
<td>-0.006</td>
<td>0.088</td>
<td>0.009</td>
<td>0.095</td>
<td>0.012</td>
<td>1</td>
</tr>
</tbody>
</table>

The Training & development has a substantial association with employee retention because correlation is (0.165(**), *.p<.01). As per the above correlation matrix, there is a positive and significant association between compensation and employee retention. The value of beta correlation is 0.392(**), .p<.01 which confirms that there is a positive relationship between employee retention and job security. The results indicate that there is a positive relationship between leadership and employee retention because the value of r is .525(**), .p<.01. The working environment also has a significant and positive association with employee retention as per the above correlation matrix. Based on the value of r which is 0.061, it is concluded that culture & policies have no significant association with employee retention.

### 4.6. Regression Analysis

The following table 8 specifies the outcomes of regression equation to find out the effect of HR practices on employee retention.

**TABLE 8: Regression analysis of employee retention**

<table>
<thead>
<tr>
<th></th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Standard Error</th>
<th>F</th>
<th>Sig.</th>
<th>Durbin Watson statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ret</td>
<td>.643</td>
<td>.413</td>
<td>.404</td>
<td>.66270</td>
<td>43.745</td>
<td>.000</td>
<td>1.634</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Beta</th>
<th>t-value</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The above table of regression analysis clearly indicates that the independent variables explain 41% variation in the model. Our model is a good fit because the value of F 43.745 which is significant at 0.000. As per the above table results, training & development has a substantial and positive role in employee retention. The beta value of compensation is .261 as per regression analysis which is momentous at a 1% level of significance which indicates that this variable plays an imperative role to enhance employee retention. Job security does not affect employee retention as per regression analysis. The results of the regression analysis specify that leadership practices have a substantial and positive role in employee retention. The working environment has a positive and substantial effect on staff retention in the banking sector. The culture and policies have no significant role with staff retention because mostly policies of this sector are customer-oriented instead of employee-oriented.

5. Discussion
The training & development activities are a regular feature in the banks to enhance knowledge, skills, experience and capacity building. This practice is being organized in the banks on a daily, monthly, quarterly and annual basis. The qualitative and quantitative results clearly indicate training & development has a positive relationship and significant role on employee retention in the banking sector of Pakistan. However, there is a need for proper training need assessment and training should be arranged only for interested and core employees. The compensation is one of the most vital factors to enhance staff retention. The compensation has a significant association and positive effect on employee retention as per qualitative and quantitative results. The employees working in developing countries like Pakistan are more interested and motivated with those HR practices which have indirectly or directly increase their earning capacity as compare to any other factor (Bashir & Khattak, 2008).

Job security is an important factor as per qualitative analysis for staff retention. The contractual employee retention level is lower as compared to a permanent staff member because the contractual staff considers that their future is not secure due to poor job security. There is a positive affiliation between job security and employee retention as per the correlation matrix. However, as per the result of regression analysis, there is no substantial effect of job security on staff retention because the employees’ jobs are not secure except in public sector banks. The staff working in the public sector bank has a high retention rate as compared to other banks. The reason for the non-significant effect is that more than 40% of staff included in the study are contractual or third party thus they have not happy and comfortable with job security. A column was left blank for additional information at the end of the questionnaires, wherein participants state that job security is one of the most crucial and important factors to retain them in the organization. The leadership practices have a significant association with staff retention as per the qualitative analysis. It is correctly said by someone “the employees did not change the job but they did change their boss”. The quantitative analysis also endorses the finding of qualitative analysis and concludes that leadership practices have a positive and significant effect on staff retention. The leader can develop such sort of environment which can encourage the staff to remain long term with the organization. The qualitative analysis indicates that the working environment has a significant effect and role on employee retention. The quantitative results also endorse the results of qualitative results and find that employees are gratified with the working environment prevailing in this sector and it has a momentous relationship and role with employee retention. The qualitative analysis concludes that positive culture and policies play a very important role in employee retention. The culture and policies of the banks were very attractive at the start of this sector but overtime, due to targets, stress, increasing profits, timings and competition, the policies are customer-oriented as
compare staff-oriented. The quantitative analysis clearly indicates that there is no substantial relationship and role between culture & policies and employee retention. It means that staffs are not satisfied with the existing culture and policies of the banking sector which is an indication of poor and weak cultures & policies in the banking sector.

6. Conclusion

The banking sector is the mainstay of the economy but unfortunately, no comprehensive study is conducted to observe the role and association of human resource and organizational factors on employee retention in this sector of Pakistan. The organization should emphasis on such type of HR practices which are proficient to motivate, retain and satisfy the most critical assets, thus this study is very helpful to enhance staff retention in the banking sector of Pakistan. The major reasons for employee turnover are higher salary, better opportunity, relocation, personal reason, leadership, job security and working environment, etc. HR and organizational factors play a very imperative role to enhance staff retention in the banking sector of Pakistan. The training & development play a very significant relationship and role to improve employee retention, however, the training should be provided only to an energetic and interested person. The need assessment should also be made before training. The compensation practices also play a central role in staff retention because people are more interested and motivated with those practices which enhance their salary and allowances particularly in developing nations like Pakistan. Job security does not effect staff retention because they are not satisfied with job security except in the public sector banks. The leadership practices have a substantial role in employee retention because “the employees did not leave the organization but they leave their leaders “due to their attitudes, abusive language, behaviour and environment. The working environment also plays an imperative role in staff retention because the working environment is very comfortable as compared to other sectors. The employees are not satisfied with the culture and policies of the bank and therefore, this variable is no significant association and role with employee retention.

7. Limitations and Future Study

The limitations of the current study are that it has a small sample size and to generalize the findings, the sample should be large. This study is carried out in the banking sector and in the future, the study should be carried out in other sectors of Pakistan to test this model. In the future, some other HR practices should be considered to increase employee retention, i.e. job rotation, performance appraisal, recognition, politics and challenging assignments, etc. In the future, the demographical, variables should also be considered for analysis.

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Jane Mucheke Ng’ethe (2013) Determinants of Academic Staff Retention in Public Universities in Kenya. Jomo Kenyatta University Of Agriculture And Technology


Reflection of Regulatory Announcement in Equity Market: Fresh Insight from Oil & Gas Sector of Pakistan

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ABSTRACT
This study is based on the problem that how regulations made by oil and gas regulatory authority influences the companies in oil and gas sector of Pakistan. We identify 13 regulatory changes in oil and sector of Pakistan which broadly includes the announcement related to the formulation, functions and responsibilities of oil and gas authority, deregulation and changes in the prices of oil and gas products, interference of apex court into the oil and gas sector and privatization of oil refineries in emerging market of Pakistan. Well-liked event study methodology is used to uncover the impact of regulation announcement on equity prices in Pakistan. Beside this, we also capture the effect of regulation announcement on the firm performance by introducing the dummy variable in ordinary least framework. In line with the financial and econometric theory criteria, we use the sales growth, leverage, liquidity and tangibility as control variables. Study reveal that regulatory announcements have statistically significant aggregate effect on the oil and gas sector of Pakistan stock exchange. We recommend to the policy makers, managers and regulators that the stock prices of oil and gas companies are more sensitive toward the regulatory announcements related to interference of Supreme Court and regulations concerning to the formulation, functions and responsibilities of oil and gas regulatory authority in Pakistan.

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1. Introduction
The stable and sustainable supply of energy is life blood to socioeconomic development (Su et al., 2017). Fossil fuels such as coal, oil, and gas remain the primary sources used to fulfill the energy requirements of humankind during the last two centuries (Husain, 2010). Oil is the leading fuel in today’s technologically advanced world. This is due to its unique attributes – accessibility, versatility, ease of transport, sufficiency, and in many areas, it results cheapest alternative. It accounts for 33% of global energy consumption (BP Statistical Review of World Energy, 2016) and the weight of oil market
in portfolio of global commodity investment is 31% (Energy Information Administration - EIA, 2016). As per the staff report of US commodity futures trading commission (CFTC), total value of commodity related instruments is increased from 15 billion in 2003 to 200 billion in 2008. Due to this financialization of commodity market, oil becomes an essential ingredient in world economy (Tang & Xiong, 2012; Liu, Wang, Wu & Wu, 2016; Cheng & Xiong, 2013). The fluctuations in oil prices have essential impact on the economic output, unemployment, financial markets, inflation, commodity prices, and all the fundamental industries of the modern industrialized world (Wang & Zhang, 2014; Wei, Wu, Fan & Liu, 2008; Du, Yanan & Wei, 2010; Wang, Wu & Yang, 2014; Cong, Wei & Jiao, 2008; Jiao, Gan & Wei, 2012; Coleman, 2012; Karali & Ramirez, 2014; Kilian and Park, 2009; Chen, 2015; Wang, Wu & Yang, 2013). A plethora of literature supports the implication of fluctuations in oil prices for government policies, national and international organizations, economists, policy makers and market participant in developed and developing countries. Since oil is a commodity product therefore its prices also depend upon the supply, demand and speculations in derivative markets (Liu et al., 2016; Wei & Zhou, 2010). Besides this, price of any security can be represented as the present value of all expected future cash flows. Therefore, prices of securities depend upon the expected cash flows and the discount rate. Any factor that affect the steam of cash flows or discount rate, ultimately affect the price of that particular security. Believers of asset pricing theories argue that return on any security is related to battery of drivers. Arbitrage pricing theory (Ross, 1976) is considered as one of the prime theories in modern asset pricing framework. Followers of arbitrage pricing theory assume that security’s return linearly depends upon finite series of drivers. It may be global factors, institutional factors, other non-economic factors, economic factors, industry specific factors, and other firm specific characteristics. In addition, literature on standard finance firmly advocates the informational efficiency of financial markets, primarily proposed by Fama (1970). The semi-strong form of efficient market hypothesis suggests that current prices fully incorporate all the publicly available information, and therefore no one can earn abnormal profits. Public information not only limited to past prices, but also includes the information reported in a company’s financial statements (annual reports, income statements, filings for the security and exchange commission, etc.), earnings and dividend announcements, announced merger plans, the financial situation of company’s competitors, expectations regarding macroeconomic factors (such as inflation, unemployment), industry specific regulations, and policies for specific sector of economy. A plethora of literature support the argument that oil prices heavily influenced by series of factors. Therefore, oil prices can be forecasted on the basis of economic growth, changes in expectations of economic growth, global industrial production, liquidity, global interest rate, changes in non-OPEC (The organization of petroleum exporting countries) production, changes in Saudi Arabia crude oil production, supply, demand, legislations related to oil market, political unrest, production, financial markets, weather, speculative buying, and exchange value of the dollar (Bodenstein, Guerrieri & Kilian, 2012; Belke, Bordon & Hendricks, 2010; Stock & Watson, 2002; Mumtaz & Surico, 2009; Abdallah & Lastrapes, 2013; Bihan & Matheron, 2012; Juvenal & Petrella, 2014; Sims, 2002; Forni & Gambetti, 2010; Bernanke, Boivin & Eliasz, 2005; Dave, Dressler & Zhang, 2013; Boivin, Giannoni & Mihov, 2009; Beckmann, Belke & Czudaj, 2014). Figure 1 plots the movements in West Texas intermediate (WTI) crude oil prices (real 2010 dollars). It shows that oil prices can be forecasted on the basis of battery of geopolitical and economic events. Our prime focus of this study is on the reflection of industry specific factors - regulations in oil and gas sector - in the oil prices.
Regulation can be defined as a rule or directive made and maintained by an authority. It is one of the dimensions of institutional environment and comes under the head of semi-strong form efficient market – publicly available information. General objective of regulation is to improve the transparency of decision making and to depoliticize the tariff settings. But Li and Ferreira (2011) argue that regulations create uncertainties for firms and act as hurdle in firm’s operations. If regulations are not properly communicated to firms then it may bring additional cost for producer of goods and services. Literature is too extensive to survey here, but it supports the argument that equity market reflects the regulation announcement (Amin, 2009; McKenzie & Woodruff, 2013; Kaplan, Piedra & Seira, 2011; Bruhn, 2013; Monteiro & Assunção, 2012; Dreher & Gassebner, 2013). Pakistani economy is growing at a steady rate that demands relatively higher energy consumptions. Pakistan uses the oil, natural gas and hydro as basic energy resources. The share of oil and gas sector in Pakistani equity market is 17.57% (Pakistan stock exchange, 2017). Pakistani government had very strict control in the oil and gas sector until 1999. Later on, in April 2006 oil and gas regulatory authority (OGRA) started to notify the price fixation in the sector. Since its inception, OGRA made many changes in regulation to regulate the oil and gas sector. Regulations are central to policy making but excessive and unnecessary regulation are harmful to the economy (Kalyvas & Mamatzakis, 2014). This study is based on the problem that how regulations made by oil and gas regulatory authority influences the performance of the company in the oil and gas sector of Pakistan. With this motive, we analyses the reflection of regulation announcement in oil and gas sector of equity market of emerging country.

The objective of this study is to investigate the impact of regulation announcement on the listed companies in oil and gas sector of Pakistan stock exchange. We identify 13 regulatory changes in oil and sector of Pakistan. The selected regulation broadly includes the announcement related to the formulation, functions and responsibilities of oil and gas authority, deregulation and changes in the prices of oil and gas products, interference of apex court into the oil and gas sector and privatization of oil refineries in emerging market of Pakistan. Well-liked event study methodology is used to uncover the impact of regulation announcement on equity prices of oil and gas sector. Beside this, we also capture the effect of regulation announcement on the firm performance by introducing the dummy variable in ordinary least framework. In line with the financial and econometric theory criteria, we use the sales growth, leverage, liquidity and tangibility as control variables. Our finding shows that the events related to formulation, functions and responsibilities of oil and gas regulatory authority has statistically significant impact on the stock prices in both the pre-event and post-event window. We observer a rigorous aggregate effect of oil and gas regulatory authority’s ordinance promulgated in both the pre-event and post-event window of cumulative average abnormal returns. The formulation of committee for proposing changes in oil prices by the Supreme Court on November 24, 2009 has statistically significant aggregate impact on the pre-event and post-event window of cumulative average abnormal returns in oil and gas sector of Pakistan. We find mixed evidence of response of stock prices of oil and gas companies against the announcement of regulation related to deregulation and changes in the prices of oil and gas products in Pakistan. We recommend to the policy makers, managers and regulators that the stock prices

Figure 1: Variety of drives of crude oil prices
Source: U.S. Energy Information Administration, Thomson Reuters
of oil and gas companies are more sensitive toward the regulatory announcement related to interference of Supreme Court and regulations concerning to the formulation, functions and responsibilities of oil and gas regulatory authority in Pakistan. The rest of paper is organized as follows; next section includes the description of oil and gas sector in Pakistan, the primary energy statistics and consumption of oil in Pakistan. Section 3 presents the literature review which is followed by data description and research methodology. Then, section 4 includes the empirical findings and finally we have brief conclusion of study.

2. Oil and Gas Sector in Pakistan

Oil and gas sector in Pakistan is regulated under the petroleum & natural resources division which was created in April 1977. Oil and gas sector comprise of two main sectors at Pakistan stock exchange (PSE), namely, oil and gas exploration companies and oil and gas marketing companies. There are 4 listed companies in oil and gas marketing sector with a total market capitalization of 1,299,952,502,099 PKR whereas 8 companies are listed in oil and gas marketing sector with a total market capitalization of 391,650,223,380 PKR (Pakistan stock exchange, January 2017). According to Facts global energy (2016) report, Pakistani import of crude oil increase by 12% from year 2014 to year 2015. In 2011, the production of petroleum related product in Pakistan is 70,000 barrels per day that is far below than the production of petroleum products of 95,000 barrels per day in 2015 (International energy agency, 2016). This increase in production is mostly due to the continuous discoveries and ongoing oil exploration projects in Pakistan. Further international monetary fund also document that current government reforms and decline in international oil prices also support the Pakistani oil and gas sector to get rid-off from energy blackouts. Currently, Pakistan has 9 billion barrels of petroleum oil reserves (EIA, 2016). There are six oil refineries in Pakistan with 390,000 barrel per day oil distillation capacity. As per the EIA (2016), Pakistan has 431,000 barrel per day oil consumptions that is mainly in power sector and transportation sector of the country. Figure 2 shows the decomposition of energy supply of Pakistan into nuclear, hydro, solid, gas and liquid in 2013. Pakistan mainly fulfills its energy requirements from the natural gas, hydro and oil related products. Anyhow, country has great potential in the field of nuclear and hydro related energy products. The dominate company in oil and gas in Pakistan is oil and gas development company limited, controlled by government of Pakistan. Beside this, British petroleum and Eni are considered the major overseas companies working in Pakistani oil and gas sector. Pakistan oilfields consider the market leader in the oil and gas exploration at Pakistan stock exchange. Pakistan finds its first gas field in 152 at Sui gas field. Currently, Pakistan has 105 trillion cubic feet reserve of gas (EIA, 2013). Presently, China showed it deep interest to build gas pipelines that will also connect to
Iran under the umbrella of the China-Pakistan economic corridor. Figure 3 shows the sector-wise consumptions of petroleum products in Pakistan. It clearly depicts that transportation sector consumes the largest portion of petroleum products in Pakistan. Almost 90% of total petroleum products are consumed in transportation and power sector of the country.

3. Literature Review

Regulation is one of the dimensions of institutional environment. It creates uncertainties for firms and act as a hurdle in firm’s operations (Li & Ferreira, 2011). Regulation is a primary requirement for an industry, and it is made for providing the maximum benefit to both economy and business Stigler’s. The Chinese stock market performs different as compare to all other stock market just due to heavy regulations (Bo et al., 2011). The effect of regulation (social or economic) depends on many factors like motive behind any regulations, political condition, and legal environment. Many researcher conduct research on the topic of government regulation at two main extremes; one is normative which focus on the need for regulation and the possible best form of regulation and other is descriptive which focuses on the different forces that effects the regulation like political, economic, bureaucratic and legal. Generally, firms are affected by regulations, but their impact varies from firm to firm. When firms comply with regulation, it reduces the number of firms in industry because it is difficult for firms to comply with government regulation as it increase the cost of production and reduce the profit margins (Pashigian, 1984). Compliance with regulation increases the cost of production which is five times higher for small business than the large one (Crain & Crain, 2010). Complex regulations are not a good sign for already operating firm as it leads toward reduction in investment, firm growth and firm profits (Alesina et al., 2005; Loayza et al., 2005; Bastos & Nasir, 2004). Restrictions affect the firm performance (Loayza et al., 2005). Also it is found that strict regulations encourage the corruption, firm does not want that their performance reduces by following the regulations, so that they use illegal actions such as corruption to reduce the effect of regulations. Djankov et al. (2002) found that regulation increases the competition. Price et al., (2011) found that regulations reduce the efficiency and restrict the operations of an option market in Mexico. Alesina et al. (2005) suggest that regulation is a determinant for firm investment. Dawson (2006) reveals that regulatory framework has a significant relationship with firm investment and find that relax regulation can increase the firm investment that enhances the growth of a firm and high productivity. Government regulations reduce the capability of firm in the acquisition of funds from the external parties and create uncertainty for firm performance (Khwaja & Mian, 2005). The prices of securities directly link with the changes in regulations. Return on investment also changes against amendment in regulatory framework. Extreme regulations have a negative impact on investments, and it reduces the ability of firm to invest in a more expensive but most profitable projects (Suchard, 2009; Hamdouni, 2011). The ability of a firm to acquire funds from outside parties is reduced to greater extent by following the regulations and it results in uncertainty in the performance of the firm (Khwaja &
Mian, 2005). Therefore; there is a significant negative relationship between extensive regulations and firm performance. Regulatory framework is a key factor during the cross-country comparison of performance of companies (Kunt et al., 2008; Lensink et al., 2008; Hasan et al., 2009; Claessens & Horen, 2012). Further, Lensink et al. (2008), Claessens and Horen (2012) and Chortareas et al. (2013) also studied the impact of country’s regulatory framework on the firm performance.

Complex business regulation increases cost of input which ultimately affects the profit of firms (Loayza et al., 2005). Similarly, law and finance literature also suggest that regulations are directly influencing the financial efficiency (Qian & Strahan, 2007; Laeven & Majnoni, 2005). Kalyvas and Mamatzakis (2014) document that business regulations are of key important and optimal use of regulation increases economic growth. Dietrich and Hauck (2014) conclude that regulation in banking sector also effect the firm performance. There also exists evidence of impact of regulation on firm performance (Kaplan, Piedra & Seira, 2011; Bruhn, 2013; Mel, McKenzie & Woodruff, 2013; Monteiro & Assunção, 2012). Trade related regulations also affect the cost of firms which ultimately affect the performance of firms (Hoekman & Nicita, 2011; Chang, Kaltani & Loayza, 2009; Djankov, Freund & Pham, 2010; Dreher & Gassebner, 2013; Freund & Rocha, 2011; Perez & Wilson, 2011). In existing literature, studies such as Giannetti and Jentzsch (2013), Houston et al. (2010), John, Litov and Yeung (2008), Visaria (2009), Gine and Love (2010), Cavalcanti (2010), Toal, Mookherjee and Visaria (2012), Buyukkarabacak and Valev (2012) examined the diverse nature of regulations – regulations on bankruptcy laws, credit market, courts, financial market and investor protections - and empirically conclude that it has an effect on operating firms. Monteiro and Assuncao (2012) and Lawless (2013) conclude that tax regulations affect the financial performance. Literature also agrees that business regulatory framework strongly affect the performance of firms (Amiti & Khandelwal, 2011; Barseghyan, 2008; Freund & Bolaky, 2008; Dutz et al., 2011; Djankov, McLiesh & Ramalho, 2006). Literature advocates that there is a relation between regulations imposed by regulatory authority and performance of firms. Most of the literature skewed towards the regulations in banking sector, tax regulations, trade related regulations, bankruptcy laws, and regulations in financial markets. Further there is no real consensus regarding the impact of regulations on firm performance. Existing literature paid no attention to the effect of regulations one the share prices of one of the most vital sectors in economy i.e. oil and gas sector. This study contributes to literature by investigating the impact of regulatory changes made by oil and gas regulatory authority (OGRA) on share prices in oil and gas sector of Pakistan.

4. Data Description and Research Methodology

We use the Bloomberg database to collect the data related to the daily share prices of listed companies in the oil and gas exploration and oil and gas marketing sector in Pakistan stock exchange from year 2002 to 2013. Study uses the KSE-100 index as an equity representative index of Pakistan stock exchange and its historical prices are collected from the data portal of Pakistan stock exchange. The sample of our research includes all the listed firms in the oil and gas sector of Pakistan stock exchange which comprises of 12 companies. We select 13 regulations and related data has been collected from the Pakistan energy books, oil and gas regulatory authority, annual report of companies, ministry of petroleum and natural resources and US energy information administration. Our selected study period (July 2000 – March 2013) is crucial with respect to intensive variation in international oil prices, and there also exist significant amendment in the Oil Company’s advisory council (OCAC) and oil and gas regulatory authority’s (OGRA) framework in Pakistan. During this selected time period, Pakistan also observed many political uncertainties and up-gradation in the judiciary system of the land. Initially we selected 20 regulatory changes in oil and gas sector of Pakistan from July 2000 to March 2013. Then we short listed and excluded some of the announcement related to oil and gas sector such as proposal to reduce custom duty in February 2008, pricing frequency is changed in June 2012, committee formed by supreme court for oil and gas sector in December 2009 etc. Table 1 shows the date wise selected event for this study. Our selected 13 regulations are primarily related to deregulation of the prices, circulation
of OGRA ordinance, privatization of one of the largest oil refineries, and interference of political government and role of Supreme Court in oil and gas sector of Pakistan.

4.1 Research Methodology
This research is based on the problem that how regulatory announcement made by oil and gas regulatory authority influences the performance of the company in the oil and gas sector of Pakistan. Existing literature uses two types of methodologies for such type of research problems i.e. use of dummy variables in the least square framework and second is the application of event study methodology (Ryan & Taffler, 2004; Vithessonthi & Techarongrojwong, 2012; Stankeviciene & Akelaitis, 2014). We use both the methodologies in this study.

Table 1
List of Selected Regulations in Oil and Gas Sector of Pakistan

<table>
<thead>
<tr>
<th>Serial</th>
<th>Date</th>
<th>Regulations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1-Jul-00</td>
<td>Fuel oil import and price deregulated</td>
</tr>
<tr>
<td>2</td>
<td>1-Sep-00</td>
<td>Liquefied petroleum gas (LPG) prices deregulated</td>
</tr>
<tr>
<td>3</td>
<td>15-Mar-01</td>
<td>Self-management of freight pool implemented through OCAC</td>
</tr>
<tr>
<td>4</td>
<td>13-Mar-02</td>
<td>The government has approved increase in oil marketing companies’ distribution margin</td>
</tr>
<tr>
<td>5</td>
<td>28-Mar-02</td>
<td>OGRA ordinance promulgated</td>
</tr>
<tr>
<td>6</td>
<td>7-Jul-05</td>
<td>NRL (second largest refinery) privatized, Attock group emerged successful bidder</td>
</tr>
<tr>
<td>7</td>
<td>16-Apr-06</td>
<td>Function of price fixation transferred to oil and gas regulatory authority (OGRA) and it is responsible for price notification.</td>
</tr>
<tr>
<td>8</td>
<td>20-Jun-08</td>
<td>Deemed duty on Aviation fuel and other products removed</td>
</tr>
<tr>
<td>9</td>
<td>1-Feb-09</td>
<td>As per Government directive, OGRA changed the price announcement frequency from Fortnightly basis to monthly basis</td>
</tr>
<tr>
<td>10</td>
<td>30-Jun-09</td>
<td>Government introduced carbon surcharge, replacing petroleum development levy</td>
</tr>
<tr>
<td>11</td>
<td>24-Nov-09</td>
<td>SC formed a committee for proposing changes in oil pricing</td>
</tr>
<tr>
<td>12</td>
<td>15-Sep-12</td>
<td>HSD prices for refineries and OMCs made uniform</td>
</tr>
<tr>
<td>13</td>
<td>8-Mar-13</td>
<td>Deemed duty on diesel to be increased from 7.5% to 9% by 2015</td>
</tr>
</tbody>
</table>

Source: Information related to regulation in oil and gas sector in Table 1 is gathered from the Pakistan energy books, oil and gas regulatory authority, ministry of petroleum and natural resources and US energy information administration.

Study uses well-liked event study approach to capture the impact of regulation announcement on the equity prices of listed companies in oil and gas sector of Pakistan stock exchange. Least square regression methodology is used to investigate the impact of regulation announcement on the firm performance in Pakistan. Beside this, we use the sales growth, leverage, liquidity and tangibility as control variables in our estimated regression model. Generally, when the objective of research is to find
the relatively short term impact of any event on some dependent variable then least square methodology is preferred but major advantage of standard event study approach is that it gives day-wise and relatively long term response of dependent variable (Sprenger & Welpe, 2001; Vithessonthi & Techarongrojwong, 2013; Bernanke & Kuttner, 2005). Below section discusses the event study methodology.

4.2 Event Study Methodology

Modern finance theory assumes that stock prices include all the relevant available information. Therefore, the price of any security is the summation of present value of all expected future stream of cash benefits. On the basis of modern finance theory, it is possible to analyze the stock prices reaction against any event. Figure 4 shows the details of how prices over-react or under react against the announcement of any event. Here ‘-t’, ‘0’ and ‘+t’ represents the before event time period, event day and after event window, respectively. Event study methodology is a statistical way to look on the reaction of stock prices against any specific event. It is one of the fundamental methodologies in the financial literature and used by catholic of existing literature. Existing literature of twentieth century uses event study approach for varying degree of events, including the corporate events, merger and acquisitions, dividend announcement, tax announcement, economic event, institutional events, calendar events, political events, imposition of new regulations, stock split event, earning announcement and accounting events (Beaver, 1968; MacKinlay, 1997; Kothari & Warner, 1997; Smith, 1986; Dechow, Sloan, & Sweeney, 1995; Jensen & Ruback, 1983; Netter, 1988; Campbell, Lo, & MacKinlay, 1997; Fama, 1998; Fama, Fisher, Jensen, & Roll, 1969; Mitchell & Netter, 1994; Fama, 1991; Barber & Lyon, 1996; Patell, 1976; Jensen & Warner, 1988; Campbell & Wasley, 1996; Brown & Warner, 1980). Conceptually event study analysis computes the abnormal returns that are attributable to the underlying event. Event study also focus on the behavior of security prices round the studied event. Recent literature on finance and economics also give healthy evidence in support of the use of event study methodology to investigate the behavior of stock prices against any event. This event may ranges from financial events to non-financial events (Kang & Kim, 2008; Chuliá et al., 2010; Kothari, 2001; Kothari, Leone & Wasley, 2005; Farka, 2009; Konrad, 2009; Bernanke & Kuttner, 2005; Chuliá et al., 2010; Schlumpf et al., 2008; Bredin et al., 2007; Vithessonthi & Techarongrojwong, 2012; Kuttner, 2005; Lim et al., 2008; Farka, 2009; Rigobon & Sack, 2004; Bredin et al., 2007; Evrensel & Kutan, 2007). In line with the existing literature, we use the standard event study methodology in oil and gas sector of Pakistan. We follow the following steps to make empirical analysis under event study approach in Pakistan stock exchange.

1. Identification of relevant events
2. Identification of estimation, event window and post event window
3. Estimation of parameters using the event window
4. Calculate the abnormal returns and cumulative abnormal returns
5. Testing and interpretation of results

First step is the short listing of the relevant events and develop an event profile. As described in the data description part that our selected regulations are primarily related to the deregulation of the prices, circulation of OGRA ordinance, privatization of one of the largest oil refinery, and interference of political government and role of Supreme Court in oil and gas sector of Pakistan. Second step is the determination of appropriate timeline for the event study methodology. Figure 5 shows the timeline for estimation window, event window and post event window for our study.

Figure 5: Timeline for event study methodology

<table>
<thead>
<tr>
<th>(Estimation window)</th>
<th>(Event window)</th>
<th>(Post-event window)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T0</td>
<td>T1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>T2</td>
<td>T3</td>
</tr>
</tbody>
</table>
The length of estimation window, event window and post event window greatly change in existing literature on event study methodology. It mainly depends upon the nature of events and its likely effect on the stock prices. Since, some events are little planned and information comes in the market before the event, therefore research also uses the pre-event window and post-event window. Studies such as Guire, Schneeweis and Naroff (1998), Farka (2009), Rigobon and Sack (2004), Woolridge and Snow (1990), Jacobson (1994) and Williams and Siegel (1997) uses -30 days to +30 days, -50 days to +50 days, -5 days to +100 days, -1 days to +10 days, as length of event window. The event window is the number of days studied before and after the event date. Further, Williams and Siegel (1997) argue that length of event window fully depends upon the nature of event window and therefore it’s more subjective than an objective decision. But literature agrees that if expected effect of an event is relatively longer then researcher should use relatively longer pre and post event window. Further it also depends upon the concentration of abnormal performance round the event days. We use 31 days event window that is +15 days pre-event window and -15 days post-event window, including the event day.

5. Expected Return Vector
As a third step, we estimate the parameters by using the event window. There are various approaches for estimation of stock returns. It may range from historical average estimation, auto-regressive estimations, auto-regressive integrated moving averages estimations, capital asset pricing model base estimations and multi-factor model-based estimations. We use two types of estimations i.e. historical averages estimation and capital asset pricing model base estimations. As a first step, we compute the continuously computed return for each event of all the listed companies in the oil and gas sector in Pakistan stock exchange by using the following formula of equation (1):

\[ R_j = \ln \left( \frac{Z_t}{Z_{t-1}} \right) \ldots \ldots (1) \]

Here, \( R_j \) denotes the historical continuous compounded return of j\textsuperscript{th} stock, \( Z_t \) and \( Z_{t-1} \) represents the current and previous period’s market price of shares of selected listed companies at Pakistan stock exchange. Simplest arithmetic mean over the estimation window of each event for all studied firms is estimated by using the following equation (2):

\[ E(r_j) = \frac{1}{K} \sum_{t=1}^{K} R_{j,t} \ldots \ldots (2) \]

Here \( E(r_j) \) denotes the forecasted return of each event, \( R_{j,t} \) denotes the historical continuous compounded return of stock 'j' and 'K' shows the length of estimation window. For this study we use 120 days as estimation window i.e. \( K=120 \) daily returns. Beside the historical estimation technique, we also used the well advocated capital asset pricing model-based estimation for forecasting the expected return vector that is consistent with the study of Kang and Kim (2008) and Schlumpf et al. (2008). It is primarily proposed by William Sharp (1964), Jack Treynor (1961), John Linter (1965) and Jan Mossin (1966). We use the following capital asset pricing model formula of equation (3):

\[ E(r_j) = R_f - \beta (R_m - R_f) \ldots \ldots (3) \]

Where \( E(r_j) \) denotes the forecasted return for each event, \( R_m \) denotes the return of benchmark portfolio and \( R_f \) denotes the risk-free rate in the country. More specifically, we estimate the following equation (4) for each company ‘j’ and predict the \( E(r_j) \) based on estimated coefficient i.e. \( \gamma_0 \) & \( \gamma_1 R_{m,t} \).

\[ E(r_j) = \alpha_0 + \gamma_1 R_{m,t} + \epsilon_t \ldots \ldots (4) \]

Here, \( E(r_j) \) denotes the forecasted returns of each event, \( \gamma_0 \) denotes the constant term, \( \gamma_1 \) measure the sensitivity of company’s return towards the market portfolio, \( R_m \) denotes the return of benchmark portfolio and \( \epsilon_t \) is the error term. We use the KSE-100 as a proxy of the benchmark portfolio in capital asset pricing model.
4.4 Abnormal Return and Cumulative Abnormal Return

After the estimation of expected return vector, we compute the abnormal return (AR) and average abnormal return (AAR) as a fourth step of the event study methodology. We estimate the expected return by using the historical average estimations as well as by applying the market model. We use the following equation (5) and equation (6) for computation of abnormal returns for each event in the event window.

\[ AR_{j,t} = R_{j,t} - (\alpha_j + \gamma_j R_{m,t}) \]

\[ AR_{j,t} = R_{j,t} - E(r_{j,t}) \] \hspace{1cm} (5)

Here \( AR_{j,t} \) denotes the abnormal returns that is the difference between the actual returns of the firm ‘\( j \)’ at time ‘\( t \)’ and the estimated return of firm ‘\( j \)’ at same time ‘\( t \)’. \( R_{j,t} \) denotes the actual continuous compounded return of the firm ‘\( j \)’ at ‘\( t \)’ and computed by using equation (1). Finally, \( E(r_{j,t}) \) denotes the forecasted returns for each event for the firm ‘\( j \)’ at ‘\( t \)’. This study also uses historical average estimation for the forecasting of stock return and then we use these forecasted returns for the computation of abnormal return for each event for firm ‘\( j \)’ at ‘\( t \)’ by using the equation (6):

\[ AR_{j,t} = (R_{j,t} - \frac{1}{K} \sum_{t=1}^{K} R_{j,t}) \]

\[ AR_{j,t} = R_{j,t} - E(r_{j,t}) \] \hspace{1cm} (6)

After the computation of abnormal returns \( AR_{j,t} \) for consider event against all selected stocks in oil and gas sector of Pakistan, we compute the average abnormal returns (AAR). AAR is very useful to eliminate the firm specific effect by removing the idiosyncrasies. Since we have many events and multiple firms in oil and gas sector of Pakistan, therefore we cannot identify the overall stock market response pattern on the basis abnormal returns. It’s better to compute the average abnormal return for each event. We use the following formula of equation (7) for the computation of average abnormal return in oil and gas sector of Pakistan. AAR is the cross-sectional aggregation of the abnormal returns of the entire ‘\( N \)’ stocks at one point in time.

\[ AAR_t = \frac{1}{N} \sum_{t=1}^{N} AR_{j,t} \] \hspace{1cm} (7)

Where, \( AAR_t \) denotes the average abnormal returns at time ‘\( t \)’ and ‘\( N \)’ shows the number of total stocks in oil and gas sector of Pakistan stock exchange. This study uses the cumulative average abnormal returns (CAAR) to determine the aggregate impact of abnormal returns. It is very useful measure especially when the impact of any event is not explicit on the event date of abnormal returns. Usually in event study most researcher focus on the cumulative average abnormal return (CAAR). CAAR serve as an indicator up to what extent the stock market adjusts new information and try to find that whether the information of change in regulation fully incorporate in the stock prices or not. CAAR can be positive or negative and depends on believe of investors that whether the regulation change the future cash flows. CAAR is also used to gauge the magnitude of an event on the full event window. We use the following equation (8) for the computation of CAAR:

\[ CAAR_T = \sum_{t=1}^{T} AAR_t \] \hspace{1cm} (8)

Equation (8) can be written as follow:

\[ CAAR_t = CAAR_{t-1} + AAR_t \]

We calculate average abnormal returns (AAR) and cumulative average abnormal return (CAAR) to capture the response of all the selected companies in the oil and gas sector of Pakistan. AAR is the
average of abnormal returns of all the companies. Two tests used to check the statistical significance of abnormal return and cumulative abnormal returns i.e. T-AAR and T-CAAR. One uses the time series mean abnormal returns as in Brown and Warner (1980, 1985), and other uses the calendar-time abnormal returns as in Jaffe (1974) and Mandelker (1974). We use the t-statistics using the time-series approach to check the significance. Finally, we employ the t-statistics to comment upon the significance of average abnormal returns and cumulative abnormal returns by using the following equation (9) and equation (10). Here the null hypothesis is that the AAR and CAAR is equal to zero.

\[ t_{AAR} = \frac{AAR_t}{\sigma_{AAR}/\sqrt{n}} \]  

\[ t_{CAAR} = \frac{CAAR_t}{\sigma_{CAAR}/\sqrt{n}} \]  

Here \( t_{AAR} \) and \( t_{CAAR} \) shows the t-statistic for AAR and CAAR, respectively whereas \( \sigma_{AAR} \) denotes the standard deviation of average abnormal return of sample of firms for time ‘\( t \)’.

6. Least Square Estimation of Study

We use two types of methodologies to find out the potential impact of regulatory framework on the firms in oil and gas sector of Pakistan. First is the use of well-liked event study approach and second is the use of ordinary least square estimations. Study also employs the descriptive statistics to describe the feature of data and draw the correlation matrix to know the strength and direction of relationship among variables of study. Regression analysis is a way to forecast the dependant variable on the basis of set of regressors. It is used to find the impact of independent variables on dependent variable of study. As regulation is an independent variable but it is qualitative in nature and we cannot measure it in terms of numbers. Therefore, the study takes regulation as dummy variable. Dummy variable is one which is used to capture the qualitative nature data in a research. As Schiantarelli et al. (2005); Bourlès (2010); and Scarpetta (2003) put the value of dummy variable 1 if we observe a regulation in any specific year and 0 if there is no change in regulation in oil and gas sector. The list of regulation is provided in Table 1. Since there are many events happen in any specific year therefore this way of estimation can be considered as relatively weak measure. Therefore, the prime focus of our paper is on the event study methodology. But simultaneously this method allows us to add other set of explanatory variables in the estimated model and we can inference the potential impact of our control variables on the performance of companies in oil and gas sector of Pakistan. We use leverage, liquidity, sale growth and tangibility as control variables while firm performance is considered a dependent variable. The details of these variables are as follow.

6.1 Specification of Regression Model

The general form of least square method can be written as follow:

\[ Y \approx f(X, \psi) \]

\[ Y_t = \psi + \psi_1 X_{1t} + \psi_2 X_{2t} + \psi_3 X_{3t} + \ldots + \psi_m X_{mt} + \zeta_t \]

Here the unknown parameters are denoted by \( \psi \) and it may be scalar or vector, \( Y \) depicts the regressand, \( X \) is the set of regressors and unexplained term is denoted by \( \zeta \).

Since regression analysis is a way to predict the mean value of dependant variable based upon the average value of regressors, therefore it assumes that all the drivers of dependant variables should be included in the regression model. The financial theory criteria also forces the researcher that model should include all the relevant variables based on the financial theory, relevant literature and economic rational. Further the econometric criteria also guide the researchers that it should fulfill all the assumption of the regression model. Primarily, there should be no heteroscedasticity in the model, no auto correlation among the error terms and there should be no multicollinerity in the estimated model. We
uses the white test for checking the presence of homoscedasticity, Durbin-Watson test for auto-correlations and correlation matrix for checking the strength of association among regressors.

6.2 White Test for Heteroscedasticity

The assumption of heteroscedasticity is central in regression model. Literally it means the data with different (hetero) dispersion (skedasis). With reference to least square estimation it assumes that variance of disturbance term should be fix over period of time i.e. variance of errors should be time invariant. It can be written as \( \text{Var}(\epsilon_t) = \sigma^2 \neq \sigma_i^2 \). If this assumption is violated then the standard error and estimated coefficient are affected and ordinary least square (OLS) is no longer the most efficient estimator. There are various test used to check the heteroscedasticity in the estimated model, it may include the Breusch-Pagan LM test (Breusch & Pagan, 1979), the Glesjer LM test (Glesjer,1969), the Harvey-Godfrey LM test (Harvey, 1976; Godfrey, 1978), the Park LM test (Park, 1966), the Goldfeld-Quandt test (Goldfeld & Quandt, 1965) and the White test (White, 1980). We use the White test to check the presence of homoscedasticity in our estimated regression model. For this purpose, we adopted the procedure suggested by White (1980). First we estimate the multiple egression equation and estimates the residuals. Then we regress the squares error terms on all the explanatory variables, square of explanatory variables and also included the cross section terms. We test the null hypothesis of homoscedasticity as described in equation (11).

\[
Y_t = \psi_1 X_{1t} + \psi_2 X_{2t} + \epsilon_t
\]

\[
\hat{\epsilon}_j^2 = \phi + \phi_1 X_{1j} + \phi_2 X_{2j} + \phi_3 X_{1j}^2 + \phi_4 X_{2j}^2 + \phi_5 X_{1j} X_{2j} + \nu_j
\]

\[H_o = \phi = \phi_1 = \phi_2 = \cdots = \phi_5 = 0 \ldots \ldots (11)\]

We calculated the \( LM = m \cdot R – Square \) statistics. Here ‘m’ is total number of observations. If LM statistics is greater than the critical values, then we reject the null hypothesis and conclude that there is statistical evidence of presence of heteroscedasticity.

Specifically we estimate the following regression equation (12);

\[
ROE = \alpha + \beta_1 \text{Reg} + \beta_2 \text{SG} + \beta_3 \text{DER} + \beta_4 \text{CR} + \beta_5 \text{Tan} + \epsilon_t \ldots \ldots (12)
\]

Where, ROE denotes the return on equity, REG denotes the dummy for regulation, SG shows the sales growth, DER denotes the debt to equity ratio, CR is used for current ratio, TAN denotes the tangibility and \( \epsilon \) denotes the error term in the model.

6.3 Description of Estimated Model

This section includes the description of estimated regression model of equation (12). It includes the return on equity, dummy for regulation, sale growth, and debt to equity ratio, current ratio and tangibility. The agency cost of manager and stockholder pushes the firm towards more debt to minimize free cash available with the manager (Jensen, 1986), bigger debt obligations may act as an inducement for dismissal of project activities that may increase value (Myers, 1977) while proceeding with risky projects (Jensen & Meckling 1976). Capital gearing is positively related to assets while have negative relation with profit margins (Hung et al. 2002). Long-term and total debt ratio has negative impact on performance of SMEs (Joshau, 2007). Leverage works only for a few firms and have negative impact on performance of firm (Madan, 2007). Performance of the firm is negatively influenced by the leverage (Capon, Farley, & Hoenig, 1990; Kiymaz, 2006). Bigger firms with low growth opportunities and higher insolvency chances utilize long-term debt, they can bear the higher fixed costs of long-term debt whereas, less secure firms have tendency to utilize more long-term debt (Dalber & Upneja, 2002). The capital structure of firm impacts negatively to the firm performance (Zeitaun & Tian, 2007). Financial mix of a company is the proportion of debt and equity in the capital of a company. Leverage is the amount of loan uses to finance the firm’s assets (Gleason et al., 2000). Leverage is a long-term debt, and firm uses to finance long term assets (Kisgen 2006). Appiadelji (2014) and Sunder and Myers (1999) use debt to equity ratio as a measure of leverage. For this study, debt to equity ratio is used to measure the financial mix of companies in oil and gas sector of Pakistan by using the equation (13);
Debt to Equity ratio = \frac{\text{Total liabilities}}{\text{Total equity}} \quad \ldots \ldots (13)

The term liquidity refers to the firm capacity to meet its short-term obligations and how quickly the assets of a firm converted into cash at a fair market price (Scott et al., 1999). Liquidity is an amount of cash that firms kept meeting short-term obligations (International Financial Reporting Standards, 2006). Liquidity level of a firm depends upon the account receivable, account payable and inventory conversion cycle policy (Singh, 2004). Firms with high market-to-book ratio experienced high level of liquid assets (Kim, Mauer & Sherman, 1998). Various studies identify liquidity as a determinant of firm profitability (Islam & Mili, 2012; Velamnpy, 2013; Velnampy & Pratheepkanth, 2012; Niresh & Velnampy, 2012). Cash conversion cycle significantly associated with the return on investment of a firm (Dong & Su, 2010). Delay in cash payments affects the firm performance (Teruel & Solano, 2007). Firm performance and liquidity have a significant relationship, firms decrease their current liabilities and increase current assets due to the positive and direct relationship between firm performance and liquidity (Almajali et al., 2012). Maina and Muturi (2013) find that liquidity of a firm is positively related to the firm performance. There are several proxies that are used to measure the liquidity of the firm. Dong (2010) and Omondi (2013) used current ratio to measure the liquidity. From equation (14), current ratio is obtained by dividing current assets by current liabilities.

\[
\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}} \quad \ldots \ldots (14)
\]

Tangibility is the quantity of assets a company uses to produce goods (Acharya et al., 2006). Tangibility is a number of total tangible assets (Gilson et al., 1990). In the case of assets, tangibility means something that actually and physically exists. There exists a significant positive relationship between tangibility of assets and profitability of firms (Malik, 2011). Tangibility has been measured with fix assets to total assets ratio by Bashir et al. (2013) and found that tangibility has a significant positive relation with firm performance. According to Li (2007), there is no significant relationship and association between tangibility of assets and profitability of the firm. Tangibility has a negative and significant relationship with firm’s performance (Zeitun & Tian, 2007). There exists a significant positive relationship between tangibility and the firm performance (Mehari & Aemiro, 2013; Bashir, Abbas, Manzoor & Akram, 2013; Chinaemerem & Anthony, 2012). According to the Trade-off Theory, debt financing is favored by the higher tangibility ratio. Sambasivam and Ayele (2013) find that tangibility has no significant relationship with the profitability of the firm. Mehari and Aemiro (2013) measured tangibility and found that tangibility has a significant positive relationship with firm performance. There are several proxies that are used to measure the tangibility of the firm. Omondi (2013) and Ahmed, Zulfqar & Usman (2011) use total assets turnover ratio to measure the tangibility. Total assets turnover ratio is obtained by dividing net revenue to average total assets. For this study, total assets turnover ratio used to measure the tangibility of companies in oil and gas sector of Pakistan as describe in equation (15):

\[
\text{Total assets turnover ratio} = \frac{\text{Net revenue}}{\text{Average total assets}} \quad \ldots \ldots (15)
\]

Firm value is affected by the revenue growth (Reilly & Brown, 2006). Firms can result in good performance when they have capacity for growth. Size of sales affects the profitability to certain amount. (Athanasoglou et al., 2005). Size can verify affect the performance, as the larger firms can leverage their size to maximize the benefits and obtain efficient financial (Mathur & Kenyon, 1998). It is easier for large firms to reach for cheaper financial resources but Singh and Whittington (1968), and Banz (1981) contradicted to this argument. When the opportunities of growth are given to the firm, it makes the firm to perform much better (Memon et al., 2012) and helps firms to generate profits (Zeitun & Tian, 2007). Thus, it is concluded that sales growth has a significant positive impact on the firm performance. Sales growth is the known measure of the firm performance (Capon et al., 1990). A change in sales is refers to sales growth. Sinthupundaja and Chiamamrong (2014) and Deloof (2003) used sales growth to measure the change in sale. Sales growth measure by dividing current year sales to
We use the following formula (16) to measure the sale growth:

\[
\text{Change in sales} = \frac{\text{Sale in current year}}{\text{Sales in previous year}} - 1 \ldots \ldots (16)
\]

Performance of company can be measure by the book base measure or market base measure. For OLS based estimation, we use book base measure for firm performance. For event study approach, we use the market base measure to check the response of share prices against regulation announcement. Company performance is the rate of change in profitability (Hoskisson et al., 1993). A firm performance is defined as the success of a firm during a year as compared to previous year (Madan, 2007). There are several proxies that are used to measure the performance of the firm. Crain and Crain (2010) and Almajali et al. (2012) use return on equity to measure the firm performance. Return on equity is measure by dividing net income minus preferred equity to common equity. We use return on equity ratio (equation 17) to measure the firm performance of companies in oil and gas sector of Pakistan.

\[
\text{Return on equity} = \frac{\text{Net income} - \text{Preferred equity}}{\text{common equity}} \ldots \ldots (17)
\]

In this paper we employ the event study approach, ordinary least square estimation, correlation analysis and descriptive statics in oil and gas sector of Pakistan stock exchange.

### 7. Empirical Findings

The result in Table 1 show the descriptive statistics applied on the data of the oil and gas sector of Pakistan from a period of 2000 to 2014. A total of 180 observations have been gathered from 12 companies for the analysis. Table 1 shows the mean and standard deviation of the studied variables. Average liquidity of oil and gas sector is 1.91 and the standard deviation of liquidity is 1.03 which shows the dispersion from average liquidity. Also, the average value of return on equity is 3.32 with standard deviation 0.48. Similarly, the mean and standard deviation of the entire variables i.e. current ratio, debt to equity ratio, sales growth, return on equity and tangibility are presented at Table 1.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquidity</td>
<td>1.9135</td>
<td>1.0317</td>
</tr>
<tr>
<td>Leverage</td>
<td>0.3845</td>
<td>0.2700</td>
</tr>
<tr>
<td>Tangibility</td>
<td>2.5229</td>
<td>1.7265</td>
</tr>
<tr>
<td>Sales growth</td>
<td>0.1582</td>
<td>0.1715</td>
</tr>
<tr>
<td>Return on equity</td>
<td>3.3237</td>
<td>0.4826</td>
</tr>
</tbody>
</table>

Table 1: Descriptive Statistics

Source: Author’s Calculation

Table 2 shows the results of correlation matrix. Correlation coefficient tells us about the strength and direction of relationship among studied variables. Its values range from -1 to +1. Table 2 shows the Pearson correlation technique applied on the data of oil and gas sector companies of Pakistan during the period of 2000 to 2014. The correlation coefficient of leverage with return on equity is 0.5130 which indicates that there exists significant substantial degree of relationship between these two variables. The direction of correlation is positive which shows that if leverage ratio changes firm performance change in the same direction. The correlation coefficient of sales growth with return on equity is 0.4614 which indicates that there exists positive and significant moderate degree of relationship between two variables. The correlation coefficient of liquidity and tangibility with return on equity is 0.1166 and 0.1085 which indicates that there exists a low degree of relationship between two variables. The direction of correlation is positive which shows that if liquidity and tangibility change firm performance change in the same direction. From the correlation coefficient it is quite clear that there is no multicollinearity problem on our studied variables.
Table 2
Correlation Matrix

<table>
<thead>
<tr>
<th>Variables</th>
<th>ROE</th>
<th>Leverage</th>
<th>Liquidity</th>
<th>Tangibility</th>
<th>Sale Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROE</td>
<td>1</td>
<td>.513*</td>
<td>.116*</td>
<td>.108**</td>
<td>.461**</td>
</tr>
<tr>
<td>Leverage</td>
<td>.513*</td>
<td>1</td>
<td>.245**</td>
<td>.176</td>
<td>.131*</td>
</tr>
<tr>
<td>Liquidity</td>
<td>.116*</td>
<td>.245**</td>
<td>1</td>
<td>.490</td>
<td>.030*</td>
</tr>
<tr>
<td>Tangibility</td>
<td>.108**</td>
<td>.176</td>
<td>.490</td>
<td>1</td>
<td>.174*</td>
</tr>
<tr>
<td>Sale Growth</td>
<td>.461**</td>
<td>.131*</td>
<td>.030*</td>
<td>.174*</td>
<td>1</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).
Source: Author’s Calculation

8. Regression Analysis
We investigate the impact of regulations on the firm performance in oil and gas sector of Pakistan stock exchange. Table 3 presents the results of multiple regression analysis of our study. Firm’s performance is measured through Return on equity and the independent variable included in the model are sales growth, company’s tangibility, company’s liquidity, company’s leverage and dummy variable for regulations in the oil and gas sector of Pakistan. Results show that value of R-square which indicates 49.99% of the variance in the dependent variable is explained by our studied independent variables. F-value that is 10.396 shows the overall significance of the estimated regression model. The estimated regression model is also test for auto correlation and heteroscedasticity, and we find no evidence of auto correlation and heteroscedasticity in error terms. The beta value of leverage is 0.8784. It indicates that a unit increase in leverage will increase the value of firm performance by 0.8784 units. This result is statistically significant because the t-value is 4.788 which are beyond the range of -1.96 to +1.96 at 95% confidence level thus the regression results of leverage as a determinant of firm’s performance are statistically significant. Similarly, sale growth and tangibility have significant impact on firm performance while liquidity has insignificant impact on the performance of firms. Further it can be seen that the beta value of regulation is 2.707 that is also statistically significant thus the regression results of regulation as determinants of firm’s performance are statistically significant. Therefore, results conclude that regulation in oil and gas sector affects the profitability of firms in Pakistan stock exchange.

Table 3
Regression Analysis

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Outcomes</th>
<th>B</th>
<th>T</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulation</td>
<td></td>
<td>2.7077</td>
<td>2.5014</td>
<td>0.0155</td>
</tr>
<tr>
<td>Leverage</td>
<td></td>
<td>0.8784</td>
<td>4.7881</td>
<td>0.0000</td>
</tr>
<tr>
<td>Liquidity</td>
<td></td>
<td>0.0461</td>
<td>0.8508</td>
<td>0.3987</td>
</tr>
<tr>
<td>Tangibility</td>
<td></td>
<td>0.0569</td>
<td>1.7391</td>
<td>0.0879</td>
</tr>
<tr>
<td>Sales growth</td>
<td></td>
<td>0.8883</td>
<td>3.0408</td>
<td>0.0036</td>
</tr>
</tbody>
</table>

F= 10.3969, R Square= 0.4999, Dependent variable = Return on equity.
Source: Author’s Calculation

9. Event Study Methodology
Event study methodology is used to analyze the impact of regulation announcement on the stock returns in oil and gas sector of Pakistan stock exchange. We selected 13 regulatory changes in oil and gas sector of Pakistan. Table 1 shows the average abnormal return (AAR) and cumulative average abnormal return (CAAR) of event 1, event 2 and event 3 on 31-day event window i.e. -15 days to +15 days in Pakistan. Pakistani government is continuously looking towards the phased deregulation of oil and gas sector of Pakistan. A number of steps had been taken for this purpose. Our first event is the deregulation of fuel oil imports in July 1, 2000, second event is the deregulation of the liquefied petroleum gas prices in September 1, 2000 and third event is the self-management of freight pool by oil marketing companies in
March 15, 2001. AAR uses to eliminate the idiosyncrasies in the computation and CAAR is uses to know the aggregate effect of average abnormal returns.

A minor effect is observed through the event window of event 1. We find no effect of event 1 on the stock prices in the pre-estimation window. A significant positive effect is observed through AAR on 10th and 15th day and 9th and 15th day through CAAR of post event window. Event 2 has significant impact on stock prices in both the pre-event and post-event window. AAR shows a significant effect of this event on the stock returns on 1st, 3rd and 13th day of pre-event window while this event has significant effect on 3rd day after the announcement of regulation. Further aggregate impact is also observed in the pre-event and post-event window of CAAR.

Table 4

<table>
<thead>
<tr>
<th>Event Window</th>
<th>Event 1</th>
<th>Event 2</th>
<th>Event 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AAR</td>
<td>CAAR</td>
<td>AAR</td>
</tr>
<tr>
<td>-15</td>
<td>-0.001</td>
<td>-0.001</td>
<td>-0.005</td>
</tr>
<tr>
<td>-14</td>
<td>0.007</td>
<td>0.006</td>
<td>0.00</td>
</tr>
<tr>
<td>-13</td>
<td>0.002</td>
<td>0.008</td>
<td>0.018**</td>
</tr>
<tr>
<td>-12</td>
<td>0.006</td>
<td>0.015</td>
<td>0.002</td>
</tr>
<tr>
<td>-11</td>
<td>0.005</td>
<td>0.021</td>
<td>0.006</td>
</tr>
<tr>
<td>-10</td>
<td>0.002</td>
<td>0.023</td>
<td>-0.009</td>
</tr>
<tr>
<td>-9</td>
<td>-0.009</td>
<td>0.014</td>
<td>0.002</td>
</tr>
<tr>
<td>-8</td>
<td>0.018</td>
<td>0.032</td>
<td>-0.001</td>
</tr>
<tr>
<td>-7</td>
<td>-0.009</td>
<td>0.022</td>
<td>-0.004</td>
</tr>
<tr>
<td>-6</td>
<td>-0.012</td>
<td>0.01</td>
<td>0.007</td>
</tr>
<tr>
<td>-5</td>
<td>0.006</td>
<td>0.016</td>
<td>-0.003</td>
</tr>
<tr>
<td>-4</td>
<td>0.011</td>
<td>0.028</td>
<td>-3.956</td>
</tr>
<tr>
<td>-3</td>
<td>0.014</td>
<td>0.042</td>
<td>-0.013*</td>
</tr>
<tr>
<td>-2</td>
<td>0.00</td>
<td>0.043</td>
<td>0.006</td>
</tr>
<tr>
<td>-1</td>
<td>0.01</td>
<td>0.053</td>
<td>0.013*</td>
</tr>
<tr>
<td>0</td>
<td>-0.003</td>
<td>0.049</td>
<td>0.00</td>
</tr>
<tr>
<td>1</td>
<td>0.001</td>
<td>0.05</td>
<td>-0.002</td>
</tr>
<tr>
<td>2</td>
<td>-0.019</td>
<td>0.031</td>
<td>0.012</td>
</tr>
<tr>
<td>3</td>
<td>-0.011</td>
<td>0.019</td>
<td>0.009</td>
</tr>
<tr>
<td>4</td>
<td>-0.003</td>
<td>0.016</td>
<td>-0.001</td>
</tr>
<tr>
<td>5</td>
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AAR shows the average abnormal return and cumulative average abnormal returns are represented by CAAR. Further, *, ** & *** shows the confidence level at 90%, 95% & 99%
Source: Author’s Calculation

Event 3 affects the share prices in relatively shorter event window. This event has significant impact on
stock prices in both the pre-event and post-event window. AAR shows a significant effect on 2\textsuperscript{nd}, 3\textsuperscript{rd} and 11\textsuperscript{th} day of pre-event window while this event has significant effect on 7\textsuperscript{th} day after the announcement of regulation. But more rigorous effect of this Self-management of freight pool is observed after the event in the post-event window of CAAR. Table 5 gives the results of event 3, event 4 and event 5 of our study. It reports the average abnormal return and cumulative average abnormal returns of events. Our third event is the approval of increased distribution margin for oil marketing companies by the government on March 13, 2002, fourth event happen on March 28, 2002 when OGRA ordinance promulgated and fifth event is about the privatization of national refinery limited (NRL) in July 7, 2005. Event 4 has significant impact on stock prices in the pre-event window. AAR shows a significant effect on 6\textsuperscript{th}, 8\textsuperscript{th} and 15\textsuperscript{th} day of pre-event window. But the approval of increased distribution margin has significant aggregate impact on the stock returns in oil and gas sector of Pakistan in both the pre-event and post-event window of CAAR. The 5\textsuperscript{th} event of our study has significant impact on stock prices in both the pre-event and post-event window under AAR and CAAR. AAR shows a significant effect on 3\textsuperscript{rd} and 9\textsuperscript{th} day of pre-event window while this event has significant effect on 13\textsuperscript{th} day after the announcement of regulation. Oil and gas sector in Pakistan observe a significant change when OGRA ordinance promulgated. Result shows that the effect of this regulation is started on the 9\textsuperscript{th} day in pre-event of CAAR and it continues till the end of post-event window of CAAR. The AAR of 6\textsuperscript{th} event shows that it has significant effect on event day and 3\textsuperscript{rd} day of post-event window while CAAR also shows the significant cumulative effect in post event window. But the effect of privation of NRL is only limited to -1 day to 7 day of the event window of CAAR. The result of average abnormal returns and cumulative abnormal returns for event 7, event 8 and event 9 are presented at Table 6. The 7\textsuperscript{th} event of our study is concerning the transfer of responsibility of notification of price fixation to oil and gas regulatory authority in April 16, 2006, 8\textsuperscript{th} event is about the removal of duty of aviation fuel and other products in Pakistan on June 20, 2008 and 9\textsuperscript{th} event is regarding the changes in the policy of announcement of price frequency from fortnightly basis to monthly basis on February 1, 2009. We find the aggregate impact of event 7 started from the 6\textsuperscript{th} day of post-event window to 15\textsuperscript{th} day of post-event window of CAAR while AAR shows the significant effect of this event only on the 12\textsuperscript{th} day of the pre-event window. Event 8 has statistically significant impact on stock prices in the pre-event and post-window. AAR shows a significant effect on 6\textsuperscript{th} and 9\textsuperscript{th} day of pre-event window while it also shows significant positive impact on 11\textsuperscript{th} day of post-event window. CAAR clearly shows that removal of duty on aviation fuel and other product has significant on the return of oil and gas sector and reaction starts from 1 day before the announcement and it continues to end of our event window i.e. day 15 of post-event window. We reveal that change in the frequency of announcement of prices in oil and gas sector in Pakistan has significant effect on the returns of listed stocks at Pakistan stock exchange. It is clear from the CAAR of event 9 that there exists aggregate effect of this event in the pre-event window and it even more rigorous effect in the post-event window.

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AAR shows the average abnormal return and cumulative average abnormal returns are represented by CAAR. Further, *, ** & *** shows the confidence level at 90%, 95% & 99%
Source: Author’s Calculation

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Table 7 gives the results of average abnormal returns and cumulative abnormal returns for event 10, event 11, event 12, and event 13 in oil and gas sector of Pakistan. We consider the introduction of carbon surcharge by the government as replacement to petroleum development levy on June 30, 2009 as 10th event of this study. 11th event of our study is regarding the formulation of committee for proposing changes in oil prices by the supreme court on November 24, 2009 and 12th event is the about the standardization of HSD prices for refineries and OMCs on September 15, 2012. The final event of our study is regarding the increase in duty on diesel on March 8, 2013. The 10th event has significant impact on stock prices in the pre-event and post-window. AAR shows a significant effect on 13th and 14th day of pre-event window while it shows also significant impact on event day and 1st day of post-event window. CAAR also shows the significant cumulative effect in pre-event and post event window.

### Table 7

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AAR shows the average abnormal return and cumulative average abnormal returns are represented by CAAR. Further, *, ** & *** shows the confidence level at 90%, 95% & 99%

Source: Author’s Calculation
The average abnormal return of 11th event shows the significant effect of this event on the 3rd, 11th and 14th day of the pre-event window. But the formulation of committee for proposing changes in oil prices by the Supreme Court on November 24, 2009 has statistically significant aggregate impact on the pre-event and post-event window of CAAR in Pakistan. The 12th event has significant impact on stock prices in the pre-event and post-window. AAR shows a significant effect on 5th day of pre-event window while it shows also significant impact on 8th and 9th day of post-event window. CAAR also shows the significant cumulative effect round the event in pre-event and post-event window. The 13th event has significant impact on stock prices in the post-window only of AAR and CAAR. AAR shows a significant effect on 3rd, 4th, 5th and 6th day of post-event window. CAAR also shows the significant cumulative effect within the one week in post-event window. Further, we only report the result of capital asset pricing model-based estimation. But these results are also consistent with historical average based estimations. Appendix A includes the event wise graph of average abnormal returns (AAR) in oil and gas sector of Pakistan.

10. Conclusion
This study is based on the problem that how regulations made by oil and gas regulatory authority influences the stock prices of the companies in oil and gas sector of Pakistan. Therefore, it is also an attempt to comments on the semi-strong form of market efficiency in emerging market. With this motive, we analyses the reflection of regulatory announcement in oil and gas sector of equity market of emerging country. We identify 13 regulatory changes in oil and gas sector of Pakistan through the year 2000 to 2014. These are primarily related to deregulation of the prices of oil related products, circulation of the OGRA ordinance, and privatization of one of the largest oil refineries, interference of political government and role of Supreme Court in oil and gas sector of Pakistan. Our selected study period is crucial with respect to intensive variation in international oil prices, and there also exist significant amendment in the Oil Company’s advisory council and oil and gas regulatory authority’s framework in Pakistan. During this selected time period, Pakistan also observed many political uncertainties and up gradation in the Judiciary system of the land. Well-liked event study methodology is used to uncover the impact of regulation announcement on equity prices of oil and gas sector. Beside this, we also capture the effect of regulation announcement on the firm performance by introducing the dummy variable in ordinary least framework. In line with the financial and econometric theory criteria, we use the sales growth, leverage, liquidity and tangibility as control variables. Correlation matrix shows that there is statistically significant association among studied variables. The result of regression analysis shows that regulation has significant impact on the profitability of firms in oil and gas sector of Pakistan. Beside this, leverage, sales growth and tangibility are proving to be significant drivers of firm’s performance while liquidity results as insignificant for profitability of firms in Pakistan. Pakistani government is continuously looking towards the phased deregulation of oil and gas sector of Pakistan. We use event study methodology to analyze the impact of regulation announcement on the stock returns in oil and gas sector of Pakistan stock exchange. We use the average abnormal return and cumulative average abnormal return on 31-day event window. Results shows that the events related to formulation, functions and responsibilities of oil and gas regulatory authority has statistically significant impact on the stock prices in both the pre-event and post-event window. We observer a rigorous aggregate effect on oil and gas regulatory authority’s ordinance promulgated in both the pre-event and post-event window of cumulative average abnormal returns. It shows that it’s more a planned event and this event is going to price simultaneously into share prices during the whole event window. The privatization of national

<table>
<thead>
<tr>
<th>Event</th>
<th>AAR 3rd</th>
<th>AAR 11th</th>
<th>AAR 14th</th>
<th>CAAR 3rd</th>
<th>CAAR 11th</th>
<th>CAAR 14th</th>
</tr>
</thead>
<tbody>
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<td>0.0116</td>
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<td>-0.006</td>
<td>0.032***</td>
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<td>13</td>
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<td>0.003</td>
<td>0.035***</td>
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<td>-0.002</td>
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<td>-0.007</td>
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<tr>
<td>15</td>
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<td>0.029*</td>
<td>-0.001</td>
<td>0.032***</td>
<td>0.00</td>
<td>-0.006</td>
</tr>
</tbody>
</table>

AAR shows the average abnormal return and cumulative average abnormal returns are represented by CAAR. Further, *, ** & *** shows the confidence level at 90%, 95% & 99% Source: Author’s Calculation

The average abnormal return of 11th event shows the significant effect of this event on the 3rd, 11th and 14th day of the pre-event window. But the formulation of committee for proposing changes in oil prices by the Supreme Court on November 24, 2009 has statistically significant aggregate impact on the pre-event and post-event window of CAAR in Pakistan. The 12th event has significant impact on stock prices in the pre-event and post-window. AAR shows a significant effect on 5th day of pre-event window while it shows also significant impact on 8th and 9th day of post-event window. CAAR also shows the significant cumulative effect round the event in pre-event and post-event window. The 13th event has significant impact on stock prices in the post-window only of AAR and CAAR. AAR shows a significant effect on 3rd, 4th, 5th and 6th day of post-event window. CAAR also shows the significant cumulative effect within the one week in post-event window. Further, we only report the result of capital asset pricing model-based estimation. But these results are also consistent with historical average based estimations. Appendix A includes the event wise graph of average abnormal returns (AAR) in oil and gas sector of Pakistan.
refineries limited also has significant impact on the share prices. But the effect of privation of NRL is only limited to -1 day to 7 days of the event window of cumulative average abnormal returns. The formulation of committee for proposing changes in oil prices by the Supreme Court on November 24, 2009 has statistically significant aggregate impact on the pre-event and post-event window of cumulative average abnormal returns in oil and gas sector of Pakistan. We find mixed evidence of response of stock prices of oil and gas companies against the announcement of regulation related to deregulation and changes in the prices of oil and gas products in Pakistan. We find significant aggregate impact of average abnormal returns in post-event windows. Therefore, it is concluded that oil and gas sector of Pakistan stock exchange lacks in semi-strong form of efficiency. These finding are helpful for managers, decision makers and policy makers in a sense that they should be vigilant about changes in regulations by oil and gas regulatory authority in Pakistan. This research also helps the general public to get to know about the oil and gas sector of Pakistan and how regulatory changes and studied variables affect the performance of firms present in the oil and gas sector. We recommend to the policy makers that the stock prices of oil and gas companies are more sensitive toward the regulatory announcement related to interference of Supreme Court and regulations concerning to the formulation, functions and responsibilities of oil and gas regulatory authority in Pakistan. As future research guidelines, we recommend that research should try to control the effect of confounding event- the effect of other related events must be isolated. Subsequent research should consider the estimation error arises during the forecasting of expected return vector for computing the abnormal return. Further, research should compare the findings of simple abnormal returns with the buy-and-hold abnormal return (BHAR) measure in oil and gas sector of Pakistan stock exchange.

References

**Appendix A: Event wise graph of average abnormal returns (AAR) of study**

*Figure A1: Average abnormal returns of event 1 to event 6*
*Source: Author’s calculation*

*Figure A2: Average abnormal returns of event 7 to event 13*
*Source: Author’s calculation*
Financial Literacy among SMEs’ Owners in Sumatera, Indonesia: The Role of Parents’ Motivation and Experience

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2Faculty of Business and Accountancy, Universiti Selangor, Indonesia

ABSTRACT

Financial literacy is the skill to conduct personal and also business finance. Financial literacy shows information and reasoned both for the economy and finance. Financial literacy is able to apply and regulate financial literacy that affects wellbeing. In 2013, the financial services authority (OJK) has conducted a financial survey and the result indicated that only 21.8% of people understand finance and in 2016, the percentage has increased from about 8% to 29.66. Lacking strength of financial literacy gives low effect on financial decisions, including less saving, opting for more leverage, and involved in unprofitable investments. This paper a particular goal to analyze the influence of parental motivation and experience on financial literacy. Research sample is SMEs' Owners in Sumatra, Indonesia, have been sent questionnaires. Based on a sample of 60 respondents it can be concluded that parents’ motivation affected their financial literacy. Nevertheless, financial experience by the parents does not affect financial literacy.

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1. Introduction

Financial literacy issue gain wide attention in to day. Financial literacy and the awareness of saving have become a priority in the county’s economic and social policy. Financial literacy regulates financial problems at both personal and business levels. Boehnke et al. (2018) state that knowledge and capabilities in financial management are among the important aspects of life. Therefore, financial literacy regulates financial problems and the implementation of financial activities at the individual and business level. Each person must have knowledge and skills in managing their assets. Financial literacy helps poor people to avoid financial problems. Financial knowledge and skills are essential so that people can avoid making inaccurate financial decisions. Financial literacy allows people to recognize, understand, and apply their financial basis in daily life to be successful.
Financial literacy direct to a source for a person's ability to make good economic and financial decisions for the best of his or her own life (Mandell, 2008a; Rosacker & Rosacker, 2016). Effective financial literacy may help to avoid financial problems because people often encounter a situation where they have to sacrifice their interests. Financial literacy influences matters related to financial planning, spending, credit card usage, existing savings, investments, financial management, and making financial decisions. Financial literacy is fractions of the basic human necessary. Financial literacy is crucial in managing one's financial sources. Knowledge of financial literacy is currently increasing in demand. It is a good sign as it helps to create a society that has good financial knowledge. Financial management make good the life of the community itself and it brings a positive influence on the economy. Financial literacy is important in everyone’s life (Grohmann & Menkhoff, 2015). Financial literacy is a process of building the ability to understand the products as well as financial concepts through information, instruction, and suggestion to develop expert and self-consciousness and awareness of financial risks. Know and understandable finances is important for businessmen, mainly for the SMEs’ owners. SMEs support the economy of the country. SMEs are considered as an important component within the business sector. Most of the SMEs in Indonesia remained during the economic crisis. SMEs strengthen the economy of Indonesia. SMEs can survive as compared to other large businesses. SMEs have an important role in creating job opportunities for the community. SMEs’ development is one of the government initiatives to enhance the economy of the community. A survey done by the Ministry of Cooperatives proves that SMEs can thrive in Indonesia. Indonesia experienced a dreadful monetary crisis in 1998, and the sector that remains was the small and medium business sectors (SMEs). The resilience of SMEs during the crisis indicates that SMEs are an important asset for the sustainability of the country’s economy.

However, a national survey conducted in 2013 showed that financial literacy among the respondents in Indonesia was 21.8%. Even in 2016, the level of financial literacy has increased to more than 8%. It shows a worrying sign since financial literacy is essential in everyone’s life especially for those who run the business. Insufficient financial literacy leads to ineffective financial decision makings and financial difficulties. Previous studies indicated that parents’ motivation and parents’ experience particularly the financial education and literation important for parents (Norvilitis & MacLean, 2010; Lusardi et al., 2010). It contributes for skills and knowledge in the children’s financial management and it leads to their financial attitude and behavior when they grow up. Parents may give examples of how to spend money wisely. Their child's financial education is led by parental experience and motivation. In other words their children's financial knowledge is derived from their parents' experiences. Van Campenhout (2015) suggests that it is important for parents in building their children's financial independence. This can be done through modelling the norms on finance, teaching the concept of financial or by giving chance to their children to manage their own money. All of these activities will facilitate the children in experiencing financial knowledge, and in the future, will give them the ability in having good financial literacy as well as making good financial decision. (Norvilitis & MacLean, 2010; Lusardi et al., 2010). Experiencing children in financial activities requires both theories and practices. Parents should give good examples in showing how to manage the money well. Children with sufficient education and experiences of financial from their parents tend to have better finance and higher grade of financial literacy.

2. Literature Review and Hypotheses Development
2.1. Financial Literacy

Financial literacy refers to an individual’s ability to manage or use money (Lusardi et al., 2008; Berry, et al., 2018). Financial literacy is highly related to habits that are influenced by various external factors. Huston (2010) states that financial knowledge also part of financial literacy, but it is not able to describe one's financial literacy. Good decision making is influenced by sufficient financial literacy. Financial literacy education has become a necessity for everyone particularly in
Financial literacy helps to prevent financial problems. Mismanagement of financial resources can bring disasters to an individual or a business. Effective financial management should be backed by good financial literacy to improve social welfare. High saving and a good investment are due to proper financial management. Financial literacy is crucial in managing financial sources. Currently, exposure to financial literacy is needed to create a social community that has good financial knowledge. Financial knowledge is very useful in making accurate and wise financial decisions. Good financial management will be able to protect the community from having financial difficulties or bankruptcy. Financial literacy has a comprehensive meaning towards understanding in financial management. As revealed by Vitt et al. (2000), and Jorgensen (2007) financial literacy education provides able to read, analyze, manage, implement, and communicate about conditions and decisions of finance. Children’s socialization process is mainly affected by their parents. Therefore parents should be able to educate and motivate their children in developing knowledge, values and beliefs in all aspects of life. Jorgensen (2007) and Rapih (2016) describe how the environment could give important contribution to someone’s future life. Daily conversation with the parents and continuous experiences related to financial activities and events will indirectly increase children’s financial literacy as well as build their values and attitudes about money. (Rapih, 2016; Allen, 2003).

The formation of attitudes as well as the cultivation of the values of life in the family is very important. The parent became the first communication medium for children and a school is a place where they can interact with friends. According to Jorgensen (2007), describes social learning theory as the influence of one's environment that may shape an individual’s attitude and behavior. Such behavior derived from the home environment. Sabri et al. (2010) say that someone who has been exposed about financial experience in his childhood life, will have a positive influence on his/her financial literacy. The parents' roles in financial literacy provide their children with knowledge and experience of finance. Moreover, educational aspect which is derived from family will strongly become a fundamental understanding for the children in developing their good attitude and behaviour in utilizing their money. It is an important skill since they have to manage their finance well, trained to independently make payments for their needs, have good plans for managing their pocket money. students, where their finances are still given by their parents will make them having higher knowledge, value and attitudes of financial behaviour. Parent have a necessary function in the process of financial socialization of their children (Cude et al., 2006; Jorgensen, 2007). Parents can be relied upon to provide enough financial literacy knowledge to their children. The presence of good financial education in families will affect children's literacy. India's life of living together in a family shows that participating in financial literacy programs may increase the parent financial decision making (Agarwal et al., 2013; Shim & Shin 2017). According to Mandell (2008), the involvement of parents has an important influence in education, motivation, and their children's understanding of financial matters. The children can manage finances from parents’ home. The results of the survey show that 58.3% of the children ability came from their upbringing by the parents, 19.5% are from education in schools, and 17.6% learn from their experiences. This is supported by research conducted by Shim and Shin (2017) that explains families and parents’ socialization influence the children learning process on financial management (through direct participation or observation) given by the parents.

The involvement of parents in financial education such as having discussions with children about financial issues is very essential for good educate of financial literacy among family members. Through educated children may have great attitudes and values that they get from their parents. Jorgensen (2007) states that students with sufficient education from their parents in control money well, will better in finance than those students who do not have any experience about financial managing from their parents. Nowadays, Financial literacy education is an issue and a major
concern in most countries of the world. This is because financial management awareness will increase. Adult education about financial literacy has become a major concern in most countries in the world. There is an increase in the awareness of financial management and its influence on any individual in the society. In Indonesia, financial literacy education has been emphasized by the OJK, Bank Indonesia, the Ministry of Education and Culture, and others. They believe that financial literacy education should be taught at the early stage since it gives an impact on individual financial decision making when they grow up.

Sufficient financial literacy will lead to healthy financial management. Research conducted by Chen and Volpe (1998) found that youths with a minus of financial literacy tend to make error in financial decisions. The need for financial literacy education is necessary for everyone’s future. With such literacy, every individual can manage their finances, understand how the system in the economy works, think economy problems critically, feel a responsibility, understand basic economic concepts (production, distribution, consumption), involved in economic decision-making, provide logical reason about current issues that give impact to their lives, and ready to participate in the activity of economic production to prepare for their future careers (Clarke et al., 2005). Education on financial literacy should be a continuous commitment and active participation by various parties. The parents become the first for children to socialize with friends in their environment. It may be effective to internalize the value of financial literacy education for the child. The process of cultivation of the values of financial literacy education requires a long and continuous process. There must be an interrelation between the lessons taught in the home and at school. Nowadays, teaching about financial literacy to children falls on the parents, but research shows that most parents do not have the skills to teach financial literacy to their children. Parents should be the first source for them to learn various lessons including financial literacy education. Unfortunately, parents think their children can understand those lessons, particularly on financial matters when they reach 18 years old (Sabri et al., 2010). Danes (1994) found that parents are the main agent in the process of acquiring knowledge about financial literacy for their children, but their roles have not been maximized.

Parenting pattern teaches and demonstrates the concept of finance where knowledge about financial literacy must be exposed from children to adolescents. Good parenting patterns involve teaching and demonstrating the concepts of finance from an early age to adolescence (Danes, 1994). Direct influence from parents by giving lessons in keeping expenditures can cause an enhancement of financial knowledge, attitudes, values, and behaviors to money management (Allen, 2003). Parents who rarely involve their children in decision-making activities will make their children less critical in dealing with problems that arise around them. The simple step is to involve them in making a financial decision on matters associated with them. The child should be given the opportunities for discussion about the allocation and determination of their financial problems. Critical thinking will grow with dialogue between parents and children in financial decisions. Dialogue and discussion about the allocation and determination of their financial matters. The existence of a dialogue between parents and children in financial decision making is useful for cultivating their critical thinking. Social learning theories explains that children possess their experiences about finance through observing, getting reinforcements, both positives and negatives, practising, participating, getting instruction, getting motivation from their parents.

2.2. Parents’ Motivation

Widayati (2014) and Rapih (2016) state that several ways in teaching and experiencing children about financial skills are by train them about basic finance activities such as saving, making their own payment independently, managing their pocket money, having part-time jobs and giving donation and making their investment.
Parents' motivation is important as it may influence the children's financial literacy. Students who received motivation from their parents in their financial management education are more likely to get higher scores in attitudes, behaviors of financial literacy, (Jorgensen, 2007). Parents are the most important entity for children to learn and get experience particularly in financial education (Cude et al., 2006). Children tend to follow the examples taught by their parents. Through parents’ education, it may influence the children’s attitude and value system. By giving them motivation and opportunity in deciding and get involved in financial decision making, it may give them experience and exposures.

2.3. Parents' Experiences

Parental involvement in financial literacy produces knowledge and experience in financial management. When children become adults, they will become smart consumers and financial users (Bowen, 2002). Introducing a child to financial institutions can be in the form of saving money in the bank. Children are taught not to withdraw their money easily. They will have a better ability to resist any urge to fulfill their desires. In addition, children will get used to set aside their money to be kept in the bank. Previous studies show that kids can learn about financial matters from their elderly through deliberate instructions, participation, and implementation through observations (Clarke, 2005).

3. Hypothesis Development

The literature on the correlate between parents’ motivation and parents’ experience of financial literacy leads to hypothesis development.

3.1. Parents’ Motivation and Financial Literacy

The involvement of highly educated parents in providing motivation will increase financial literacy (Santrock, 2008). It affects the children’s exposure, knowledge, and skills in finance with various activities that involve financial decision making created by the parents. There is a correlation between parents’ motivation and financial literacy (Firmansyah, 2014). Education and motivation from parents have an impact on financial literacy (Lusardi et al, 2010; Ansong & Gyensare, 2012; Cole, et al., 2008; Rudeloff, 2019; Micek, 2020). The preceding argument leads to the following hypothesis:

H1: There is a positive influence of parents’ motivation on financial literacy.

3.2. Parents’ Experience and Financial Literacy

Everyone requires knowledge and skills for personal financial decision makings. Insufficient knowledge of financial management will create a negative impact on anyone’s life. Financial management knowledge is easy to be obtained from their parents’ experience. Jorgensen (2007) explained that testing the influence of financial activities modelling from parents with good financial literacy to their children since the beginning, should be done. Moreover he said that testing about modelling is commonly done. In accordance to that, this research is also doing testing about the influence of parents’ financial modelling to discover how far it is affected the process of their children's financial socialization. Sabri et al. (2010) investigated the influence of personality, parents’ motivation, and parents’ experience on financial literacy among students. Students who had no experience communicating and discussing financial matters with their parents. (Gudmondson & Danes, 2011; OECD 2017) describes people discuss money issues with their parents and friends. The parents could provide continuous great advice will bring a good financial impact on the children. The children who oftenly having discussion about financial things with their parents will associate a higher score in financial literacy. Hogan et al. (2010) stated that people's work experience correlates with financial literacy. People must have long working experience, knowledge, and financial skills in their life. The parents’ experience in managing they are financial will influence the children’s financial literacy. Based on this assumption, the next hypothesis is:
H2: There is a positive impact of parents’ experience on financial literacy

3.3. Research Framework
The research framework on the effect of parent motivation and parent experience on financial literacy is illustrated in Figure 1.

![Figure 1. Research Framework](image)

4. Methodology
4.1. Population and Sample
All small-medium enterprises in Sumatera, Indonesia are the population of this study. The samples then, are taken from this population. According to Sekaran (2018), the sample size is 20 times the number of variables in the study. There are three main variables in the study i.e., parents’ motivation, parents’ experience, and also financial literacy. The sampling technique is a convenience sampling design. A total of 60 returned questionnaires were received.

4.2. Dependent Variable - Financial Literacy
Lusardi and Mitchell (2014) present financial literacy in the form of true and false questions. Financial literacy is measuring by calculating numbers of correct answers then divided by the number of all correct answers by the respondents. Respondents’ answers are categorized into 3 groups (Sabri et al., 2010; Chen & Volpe, 1998; Nababan & Sadalia, 2012; Rahayu & Musdholifah, 2017; Yushita 2017) namely:

a. Group 1 (60% of SMEs' owners have lower gain, skill, behavior, and attitude of financial).
b. Group 2 (61%-79% of SMEs' owners have lower gain, skill, behavior, and attitude of financial).
c. Group 3 (>80% of SMEs' owners have lower gain, skill, behavior, and attitude of financial).

4.3. Independent variable –Parent Motivation and Parent Experience
The independent variable is represented by parents’ motivation and parents’ experience. According to OECD (2017) and Widayati (2014), the financial knowledge and literacy are influenced by parents’ motivation and parents’ experience which are measured by using five points Likert scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and also 5 = strongly agree).

5. Result
The result in this study the descriptive and regression as follow:

<table>
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<tr>
<th>Variables</th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
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<tbody>
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<td>Parent motivation</td>
<td></td>
<td></td>
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<tr>
<td>I have been motivated by my parents to get involved in family business</td>
<td>3.76</td>
<td>1.0</td>
<td>5</td>
</tr>
<tr>
<td>I and my family members have been motivated by my parent in having financial knowledge</td>
<td>3.31</td>
<td>1.1</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 4 - Descriptive Parents’ Motivation, Experience, and Financial Literacy
My parents took parts in the process of my financial socialization and financial literacy has been experienced and motivated to me by my parents since my early childhood. All of the children are got involved in financial decision making, by parents.

**Parent experience**

- Family is the first institution that taught about financial literacy.
- My parents' experiences is my role models for my business.
- I frequently discuss with my parents about effective ways in lending my own money.
- My parents are my role model in managing money.
- My parents experienced high financial activities and moments.
- I can differentiate between needs and desires since my parents educate me about that.

**Financial literacy**

- Savings Interest is exceeding the deposit interest.
- Credit card holders can shop as freely as possible.
- Credit cards have the lowest financial costs.
- Insurance is the best investment.
- All profitable investments.
- Investing can be done by borrowing.

<table>
<thead>
<tr>
<th>Predictors</th>
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<th>S</th>
<th>t-statistics</th>
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<td>Significance F</td>
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</tbody>
</table>

Table 5 - Regression Model

a. Dependent Variable: financial literacy

***, **, * indicates regression analysis significant at 1%, 5%, 10% respectively

It shows that out of two independent variables, parents’ motivation have a positive relationship to financial literacy at 5% significant level. Thus, hypothesis 1 is accepted. However, the parents’ experience has no significant relationship to financial literacy. Thus, hypothesis 2 is not acceptable. This study fails to find any influence between parents’ experience and financial literacy as the p-value is greater than 5%.
6. Discussion and Conclusion

This study aims to discover the impact of parents’ motivation and parents’ experience on financial literacy. Results of analysis of 60 SME owners’ answers, revealed an interesting facts. The results show that parents’ motivation is one of important aspects in increasing financial literacy. For most of SME owners, parent’s motivation become an essential factor in making them financially literate. This is also happened because their parents also trained them through interactive discussion and activities about finance at their home. Related to this, Mandell and Klein (2007) found that people who come from better financial resources families, as well as have good motivation from their parents, are considerably more financially literate than those who come from less well-off families, thereby aggravating the discrepancy of economic level of welfare among families. The result of this study also found that people that having experience in discussing financial with their parents or family members, are have relation to their financial literacy. The parents can help their children to build their financial skill and knowledge by giving their children motivation and being role models for their children while giving them direct experiences. Direct and explicit teaching and demonstrating the concept of finance can affect their children’s financial literacy from early stage. Unfortunately, it is found that parents’ experiences which were transferred to their children do not have necessary contribution to their financial literacy. It is important for the parents to realize the best moments for their children to get involved in various financial activities so that they can get the best opportunity and take the advantages through learning experiences. This study proposes that SMEs’ owners should manage their finances with better understanding and skills. It may help to maintain the sustainability of business with effective financial management. The government supports to increase the level of financial literacy by issuing several policies in the fields of finance and financial products. For the financial services, it is necessary for more intensive authority in propagating literacy programs to the community. Furthermore, the academicians from higher learning institutions should assist the communities and SMEs owners to be literate and familiar with the financial issues. Besides, the study contributes to the literature on financial literacy. In addition, the study provides the essentials of having proper financial literacy among SMEs' owners and strengthening the roles of parents in giving experience and exposures in financial management.

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Effect of Practices Executed by Monitoring Education Assistants on Elementary School Teachers’ Mental Health

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ABSTRACT

Teachers’ mental health not only increases their efficiency, professional growth and development but also their effects their personality. Punjab education department established Monitoring education authorities to improve quality of education by monitoring quality indicators. Monitoring practices of Education Assistants may affect the mental health of teachers on their workplaces which culminate in low performance. The objective of this study was to determine effect of monitoring education authorities’ practices on school teachers’ mental health. 300 elementary school teachers were selected for data collection through cluster sampling technique in District Sheikhpura. Data collection was done through survey questionnaire with 17 statements. Findings revealed that a significant correlation between teachers’ performance and motivational techniques used by their heads. A pilot study was conducted to validate cronbach’s alpha 0.86 which statistically significant. Furthermore, following practices of Monitoring education authorities are effecting mental health index. On the bases of these findings that it is recommended that the government might give training to MEAs for improving their behaviours during their visits in schools.

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1. Introduction

The socio-economic development of any country is based on the most important indicator called education. For a nations’ socio-economic development it is a vital investment and given importance in all over the world. According to Government of Pakistan (2009) the role of education as a reform and
development of a country is emphasized in all the education policies of Pakistan. In Pakistan there is no proper attention on quality of education. Total 2 percent of GDP is investing by the federal and provincial government which is very less to promote education in the country. World Bank (2004) described that in our country both quality and quantity of education is poor. This backwardness has many reasons. Some of them are poverty, lack of infrastructure, lack of funds and teachers’ absenteeism. It is difficult in organizations of education to introduce the system of complex management in order to develop the means of modification for creation and formation of modern system (Sergeevich & Sevastjanovna, 2020).

According to Muriuning (2015) “monitoring is a continuous process of collecting information, providing check and balance and presenting factual position of assigned work.” The relevant information is gathered through monitoring process. “It is a type of evaluation that collects concrete information utilized for program reformation (Noh, 2006).” Mental health, in layman terms, is a “level of psychological well-being, or an absence of a mental disorder”. According to various personnel and professional demands the level of mental heath being effected in teachers. The social, physical and mental health of teachers not only develop teachers’ personality but it also adds to the teachers’ efficiency. (Lucas & Kate, 2019).

According to McCutcheon (2007) we have to remove these reasons in order to achieve national education goals. It is reviewed in the education policy of Pakistan recently that there are two main reasons (lack of commitment and implementation) because of them previous educational policies did not achieve the targets. Through motivation commitment gap might be filled and through better monitoring system implementation gap may be filled. Government of Pakistan (2009) recommended that in education sector monitoring system should be strengthen. The successful key to implementation of any educational program adequate, inclusive, rigorous, supervision and continuous monitoring are the most important elements. In order to assess implementation progress readily, there is need to some kind of mechanism for newly program introduced in any educational settings. This type of mechanism is called monitoring mechanism (Donkoh & Dwamena, 2014).

Khawaja (2001) stated that activities of monitoring and supervision by monitoring education assistant within an educational system. “Monitoring is a type of evaluation that collects concrete information utilized for program reformation” (Noh, 2006). According to Shah (2009) “monitoring is a continuous process of collecting information, providing check and balance and presenting factual position of assigned work.” The relevant information is gathered through monitoring. According to Shami (2009) monitoring involves results of communication at appropriate management level and for future evaluation of storage of information. For effective implementation of any program, monitoring is an effective part of management.

According to Tatnack (2000) “monitoring is an aspect of both accountability and development.” There are two types of monitoring functions i.e. passive and active. Without proper monitoring any organization cannot be achieved their desired goals. Therefore, in all developed countries there is an effective and organized system of monitoring in the world. Shah (2004) defined that in order to ensure quality education effective monitoring is an important part of management system. The following steps involved in monitoring; objectives formulation, instrumentation, and aims of education. Through these steps it is ensured whether these objectives are achieved vigilantly or not. Many countries have their own monitoring system in all over the world. The monitoring education in Pakistan lies with the education department itself. The responsibility of monitoring school programs are the responsibility of heads who are the immediate boss of the institution. On the other hand EDOs, DEOs, DDEOs, and AEOs are responsible for planning, organizing, staffing, directing, leading, controlling, monitoring and evaluating the institutions.

Under the Punjab Education Sector Reforms Program (PESRP) in 2000, Government of the Punjab (2001) has reforms in education sectors. PESRP has three pillars responsible for quality education. In 2001 under the act of devolution power, provincial government introduced an external monitoring system called Program Monitoring and Implementation which was initiated to enhance quality of education, access to education, allocation of resources to support devolution and improve governance in
Punjab at provincial and district level. The programs and projects of government of the Punjab are monitoring by the Monitoring and Implementation Unit (PMIU). In all thirty five districts there are appointed thirty five District Monitoring Officers (DMOs) for this purpose. “These DMOs had been appointed directly by the Chief Minister Secretariat after recommendation of services and general administration department of the provincial government and they were appointed from District Management Group.” A sub department of monitoring cell PMIU called monitoring cell was established to monitoring educational programs.

In order to collect data from schools retired Junior Commissioned Officers of army (JCOs) were appointed. The designation given to these newly appointed field workers are called Monitoring and Evaluation Assistants (MEAs). The monthly reports are sent to District Monitoring Officers made by them. Then further copies of these reports forwarded to the DCO and Chief Minister of Punjab. According to the report given by DMOs it is the duty of DCO to give instructions to concerned education officer to take action on these reports. At district level under the DCO both departments are working. The data is gathered by monitoring system through public education system and third party validated the data. With the help of these stake holders (EDOEs, DEOs, DMOs and heads) through PESRP has to improve the Punjab province education system. Under the PESRP at primary and secondary level enrollment rate has been increased GOP, 2007).

Many factors like devolution of power, external and internal motivation, commitment and efforts of government and media campaigns are responsible for this gain. In order to take corrective actions, monitoring system provide facts and figures provided by these factors. There is need to find effectiveness of both systems working parallel to the both monitoring system. Mental health of teachers are affected by this strict monitoring system. Therefore, researcher intended to investigate the effect of monitoring evaluation on mental health of teachers.

### 2. Research Questions

Following research questions were formed in this study.

1. Is there any significant difference between male and female teachers about “Effect of Practices Executed by Monitoring Education Assistants on Elementary School Teachers’ Mental Health”?

2. Is there any significant difference between rural and urban teachers about “Effect of Practices Executed by Monitoring Education Assistants on Elementary School Teachers’ Mental Health”?

3. Is there any significant difference between B. Ed. And M. Ed. teachers about “Effect of Practices Executed by Monitoring Education Assistants on Elementary School Teachers’ Mental Health”?

4. Is there any significant difference between PST and EST teachers about “Effect of Practices Executed by Monitoring Education Assistants on Elementary School Teachers’ Mental Health”?

5. Is there any significant difference between teachers about “Effect of Practices Executed by Monitoring Education Assistants on Elementary School Teachers’ Mental Health in terms of their qualification”?

6. Is there any significant difference between teachers about “Effect of Practices Executed by Monitoring Education Assistants on Elementary School Teachers’ Mental Health in terms of their age”?

### 3. Research Methodology

Present study was quantitative in nature. The survey method was used to collect data. Population of the study was all the Government Elementary School teachers working in schools of District Sheikhpura. Sample of the study was 300 elementary school teachers.

### 4. Instrumentation

Questioner was used for data collection. The researcher used a self-compiled questionnaire for data collection. The questionnaire consisted of five point Likert scales. Responses of the items rated on five point likert type scale from ‘strongly agree 5’ to ‘strongly Disagree1.”
5. Data Analysis
Data were analysed by using inferential statistics (independent samples t-test).

**Table 1**
*Comparison of Male and Female Teachers’ Perceptions regarding Effect of Practices Executed by Monitoring Education Assistants on Elementary School Teachers’ Mental Health*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Gender</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>t-value</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEAS</td>
<td>Male</td>
<td>121</td>
<td>57.09</td>
<td>11.34</td>
<td>4.872</td>
<td>298</td>
<td>0.094</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>179</td>
<td>50.21</td>
<td>12.42</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mental</td>
<td>Male</td>
<td>121</td>
<td>49.39</td>
<td>7.90</td>
<td>0.859</td>
<td>296.885</td>
<td>0.003</td>
</tr>
<tr>
<td>Health</td>
<td>Female</td>
<td>179</td>
<td>50.40</td>
<td>12.47</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The mean scores regarding the perceptions of male and female teachers about “Effect of Practices Executed by Monitoring Education Assistants on Elementary School Teachers’ Mental Health” was shown in table 1. No significant mean difference between male and female teachers’ was found at p≤0.05 level of significance. Whereas, male and female teachers have mean difference regarding mental health at p≤0.05 significance level.

**Table 2**
*Comparison of Teachers’ Perceptions regarding Effect of Practices Executed by Monitoring Education Assistants on Elementary School Teachers’ Mental Health in terms of Local*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Area</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>t-value</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEAS</td>
<td>Rural</td>
<td>172</td>
<td>54.21</td>
<td>12.67</td>
<td>1.980</td>
<td>298</td>
<td>0.775</td>
</tr>
<tr>
<td></td>
<td>Urban</td>
<td>128</td>
<td>51.35</td>
<td>11.99</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mental</td>
<td>Rural</td>
<td>172</td>
<td>49.05</td>
<td>7.99</td>
<td>1.625</td>
<td>190.048</td>
<td>0.001</td>
</tr>
<tr>
<td>Health</td>
<td>Urban</td>
<td>128</td>
<td>51.26</td>
<td>13.73</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The mean scores regarding the perceptions of rural and urban teachers about “Effect of Practices Executed by Monitoring Education Assistants on Elementary School Teachers’ Mental Health” was shown in table 2. A significant mean difference between male and female teachers’ was found at p≤0.05 level of significance. Whereas, rural and urban teachers have mean difference regarding mental health at p≤0.05 level of significance.
The mean scores regarding the perceptions of B.Ed and M.Ed. teachers about “Effect of Practices Executed by Monitoring Education Assistants on Elementary School Teachers’ Mental Health” was shown in table 3. A significant mean difference between B.Ed and M.Ed. teachers’ was found at p≤0.05 level of significance. Whereas, B. Ed. and M.Ed. teachers have no mean difference regarding mental health at p≤0.05 significance level.

### Table 3

<table>
<thead>
<tr>
<th>Variable</th>
<th>PQ</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>t-value</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEAS</td>
<td>B. Ed.</td>
<td>171</td>
<td>52.67</td>
<td>13.67</td>
<td>0.820</td>
<td>294.887</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>M. Ed.</td>
<td>126</td>
<td>53.81</td>
<td>10.26</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mental</td>
<td>B. Ed.</td>
<td>171</td>
<td>48.46</td>
<td>9.32</td>
<td>2.964</td>
<td>295</td>
<td>0.525</td>
</tr>
<tr>
<td>Health</td>
<td>M. Ed.</td>
<td>126</td>
<td>52.20</td>
<td>12.41</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The mean scores regarding the perceptions of PST and EST teachers about “Effect of Practices Executed by Monitoring Education Assistants on Elementary School Teachers’ Mental Health” was shown in table 4. No significant mean difference between PST and EST teachers’ was found at p≤0.05 level of significance. Whereas, PST and EST teachers have no mean difference regarding mental health at p≤0.05 level of significance.

### Table 4

<table>
<thead>
<tr>
<th>Variable</th>
<th>Designation</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>t-value</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEAS</td>
<td>EST</td>
<td>151</td>
<td>53.60</td>
<td>12.40</td>
<td>0.763</td>
<td>297</td>
<td>0.889</td>
</tr>
<tr>
<td></td>
<td>PST</td>
<td>148</td>
<td>52.51</td>
<td>12.42</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mental</td>
<td>EST</td>
<td>151</td>
<td>50.58</td>
<td>9.49</td>
<td>0.828</td>
<td>297</td>
<td>0.665</td>
</tr>
<tr>
<td>Health</td>
<td>PST</td>
<td>148</td>
<td>49.54</td>
<td>12.01</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 5

Comparison of Teachers’ Perceptions regarding Effect of Practices Executed by Monitoring Education Assistants on Elementary School Teachers’ Mental Health in terms of Age

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sum of Square</th>
<th>Mean Square</th>
<th>F</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEAS</td>
<td>168.753</td>
<td>84.377</td>
<td>0.543</td>
<td>2</td>
<td>0.582</td>
</tr>
<tr>
<td></td>
<td>46175.234</td>
<td>155.472</td>
<td></td>
<td>297</td>
<td></td>
</tr>
<tr>
<td></td>
<td>46343.987</td>
<td></td>
<td></td>
<td>299</td>
<td></td>
</tr>
<tr>
<td>Mental Health</td>
<td>152.168</td>
<td>76.084</td>
<td>0.644</td>
<td>2</td>
<td>0.526</td>
</tr>
<tr>
<td></td>
<td>35097.832</td>
<td>118.175</td>
<td></td>
<td>297</td>
<td></td>
</tr>
<tr>
<td></td>
<td>35250.000</td>
<td></td>
<td></td>
<td>299</td>
<td></td>
</tr>
</tbody>
</table>

Age wise mean scores regarding the perceptions of male and female teachers about “Effect of Practices Executed by Monitoring Education Assistants on Elementary School Teachers’ Mental Health” was shown in table 5. “No significant mean difference between male and female teachers’ was found at p≤0.05 level of significance”. Whereas, male and female teachers have no mean difference regarding mental health at p≤0.05 level of significance.

Table 6

Comparison of Teachers’ Perceptions regarding Effect of Practices Executed by Monitoring Education Assistants on Elementary School Teachers’ Mental Health in terms of Qualification

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sum of Square</th>
<th>Mean Square</th>
<th>F</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qualification</td>
<td>141.759</td>
<td>70.880</td>
<td>0.456</td>
<td>2</td>
<td>0.634</td>
</tr>
<tr>
<td></td>
<td>46202.227</td>
<td>155.563</td>
<td></td>
<td>297</td>
<td></td>
</tr>
<tr>
<td></td>
<td>46343.987</td>
<td></td>
<td></td>
<td>299</td>
<td></td>
</tr>
<tr>
<td>Qualification</td>
<td>105.410</td>
<td>52.705</td>
<td>0.445</td>
<td>2</td>
<td>0.641</td>
</tr>
<tr>
<td></td>
<td>35144.590</td>
<td>118.332</td>
<td></td>
<td>297</td>
<td></td>
</tr>
<tr>
<td></td>
<td>35250.000</td>
<td></td>
<td></td>
<td>299</td>
<td></td>
</tr>
</tbody>
</table>

Qualification wise mean scores regarding the perceptions of male and female teachers about “Effect of Practices Executed by Monitoring Education Assistants on Elementary School Teachers’ Mental Health” was shown in table 6. “No significant mean difference between male and female teachers’ was found at p≤0.05 level of significance”. Whereas, male and female teachers have no mean difference regarding mental health at p≤0.05 level of significance.

6. Conclusions
On the basis of data analyses, the following conclusions are drawn.

1. MEAs checked the balance/record of School Council (SC), Farogh-e-Taleem funds.
2. “MEAs also reviewed the number of meetings held during the past three months by the school board and the visit by the District Officer and the Deputy District Education Officer.”
3. The necessary equipment would be tested by MEAs like, cleanliness of building, parks, and school playgrounds and classroom environment.
4. This monitoring system for the improvement of primary education system is valuable.
5. Daily three to four hour MEAs should visit by MEAs regularly in schools.
6. School monitoring training did not received by MEAs.
7. Before visit to any school deputy district education officer did not inform by MEAs before the visit to any school.
8. Head-teachers provide co-operation to MEAs during their visit to school.
9. Number of students present and absent in the class should be checked by the MEAs at the time of monitoring and also check Farogh-e-Taleem fund received per student.
10. MEAs examined the students ' level of cleanliness and a number of free sets of textbooks.

7. Recommendations
Following were the recommendations on the basis of the above findings.
1. Monitoring education authorities receive no school trainings. Therefore, MEAs should provide training before the 15 days of their appointments and an orientation session should be conducted.
2. Before visiting to any school MEAs should informed by District Education Officer / Deputy District Education Officer, therefore, the visit schedule should be provided to the District Education Officer/ Deputy District Education Officer by MEAs.

References
Co-movement between Sukuk, Conventional Bond and Islamic Stock Markets under Bullish and Bearish Market Conditions: An Application of Quantile-on-Quantile Regression

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ARTICLE DETAILS

Abstract

This study explores the asymmetric co-movement between conventional bonds market, sukuk market and Islamic stock markets of top ten Islamic economies. The study used daily data ranging from 1st January 2008 to 31st December 2019. However, for the dependency structure, we used Quantile-on-Quantile (QQ) method, which captures the dependence between the entire distributions of financial assets and uncovers some nuance features of the relationship. The empirical findings show that under the stress condition (bearish condition), both bonds and stocks markets negatively commove. However, in the bullish market condition, these markets show week positive correlation/ co-movement in all the sample economies. The findings also confirmed that under the bearish condition, a mild negative correlation exists between sukuk and Islamic stock markets except for Malaysia. However, in the bullish market condition, sukuk markets and stock markets show strong positive correlation in all sample economies. Furthermore, study also enriches quantiles estimation by using quantiles granger causality approach. The findings show that the conventional bond market, sukuk market and Islamic stock market granger cause to each other on all the quantiles (in bullish or bearish market conditions.

Keywords

QQ regression, Sukuk market, Conventional bond market, Islamic stock market

JEL Classification:
M40, M41

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management strategies. They reflect and encapsulate investors’ behavior and responses to changing market conditions as well as their forward-looking perspectives or the economy (Nasir and Farooq, 2017). Hence, not surprisingly, the determinants and the dynamics that govern the relationship between the two markets have been a popular theme in the relevant literature (Ahmed and Elsayed, 2019; Duqi and Al-Tamimi, 2019). Islamic Stocks index and Conventional bonds market have different risk-return characteristics and are of great interest for traders, portfolio managers as well as policymakers. Many scholars have been involved in plentiful theoretical and empirical studies to provide a better understanding of the interplay between these two classes of financial assets (Shahzad, Raza, Shahzad and Ali, 2017; Duqi and Al-Tamimi, 2019). The research is motivated by several theoretical arguments of the Islamic stock index-conventional bond market interplay related to the price discovery information process, contagion effects, capital market efficiency, volatility spillovers, portfolio’ allocations and optimal hedging strategies (Ahmed and Elsayed, 2019). In financial markets, sharia-compliant Islamic stocks index and sukuk market are the two main assets classes to design investment portfolios. On the academic side, it is very important to answer the question of whether Islamic bonds (sukuk market) have the same behavior as conventional bonds market in terms of co-evolution. In this vein, many counterarguments are identified in the Islamic finance literature, but no empirical consensus is reached. For Islamic portfolio managers, it is very important to comprehend the dynamic linkage between the two financial markets since they can provide useful implications in terms of creating effective hedging strategies and informational efficiency. It can help to understand how Islamic assets are co-reacting to the arrival of new information and their degree of persistence to innovations through time (Ahmed and Elsayed, 2019). For policymakers, it is well recognized that the co-movement between these markets is essential in the sense that it may be expedient for assessing policy effectiveness. Currently, the related literature is extremely probe and mainly concerned with developed and emerging capital markets, however, no particular attention is paid to analyze stock-conventional bond interplay in the Islamic financial markets. The global events that have shaken the world economy are now more insistent and frequent in large developed and emerging economies worldwide. The synchronization of economic sectors and sustainable international financial integration is considered as the essentials for the market turbulences (Coeurdacier, Rey, and Winant, 2020) Modeling the dependence structure between financial assets is of immense importance to construct an optimal portfolio. The current study will cover the existing gap by providing co-movement between sukuk, conventional bonds and Islamic stock markets under different market conditions.

2. Literature Review

In this section, we are giving a brief review of some previous studies which analyzes the relationship between conventional bond, sukuk and Islamic stock. Naifar (2016) investigated the dependence structure between Islamic bond (sukuk) and stock market in Saudi Arabia by using Archimedean copula models. The findings revealed that the sukuk yield exhibited significant and symmetric dependence with stock market returns. Ahmed and Elsayed (2019) analyzed the dynamic interdependencies among bonds, sukuk markets, conventional stock and Islamic stock in Malaysia. It was found that conventional bond and stock markets were the main net transmitters of spillovers from other markets, while sukuk market was the net receipt of return shocks from other markets. Nasir and Farooq (2017) analyzed the value of risk of conventional bonds and sukuk in Pakistan and revealed that sukuk were less risky and more stable instrument as compared to conventional bonds. Shahzad et al. (2017) examined the association of gold and conventional bonds with stock market in USA, UK, Japan, Canada and Germany by using the novel vector autoregressive and found that gold was a strong hedge and diversifier for the stock portfolio except when both market are under stress. In another study, Shahzad et al. (2017) examined the association of gold and conventional bonds with stock market in USA, UK, Japan, Canada and Germany by using the novel vector autoregressive and found that gold was a strong hedge and diversifier for the stock portfolio except when both market are under stress. Nasir and Farooq (2017) analyzed the value of risk of conventional bonds and sukuk in Pakistan and revealed that sukuk were less risky and more stable instrument as compared to conventional bonds. Shahzad et al. (2020) examined the safe haven property of gold for stock and conventional bond markets of G-7 countries by using the cross quantilogram method and observed that gold did not act as a safe haven for stock and conventional bond markets. In another study, Mcmillan (2019) examined the behavior of stock and conventional bond and observed that stock and conventional bond return had significant predictive power to other country stock and conventional bond return. It is cleared from the review of literature that previous studies are mainly concerned with developed and emerging capital
markets, however, no particular attention is paid to analyze the co-movement between conventional bond market, sukuk and Islamic stock in different market conditions (i.e. bulish and bearish conditions) as these markets interplay in the financial markets. Co-movement between conventional bonds market, sukuk market and Islamic Stocks index is the critical issue for portfolio’s designing and hedging strategies for investors who have hugely different time investment horizons. So in this study, we analyze the relationship between these assets from a different angle under different market conditions in the top 10 Islamic stock markets of the world. No previous study has analyzed the asymmetric or non-linear relationship between these variables at both bottom and upper quantiles of the distribution of data by applying a new approach “Quantile-on-Quantile”.

3. Data and Methodology
3.1 Variables and Data Sources
This study examines co-movement between conventional bonds, sukuk and Islamic stocks under bearish and bullish market conditions in top 10 Islamic stock markets\(^4\) based on daily data ranging from 1\(^{st}\) January 2008 to 31\(^{st}\) December 2019 and extracted from DataStream database. Following the studies of Naifer (2016) and Nasir and Farooq (2017), we have taken Islamic stock as the dependent variable while conventional bond and sukuk market as independent variables. We use Quantile-on-Quantile (QQ) approach, which captures the dependence between the entire distributions of financial assets and uncovers some nuance features of the relationship.

3.2 Quantile Autoregressive Unit Root Test
The stationary properties of the time series data at each quantile and on the conditional mean is checked by Quantile Auto-Regressive (QAR) proposed by Koenker and Xiao (2004). The basic characteristics of QAR model are generalized by Galvao (2009) by considering linear time trends and covariates in model. The numerous tenacity parameters (\(\hat{\alpha}(\tau)\)) for each quantile of the conditional distribution of \(X_t\) is estimated and \(t\)-statistics for various quantiles \(\tau \in T\) are obtained to test the null hypothesis \(H_0: \alpha(\tau) = 1\).

3.3 Quantile Cointegration Test
The novelty of the current study lies in its endeavor to analyze the systematic influence of various frequencies of stock market on the shape, location and scale of the Islamic stock index by applying Quantile Cointegration Test of Xiao (2009). To deal with the endogeneity problem in cointegration model, Xiao (2009) decomposed the cointegration equation errors into pure innovation component and lead-lag terms. Furthermore, the Quantile Cointegration Test of Xiao (2009) is the extended form of the cointegration test proposed by Engle and Granger (1987). Xiao (2009) took the null hypothesis as \(H_0: \beta(\tau) = \beta\) over all the quantiles. A rule of the absolute value of the difference \(\hat{V}_n(\tau) = (\hat{\beta}(\tau) - \beta)\) is proposed as a test statistic under null hypothesis. The test statistic \(\sup_{\tau}|\hat{V}_n(\tau)|\) across all the quantiles distribution is employed. Following Xiao (2009), this study applies 1000 Monte Carlo simulations to calculate the critical values of \(\sup_{\tau}|\hat{V}_n(\tau)|\).

3.4 Quantile on Quantile Approach
Most of previous studies had analyzed the association between two variables by employing linear regression and then move to the Quantile Regression Approach (QRA) of Koenker and Bassett (1978). However, the QRA framework is unable to capture the entire dependency structure between the variables. Although the QRA framework can consider heterogeneity at various points of the conditional distribution, it cannot deal with the the nature of uncertainty which may also affect the relationship between independent and dependent variables. Owing to this lacuna of QRA, Sim and Zhou (2015) introduced a novel approach named “Quantile-on-Quantile (QQ)” which can excellently deal with all

\(^4\) Bahrain, Brunei, Kuwait, Libya, Malaysia, Oman, Qatar, Saudi Arabia, Turkey and United Arab Emirates.
these problems. The QQ methodology would help in capturing the variations in the association between
the variables at each point of their conditional distribution and provides a complete and clear picture of
the dependency relationship. The study employs the QQ framework by selecting some uncertainty
quantiles and by analyzing the local effect of conventional bonds market (CBM) and sukuk market
(SM). In recent years, a remarkable work was done by using QQ approach to estimate the association
between the variables at different bottom and top quantiles (Sharif, Afshan, and Qureshi, 2019; Chang et
al., 2020; Sharif et al., 2020). Suppose, ISI represents the Islamic stock index of the country at time t.
CBM and SM is the conventional bond market and sukuk market at time t, respectively. \( \mu_t \) is the
quantile residual term. These quantile regression methods help to analyze the empirical effects of the
conventional bond market and sukuk market across the different quantiles of Islamic stock market.

\[
\begin{align*}
ISI_t &= \beta^0(CBM_t) + \mu^0_t \quad \text{Eq.(1)} \\
ISI_t &= \beta^0(SM_t) + \mu^0_t \quad \text{Eq.(2)}
\end{align*}
\]

This regression technique is flexible because it evaluates the functional dependence between Islamic
stock index (ISI), conventional bond and sukuk market in the top ten Islamic countries. The main benefit
of the specification is its flexibility because no previous hypothesis exists regarding the functional
relationship between sukuk market and stock market growth. Eq.(1) is examined the neighborhood of
Islamic stock index employing local linear regression.

\[
\begin{align*}
\beta_0 (ISI) &= \beta_0 (CBM) + \beta_0 (CBM^\tau)(CBM-CBM^\tau) \quad \text{Eq. (3)} \\
\beta_0 (ISI) &= \beta_0 (SM) + \beta_0 (SM^\tau)(SM-SM^\tau) \quad \text{Eq. (4)}
\end{align*}
\]

\( \beta_0 \) is partial derivative of \( \beta^\theta(CBM_t) \) with respect to \( (SM_t) \), also called marginal effect or response. The
parameters \( \beta_0 (CBM) \) and \( \beta_0 (SM) \) are the doubly index in \( \theta \) and \( \tau \), that give \( \beta_0 (CBM_t) \) is function of \( \theta \)
and \( \beta_0 (SM) \) is function of \( \tau \), and additional \( \beta_0 (SM) \) can be renamed as \( \beta_0 (\theta, \tau) \). Accordingly, the
revised forms of eq 3 and 4 can be written as follows:

\[
\begin{align*}
\beta_0 (ISI) &= \beta_0 (\theta, \tau) + \beta_0 (\theta, \tau) (CBM-CBM^\tau) \quad \text{Eq.(5)} \\
\beta_0 (ISI) &= \beta_0 (\theta, \tau) + \beta_0 (\theta, \tau) (SM-SM^\tau) \quad \text{Eq.(6)}
\end{align*}
\]

By substituting Eq.(5) and Eq.(6) in Eq. (1), the following equations of QQ methodology are obtained:

\[
\begin{align*}
ISI_t &= \beta_0 (\theta, \tau) + \beta_1 (\theta, \tau) (CBM-CBM^\tau) + u^0_t \quad \text{Eq.(7)} \\
ISI_t &= \beta_0 (\theta, \tau) + \beta_1 (\theta, \tau) (SM-SM^\tau) + u^0_t \quad \text{Eq.(8)}
\end{align*}
\]

Equations 7 and 8 show the functional form of QQ methodology. The part (*) of Eq.7 and 8 is the \( \theta \)
conditional quantile of Islamic stock Index. Eq. (7) reflects the relationship between \( \theta \)th quantile of
the conventional bond market and the \( \tau \)th quantile of islamic stock index. On the other hand, Eq. (8) shows
the association between \( \theta \)th quantile of sukuk market and the \( \tau \)th quantile of Islamic stock index. The
quantile relationship between conventional bond market, sukuk market and Islamic stock index is truly
established due to the parameters \( \beta_0 \) and \( \beta_1 \), which are doubly indexed in \( \theta \) and \( \tau \). These parameters vary
due to different values of \( \theta \)th quantiles of conventional bond and stock market. In Eq. (7) and (8), we
estimate the overall dependance structure between co-movement of sukuk market, conventional bond
market and Islamic stocks market.

4. Results and Discussion

Table1 exhibits the result of quantile unit root test. The stationary test documents the presence of unit
root at the level for conventional bonds market, sukuk market and Islamic stock index for the different
conditional distribution of quantiles. The result of the unit root test confirms that the entire variables are
showing non-stationary behavior at level.
|      | ISI | t-stats | CBM  | ISI | t-stats | CBM  | ISI | t-stats | CBM  | ISI | t-stats | CBM  | ISI | t-stats | CBM  | ISI | t-stats | CBM  | ISI | t-stats | CBM  | ISI | t-stats | CBM  |
|------|-----|---------|------|-----|---------|------|-----|---------|------|-----|---------|------|-----|---------|------|-----|---------|------|-----|---------|------|-----|---------|------|-----|---------|------|
| 0.05 | 0.01 | 0.058  | 0.971-0.128 | 0.922-1.559 | 0.988-0.292 | 0.972-0.583 | 0.992-0.114 | 0.980-0.369 | 0.978-0.250 | 0.973-1.748 | 1.001-0.674 |
| 0.10 | 0.01 | 0.174  | 0.979-0.166 | 1.010-0.379 | 0.989-0.354 | 0.979-0.207 | 1.001-0.031 | 0.985-1.619 | 0.984-0.824 | 0.986-2.446 | 1.000-0.904 |
| 0.15 | 0.01 | 0.229  | 0.972-0.865 | 1.000-0.012 | 0.988-2.252 | 0.980-2.383 | 0.996-0.375 | 0.990-1.950 | 0.995-0.362 | 0.986-2.044 | 1.000-1.274 |
| 0.20 | 0.01 | 0.343  | 0.968-2.582 | 0.991-1.007 | 0.990-2.435 | 0.978-2.564 | 0.994-0.724 | 0.988-2.059 | 0.995-0.503 | 0.983-1.979 | 1.000-1.594 |
| 0.25 | 0.01 | 0.470  | 0.969-2.516 | 0.989-1.559 | 0.992-2.569 | 0.979-2.595 | 0.997-0.423 | 0.987-2.170 | 0.991-0.951 | 0.991-2.206 | 1.000-1.889 |
| 0.30 | 0.01 | 0.647  | 0.974-2.390 | 0.985-1.916 | 0.993-2.582 | 0.979-2.355 | 0.997-0.474 | 0.991-1.846 | 0.991-1.304 | 0.994-2.153 | 0.998-1.613 |
| 0.35 | 0.01 | 0.818  | 0.983-2.135 | 0.987-1.474 | 0.997-1.513 | 0.980-1.808 | 0.997-0.666 | 0.993-1.569 | 0.989-1.668 | 0.995-2.104 | 0.999-1.267 |
| 0.40 | 0.01 | 1.241  | 0.985-2.011 | 0.986-1.703 | 0.997-1.540 | 0.980-2.209 | 0.997-1.205 | 0.994-1.852 | 0.990-1.970 | 0.995-1.770 | 0.999-0.845 |
| 0.45 | 0.01 | 1.665  | 0.986-2.232 | 0.985-1.801 | 0.997-1.430 | 0.980-2.318 | 0.997-2.340 | 0.995-1.974 | 0.989-2.249 | 0.995-2.001 | 0.999-0.219 |
| 0.50 | 0.01 | 1.754  | 0.986-2.259 | 0.985-1.575 | 0.997-1.134 | 0.980-2.374 | 0.997-2.593 | 0.995-1.918 | 0.989-2.380 | 0.995-2.006 | 0.998-0.970 |
| 0.55 | 0.01 | 1.936  | 0.986-2.484 | 0.984-1.929 | 0.998-1.158 | 0.981-2.358 | 0.997-2.194 | 0.994-2.434 | 0.989-2.251 | 0.995-1.757 | 0.997-1.506 |
| 0.60 | 0.01 | 1.463  | 0.984-2.482 | 0.983-1.604 | 0.998-1.050 | 0.981-1.135 | 0.997-1.277 | 0.989-2.001 | 0.998-1.974 | 0.995-2.071 | 0.996-1.561 |
| 0.65 | 0.01 | 1.912  | 0.978-2.351 | 0.982-1.291 | 0.996-1.488 | 0.982-1.445 | 0.994-1.252 | 0.990-1.906 | 0.988-1.705 | 0.995-2.394 | 0.993-1.954 |
| 0.70 | 0.01 | 2.199  | 0.974-2.393 | 0.979-1.914 | 0.993-1.068 | 0.982-1.507 | 0.994-0.954 | 0.988-1.957 | 0.998-1.887 | 0.995-2.199 | 0.992-1.025 |
| 0.75 | 0.01 | 2.296  | 0.964-2.570 | 0.974-2.265 | 0.997-0.833 | 0.983-1.852 | 0.995-0.580 | 0.987-2.204 | 0.998-1.549 | 0.993-2.279 | 0.990-0.687 |
| 0.80 | 0.01 | 2.023  | 0.945-1.409 | 0.960-1.981 | 1.001-0.404 | 0.983-1.669 | 0.994-0.719 | 0.990-1.955 | 0.988-1.159 | 0.984-2.333 | 0.986-0.458 |
| 0.85 | 0.01 | 0.670  | 0.934-1.137 | 0.958-1.474 | 1.005-1.759 | 0.980-2.439 | 0.988-1.295 | 0.993-1.879 | 0.989-0.694 | 0.983-2.215 | 0.966-0.682 |
| 0.90 | 0.01 | 0.115  | 0.924-0.807 | 0.979-0.475 | 1.004-0.154 | 0.973-1.973 | 0.977-0.773 | 0.984-0.803 | 0.996-0.137 | 0.982-0.974 | 0.888-1.976 |
| 0.95 | 0.01 | 0.690  | 0.864-1.057 | 0.981-0.280 | 1.000-0.010 | 0.969-0.668 | 0.972-0.439 | 0.980-0.551 | 0.950-0.398 | 0.984-0.674 | 0.760-1.957 |

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Oman | Qatar | Saudi Arabia | Turkey | UAE
| Country       | ISI | a(t) | t-stats | SM | a(t) | t-stats | IS | a(t) | t-stats | SM | a(t) | t-stats | IS | a(t) | t-stats | SM | a(t) | t-stats | IS | a(t) | t-stats | SM | a(t) | t-stats | IS | a(t) | t-stats |
|--------------|-----|------|---------|----|------|---------|----|------|---------|----|------|---------|----|------|---------|----|------|---------|----|------|---------|----|------|---------|----|------|---------|----|------|---------|
| Bahrain      | 0.05| 1.001| -0.128  | 0.971| -1.559| 0.988   | -0.292| 0.972| -0.583| 0.992| -0.369| 0.978   | -0.250| 0.973| -1.748| 1.001| 0.674|
| Brunei       | 0.10| 1.001| -0.166  | 1.010| 0.379 | 0.989   | -0.354| 0.979| -2.027| 1.001| 0.031 | 0.985   | -1.619| 0.984| -0.824| 1.000| 0.904|
| Kuwait       | 0.15| 0.998| -0.865  | 1.000| 0.012 | 0.988   | -2.252| 0.980| -2.383| 0.996| -0.375| 0.990   | -1.950| 0.995| -0.362| 0.986| 2.044|
| Libya        | 0.20| 0.998| -1.343  | 0.968| -2.582| 0.991   | -1.000| 0.995| -2.564| 0.994| -0.724| 0.988   | -2.059| 0.999| -0.503| 0.983| -1.979|
| Malaysia     | 0.25| 0.999| -0.740  | 0.969| -2.516| 0.989   | -1.559| 0.992| -2.595| 0.997| -0.423| 0.987   | -2.170| 0.991| -0.951| 0.991| -2.206|
| Oman         | 0.30| 1.000| -0.447  | 0.974| -2.390| 0.985   | -1.916| 0.993| -2.355| 0.997| -0.474| 0.991   | -1.846| 0.991| -1.304| 0.994| -2.153|
| Qatar        | 0.35| 0.999| -0.618  | 0.983| -2.135| 0.987   | -1.474| 0.997| -1.513| 0.980| -1.808| 0.997   | -1.668| 0.995| -1.064| 0.999| -2.104|
| Saudi Arabia | 0.40| 0.999| -1.241  | 0.985| -2.011| 0.986   | -1.703| 0.997| -1.540| 0.980| -2.209| 0.997   | -1.205| 0.992| -0.190| 0.995| -1.770|
| Turkey       | 0.45| 0.999| -1.665  | 0.986| -2.232| 0.983   | -1.801| 0.997| -1.430| 0.980| -2.318| 0.997   | -2.340| 0.995| -1.794| 0.989| -2.249|
| United Arab  | 0.50| 0.999| -1.754  | 0.986| -2.259| 0.985   | -1.575| 0.997| -1.134| 0.980| -2.374| 0.997   | -2.593| 0.995| -1.918| 0.989| -2.380|
| Emirates     | 0.55| 0.998| -1.936  | 0.986| -2.484| 0.984   | -1.929| 0.998| -1.158| 0.981| -2.358| 0.997   | -2.194| 0.995| -2.434| 0.989| -2.251|
| UAE          | 0.60| 0.998| -1.463  | 0.984| -2.482| 0.983   | -1.604| 0.998| -1.050| 0.981| -1.135| 0.997   | -1.277| 0.989| -2.001| 0.988| -1.974|
| United States| 0.65| 0.998| -1.312  | 0.978| -2.351| 0.982   | -1.291| 0.996| -1.488| 0.982| -1.445| 0.994   | -1.252| 0.990| -1.906| 0.988| -2.394|
| United Kingdom| 0.70| 0.998| -2.199  | 0.974| -2.393| 0.979   | -1.914| 0.997| -1.068| 0.982| -1.507| 0.994   | -0.954| 0.988| -1.957| 0.988| -2.199|
| United States| 0.75| 0.998| -2.296  | 0.964| -2.570| 0.974   | -2.265| 0.997| -0.833| 0.983| -1.852| 0.995   | -0.580| 0.987| -2.204| 0.989| -2.279|
| United States| 0.80| 0.998| -2.023  | 0.945| -1.409| 0.960   | -1.981| 1.001| 0.404| 0.983| -1.669| 0.994   | -0.719| 0.990| -1.955| 0.988| -2.333|
| United States| 0.85| 0.998| -0.670  | 0.934| -1.737| 0.958   | -1.474| 1.005| 1.759| 0.980| -2.439| 0.998   | -1.295| 0.993| -1.879| 0.989| -2.215|
| United States| 0.90| 0.999| -0.115  | 0.924| -0.807| 0.979   | -0.475| 1.004| 0.154| 0.973| -1.973| 0.997   | -0.773| 0.984| -0.803| 0.996| -0.974|
| United States| 0.95| 0.991| -0.690  | 0.864| -1.057| 0.981   | -0.280| 1.000| 0.010| 0.969| -0.668| 0.972   | -0.439| 0.990| -0.551| 0.950| -0.674|

Source: Authors Estimation
Table 1: Quantile Unit Root Test
Table 2(a) and 2(b) employ the Xiao (2009) cointegration test to confirm that long-run association between the variables by applying the grid of 10 quantiles (0.01-0.95) in logarithm form. The critical values are produced by using 1000 Monte Carlo simulations. CV1, CV5, and CV10 are the critical values at 1%, 5% and 10% level of significance, respectively. Supremum norm values of coefficients (β and Γ) are larger than all the critical values showing that the cointegration association between the variables changes over quantile distribution which is the sign of a significant nonlinear or asymmetric long-run association.

Table 2(a): Quantile Cointegration Test Results (Conventional Bond Market and Islamic Stock Index)

<table>
<thead>
<tr>
<th>Country</th>
<th>Coefficient</th>
<th>Sup,</th>
<th>CV1</th>
<th>CV5</th>
<th>CV10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bahrain</td>
<td>β</td>
<td>68568.30</td>
<td>58359.38</td>
<td>57206.27</td>
<td>54777.74</td>
</tr>
<tr>
<td>CBM_t vs. ISI_t</td>
<td>Γ</td>
<td>2466.69</td>
<td>1489.24</td>
<td>1458.50</td>
<td>1480.22</td>
</tr>
<tr>
<td>Brunei</td>
<td>β</td>
<td>8336.25</td>
<td>5293.26</td>
<td>3144.06</td>
<td>2547.33</td>
</tr>
<tr>
<td>CBM_t vs. ISI_t</td>
<td>Γ</td>
<td>166.67</td>
<td>104.35</td>
<td>49.62</td>
<td>39.31</td>
</tr>
<tr>
<td>Kuwait</td>
<td>β</td>
<td>3948.92</td>
<td>3788.25</td>
<td>2452.83</td>
<td>2054.07</td>
</tr>
<tr>
<td>CBM_t vs. ISI_t</td>
<td>Γ</td>
<td>162.729</td>
<td>150.800</td>
<td>46.076</td>
<td>49.765</td>
</tr>
<tr>
<td>Libya</td>
<td>β</td>
<td>8646.53</td>
<td>2933.04</td>
<td>2413.40</td>
<td>1420.20</td>
</tr>
<tr>
<td>CBM_t vs. ISI_t</td>
<td>Γ</td>
<td>166.70</td>
<td>79.97</td>
<td>60.80</td>
<td>50.72</td>
</tr>
<tr>
<td>Malaysia</td>
<td>β</td>
<td>39726.06</td>
<td>27489.40</td>
<td>13665.41</td>
<td>5634.60</td>
</tr>
<tr>
<td>CBM_t vs. ISI_t</td>
<td>Γ</td>
<td>1299.47</td>
<td>1009.52</td>
<td>797.40</td>
<td>569.59</td>
</tr>
<tr>
<td>Oman</td>
<td>β</td>
<td>81833.54</td>
<td>67123.30</td>
<td>37922.33</td>
<td>21848.22</td>
</tr>
<tr>
<td>CBM_t vs. ISI_t</td>
<td>Γ</td>
<td>993.67</td>
<td>646.61</td>
<td>588.50</td>
<td>564.42</td>
</tr>
<tr>
<td>Qatar</td>
<td>β</td>
<td>19777.30</td>
<td>15989.22</td>
<td>11169.07</td>
<td>7647.05</td>
</tr>
<tr>
<td>CBM_t vs. ISI_t</td>
<td>Γ</td>
<td>657.55</td>
<td>554.00</td>
<td>532.10</td>
<td>224.68</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>β</td>
<td>9382.00</td>
<td>7200.00</td>
<td>5900.70</td>
<td>2622.00</td>
</tr>
<tr>
<td>CBM_t vs. ISI_t</td>
<td>Γ</td>
<td>249.67</td>
<td>161.40</td>
<td>129.58</td>
<td>99.09</td>
</tr>
<tr>
<td>Turkey</td>
<td>β</td>
<td>8754.51</td>
<td>6730.00</td>
<td>4770.11</td>
<td>1488.90</td>
</tr>
<tr>
<td>CBM_t vs. ISI_t</td>
<td>Γ</td>
<td>399.10</td>
<td>200.60</td>
<td>100.01</td>
<td>97.00</td>
</tr>
<tr>
<td>UAE</td>
<td>β</td>
<td>7111.31</td>
<td>3492.10</td>
<td>3088.11</td>
<td>2225.30</td>
</tr>
<tr>
<td>CBM_t vs. ISI_t</td>
<td>Γ</td>
<td>600.40</td>
<td>300.84</td>
<td>215.17</td>
<td>117.11</td>
</tr>
</tbody>
</table>

Note: This table presents the results of the quantile cointegration test of Xiao (2009) for the conventional bonds markets (CBM) and ISI (Islamic stock index). We test the stability of the coefficients β and Γ in the quantile cointegration model.

Table 2(b): Quantile Cointegration Test Results (Sukuk Market and Islamic Stock Index)

<table>
<thead>
<tr>
<th>Country</th>
<th>Coefficient</th>
<th>Sup,</th>
<th>CV1</th>
<th>CV5</th>
<th>CV10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bahrain</td>
<td>β</td>
<td>66773.33</td>
<td>60779.36</td>
<td>49405.89</td>
<td>29890.92</td>
</tr>
<tr>
<td>SM_t vs. ISI_t</td>
<td>Γ</td>
<td>6525.92</td>
<td>1499.40</td>
<td>1066.50</td>
<td>940.42</td>
</tr>
<tr>
<td>Brunei</td>
<td>β</td>
<td>8001.20</td>
<td>5009.52</td>
<td>4033.00</td>
<td>3059.31</td>
</tr>
<tr>
<td>SM_t vs. ISI_t</td>
<td>Γ</td>
<td>179.80</td>
<td>109.63</td>
<td>66.81</td>
<td>51.91</td>
</tr>
<tr>
<td>Kuwait</td>
<td>β</td>
<td>4088.99</td>
<td>3077.28</td>
<td>2224.08</td>
<td>1155.00</td>
</tr>
<tr>
<td>SM_t vs. ISI_t</td>
<td>Γ</td>
<td>133.72</td>
<td>120.66</td>
<td>78.00</td>
<td>61.76</td>
</tr>
<tr>
<td>Libya</td>
<td>β</td>
<td>6066.32</td>
<td>4022.00</td>
<td>3921.00</td>
<td>2255.22</td>
</tr>
<tr>
<td>SM_t vs. ISI_t</td>
<td>Γ</td>
<td>177.73</td>
<td>83.197</td>
<td>61.86</td>
<td>50.22</td>
</tr>
<tr>
<td>Malaysia</td>
<td>β</td>
<td>51227.00</td>
<td>40755.00</td>
<td>30609.01</td>
<td>24097.70</td>
</tr>
<tr>
<td>SM_t vs. ISI_t</td>
<td>Γ</td>
<td>1099.88</td>
<td>1004.25</td>
<td>991.64</td>
<td>769.29</td>
</tr>
<tr>
<td>Oman</td>
<td>β</td>
<td>43819.90</td>
<td>22391.28</td>
<td>13981.44</td>
<td>9899.23</td>
</tr>
<tr>
<td>SM_t vs. ISI_t</td>
<td>Γ</td>
<td>999.72</td>
<td>466.21</td>
<td>285.30</td>
<td>145.72</td>
</tr>
<tr>
<td>Qatar</td>
<td>β</td>
<td>66719.30</td>
<td>56797.32</td>
<td>40197.00</td>
<td>20679.00</td>
</tr>
<tr>
<td>SM_t vs. ISI_t</td>
<td>Γ</td>
<td>7646.55</td>
<td>5244.00</td>
<td>3401.11</td>
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Quantile-on-Quantile Estimation
This section describes the empirical results of the Quantile and Quantile analysis between conventional bond market, Sukuk market and Islamic stock index of the Top 10 Islamic stock markets.

Figure 1: Impact of conventional bond on Islamic Stocks
Quantile-on-Quantile (QQ) estimates of the slope coefficient, $\beta_1 (\theta, \tau)$

i). Bahrain

ii). Brunei

iii). Kuwait

iv). Libya

v). Malaysia

vi). Oman
Note: Slope coefficient $\beta_{i}(\theta, \tau)$ are shown on the z-axis against the quantiles of conventional bond on the x-axis and the quantiles of Islamic stock on the y-axis.
Figure 1 shows the impact of conventional bond on Islamic Stocks in top 10 Islamic stock markets. In Libya and Malaysia, the effect of conventional bond on Islamic stock is negative in the area which combines all the quantiles of conventional bond with lower to lower-middle quantiles of Islamic stock (0.05-0.40). This finding indicates that demand of conventional bond decreases in bearish market condition or when the market is in stress. The effect of conventional bond on Islamic stock is positive between the regions which combines the quantiles of conventional bond with upper-middle quantiles of Islamic stock (0.60-0.70) under bullish market conditions. For the Oman and Kuwait, a strong negative association is present in the area which combines all the quantiles of conventional bond with the lower quantiles of Islamic stock (0.10-0.30) under the bearish market condition. Qatar and Saudi Arabia have a positive association between the conventional bond and Islamic stock. This effect is strong in the region which combines all the quantiles of conventional bond with lower-middle to upper-middle quantiles of Islamic stock (0.45-0.70). In Bahrain and Brunei, the overall effect of conventional bond on Islamic stock is also positive. A strong positive effect of conventional bond on Islamic stock is found at the upper-middle quantiles (0.60-0.75) of Islamic stock. A minor positive effect is also found at the lower quantile of both conventional bond and the Islamic stock under bearish market condition. However, a strong negative effect of conventional bond on Islamic stock is found in the area that combines all the quantiles of conventional bond with the upper quantiles of Islamic stock (0.80-0.80) under bullish market conditions. This finding shows that demand of conventional bond decreases under bullish market condition or when the market is in stress. In Turkey and the United Arab Emirates, the effect of conventional bond on Islamic stock is mixed. A strong negative association between the conventional bond and Islamic stock is found in the region which combines all the quantiles of conventional bond with lower to lower-middle quantiles of Islamic stock (0.05-0.40) in Turkey and lower-middle to upper-middle quantiles of Islamic stock in the United Arab Emirates which indicates that the demand of conventional bond decreases under the bearish market condition in Turkey. The effect of conventional bond on Islamic stock becomes strong and positive between the area which combines all the quantiles of conventional bond with lower to lower-middle and upper-middle to higher quantiles (0.05-0.40 & 0.70-0.95) of Islamic stock in the United Arab Emirates which shows that the demand of conventional bond increases under both bearish and bullish market conditions in United Arab Emirates.

The findings of the study confirmed that generally, at the high quantiles (bullish condition) of both Islamic stock markets and conventional bonds, a strong positive relationship exists in all the Islamic stock markets. While on the low quantiles (bearish condition) of both Islamic stock markets and conventional bonds, a mild negative relationship exists in all the Islamic stock markets. The findings of the study are aligning with the findings of Nasir and Farooq (2017) and Ahmed and Elsayed (2019). Hence the findings show an asymmetric relationship between these two variables.

**Figure 2:** Impact of Sakuk Market on Islamic Stocks  
Quantile-on-Quantile (QQ) estimates of the slope coefficient, $\beta_1(\theta, \tau)$
i). Bahrain

ii). Brunei

iii). Kuwait

iv). Libya

v). Malaysia

vi). Oman

vii). Qatar

viii). Saudi Arabia
Figure 1 shows the impact of sukuk on Islamic stocks in top 10 Islamic stock markets. In Brunei and Qatar, the effect of sukuk market on Islamic stock is negative for the majority of the quantiles of both variables. This negative effect is very strong at lower and higher quantiles of sukuk market (0.05-0.20 & 0.80-0.95) under bullish and bearish market conditions. In Kuwait and Turkey, the negative association between sukuk and Islamic stock becomes strong in the region which joins the quantiles of sukuk with higher quantiles of Islamic stock which demonstrates that demand of sukuk decreases under bullish market conditions. However, a positive impact of sukuk on Islamic stock is also observed in the area which connects the quantiles of sukuk with upper-middle quantiles of Islamic stock (0.65-0.80) in Turkey and lower quantiles of Islamic stock (0.05-0.30) in Kuwait under bullish and bearish market conditions, respectively. In Malaysia, the effect of sukuk market on Islamic stock Index is weak and negative in lower-middle to upper-middle quantiles of Islamic stock (0.30-0.75). However, this effect becomes positive at the lower and upper quantiles of Islamic stocks. This finding clarifies that demand for sukuk increases in both bullish and bearish market conditions in Malaysia. For Oman and the United Arab Emirates, the effect of the sukuk market on Islamic stock is positive at the significant number of quantiles of both variables. This effect becomes strong in the area which connects the quantiles of sukuk with lower and upper quantiles of Islamic stocks in Oman (0.05-0.20& 0.80-0.95) which means the demand of sukuk significantly increases under both bearish and bullish market conditions. On the other hand, the negative effect of sukuk becomes strong at the upper quantiles of Islamic stock in the United Arab Emirates, which shows the negative association between sukuk and Islamic stock in bullish market conditions.
For Bahrain, Libya and Saudi Arabia, the positive effect of sukuk on Islamic stock is dominant. The impact of sukuk on Islamic stock is positive in the area which merges all the quantiles of sukuk and lower-middle to upper-middle quantiles of Islamic stock (0.30-0.75) in Saudi Arabia and Libya while lower-middle to higher quantiles (0.30-0.95) of Islamic stock in Bahrain. However, the effect becomes negative in the region which connects the quantiles of sukuk with lower and higher quantiles of Islamic stock (0.05-0.30 & 0.85-0.90) in Saudi Arabia and Libya, and lower quantiles of Islamic stock in Bahrain. The findings indicate that the demand for sukuk decreases under both bullish and bearish market conditions in Saudi Arabia and Libya while only bearish market condition in Bahrain. The findings of the study confirmed that generally, at the low quantiles (bearish condition) of both Islamic stock markets and Islamic sukuk market, a strong negative relationship exists in all the Islamic stock markets. While on the high quantiles (bullish condition) of both Islamic stock markets and Islamic sukuk market, a mild positive relationship exists in all the Islamic stock markets. The findings of the study are aligning with the study of Naifar (2016). Hence the findings show an asymmetric relationship between these two variables.
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Table 3(a): Quantile Granger Causality (Conventional Bond Market and Islamic Stock Index)

Note: ΔISIt is the log-difference of Islamic stock index; ΔCBMt is the log difference sukuk market.
Journal of Accounting and Finance in Emerging Economies

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Table 3(b): Quantile Granger Causality (Sukuk Market and Islamic Stock Index)
Bahrain
Bahrain
∆ISIt to ∆SMt
∆SMt to ∆ISIt

0.05
0.000
0.000

0.10
0.000
0.000

0.15
0.000
0.000

0.20
0.000
0.000

0.25
0.000
0.000

0.30
0.000
0.000

0.35
0.000
0.000

0.40
0.000
0.000

0.45
0.000
0.000

0.50
0.120
0.759

0.55
0.000
0.000

0.60
0.000
0.000

0.65
0.000
0.000

0.70
0.000
0.000

0.75
0.000
0.000

0.80
0.000
0.000

0.85
0.000
0.000

0.90
0.000
0.000

0.95
0.000
0.000

Brunei
Brunei
∆ISIt to ∆SMt
∆SMt to ∆ISIt

0.050
0.528
0.000

0.10
0.000
0.000

0.15
0.000
0.000

0.20
0.000
0.000

0.250
0.000
0.000

0.30
0.000
0.000

0.35
0.000
0.000

0.40
0.000
0.000

0.45
0.000
0.000

0.500
0.009
0.667

0.55
0.000
0.000

0.60
0.000
0.000

0.65
0.000
0.000

0.70
0.000
0.000

0.75
0.000
0.000

0.80
0.000
0.000

0.85
0.000
0.000

0.90
0.000
0.000

0.950
0.000
0.000

Kuwait
Kuwait
∆ISIt to ∆SMt
∆SMt to ∆ISIt

0.050
0.000
0.000

0.10
0.000
0.000

0.15
0.000
0.000

0.20
0.000
0.000

0.250
0.000
0.000

0.30
0.000
0.000

0.35
0.000
0.000

0.40
0.000
0.000

0.45
0.000
0.000

0.500
0.046
0.931

0.55
0.000
0.000

0.60
0.000
0.000

0.65
0.000
0.000

0.70
0.000
0.000

0.75
0.000
0.000

0.80
0.000
0.000

0.85
0.000
0.000

0.90
0.000
0.000

0.950
0.000
0.000

Libya
∆ISIt to ∆SMt
∆SMt to ∆ISIt

0.050
0.000
0.000

0.10
0.000
0.000

0.15
0.000
0.000

0.20
0.000
0.000

0.250
0.000
0.000

0.30
0.000
0.000

0.35
0.000
0.000

0.40
0.000
0.000

0.45
0.000
0.000

0.500
0.829
0.639

0.55
0.000
0.000

0.60
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0.65
0.000
0.000

0.70
0.000
0.000

0.75
0.000
0.000

0.80
0.000
0.000

0.85
0.000
0.000

0.90
0.000
0.000

0.950
0.000
0.000

Malaysia
Malaysia
∆ISIt to ∆SMt
∆SMt to ∆ISIt

0.050
0.000
0.000

0.10
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0.000

0.15
0.000
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0.000

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0.000
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0.45
0.000
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0.500
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0.468

0.55
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0.75
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0.80
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Oman
∆ISIt to ∆SMt
∆SMt to ∆ISIt

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0.000
0.000

0.90
0.000
0.000

0.950
0.000
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Qatar
∆ISIt to ∆SMt
∆SMt to ∆ISIt

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0.000
0.000

0.10
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0.000
0.000

0.90
0.000
0.000

0.950
0.000
0.000

Suadi Arabia
Saudi
∆ISIt to ∆SMt
∆SMt to ∆ISIt

0.050
0.000
0.759

0.10
0.000
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0.20
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0.45
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0.500
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0.90
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0.950
0.000
0.065

Turkey
Turkey
∆ISIt to ∆SMt
∆SMt to ∆ISIt

0.050
0.000
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0.287
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0.950
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UAE
∆ISIt to ∆SMt
∆SMt to ∆ISIt

0.050
0.000
0.000

0.10
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0.500
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0.950
0.000
0.000

Note: ∆ISIt is the log-difference of Islamic stock index; ∆SMt is the log difference sukuk market.

854


The study presents quantile granger causality test in Table 3(a) and Table3(b). The findings show that both conventional bond market and Islamic stock index granger cause to each other almost on all quantiles of both variables in all selected countries. Similarly, granger causality between sukuk and Islamic stock markets also indicates that these variables are also granger cause to each other on all quantiles.

5. Conclusion and Recommendations
This research explores the asymmetric empirical relationship between sukuk, Conventional bonds and Islamic stock market for the world’s top 10 Islamic stock markets using the Quantile-on-Quantile methodology proposed by Sim and Zhou (2015).

This methodology provides details on how quantiles of sukuk market and Conventional bonds affect the quantiles of Islamic stock markets and gives information on the inter-linkage between these variables for a more precise and accurate manner. The study employed daily data ranging from 1st January 2008 to 31st December 2019.

6. Recommendation
Investment has played an important role in absorbing employment, promoting agricultural development, and increasing tax revenue and has made outstanding contributions to economic growth and social development. The development of stock market can bring information and capital flow. A large number of entrepreneurs, experts and scholars bring the latest technology, information, and advanced management concepts for investment.

Islamic stock speeds up the renewal of ideas and promotes the opening of the region and its integration with the international community. The analysis and the result of the study indicate and provide the evidence regarding the timely and appropriately measurement regarding the correlation changing and the behavior of the conventional bond market, sukuk market and the Islamic stock market in the top Islamic economies of the world which is beneficial for the investors and the policymakers for portfolio diversification and risk management.

The portfolio managers can tap our empirical results by combining sukuk, conventional bonds and Islamic stock as assets with asymmetric dependence to hold optimal hedge ratios and portfolio weights in crisis periods and in different market episodes. However, this study has some limitations, which help to provide a scope for future research in this field.

Since, in this study, the data are collected from the top 10 Islamic economies countries to treat the hypothesis, in the future, it may be taken from developing and fast-growing nations and should explore the dynamics of the conventional bond market, sukuk market, bit-coin, mutual fund in those countries with different outcomes. Economies in a particular domain may also be analyzed with investment, such as for residential, commercial, and industrial.

References
The Relationship between Employees Training and Job Satisfaction with Moderating role of Organizational Culture. A Case of Banking Sector of KP, Pakistan

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ARTICLE DETAILS

ABSTRACT

Employee job satisfaction has been widely acknowledged as one of the most important factors in the performance and productivity of the employees working in an organization. There are certain factors that contribute towards the job satisfaction of the employee’s and one such widely renowned factor is the training of the employees. The relationship between job satisfaction and the training of employees is further moderated by the organizational culture. This study analyzed the impacts of employees training on the level of their job satisfaction under the moderating effects of the organizational culture. Three different dimensions of satisfaction i.e. satisfaction with Pay, work itself and interpersonal relationship was analyzed in the study. Primary data was collected from as ample of 200 employees from different banks operating in Khyber Pakhtunkhwa, Pakistan. The data was analyzed using descriptive statistics, T-test and regression analysis techniques. The results of the study presented that Hierarchy and Adhocracy culture are the two most dominant cultures prevailing in the banking sector of Pakistan. The results further present that training has significant association with the level of job satisfaction of the employees with their, pay, work itself and interpersonal relationship. The results further established the moderating role of Adhocracy and Hierarchy Culture in determining the relationship between Training and job satisfaction of the employees.

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1. Background of the study

Employee retention is emerged as one of the most important challenge in vague of the national, international and global competition for the companies (Gisbert-Trejo et al., 2019). In this context the employee job satisfaction has been considered as one of the most important determinates of the employee retention and minimizing the employee turnover in the organizations. Wijaya Wijaya, & Carlos (2020), in their study also indicates that a higher level of job satisfaction results in lower turnover of the employees as a result of the higher productivity and lower absenteeism of the employees working in organizations.

Furthermore, Wijaya Wijaya, & Carlos argue that a high level of job satisfaction is a result of many job related factors such as the incentives of the employees, the supervision, work conditions and colleagues. Alshamey, (2019), appraised the role of individual factors such as gender, race and positions of the individuals as important factors contributing towards the job satisfaction of employees working in organizations. The work environment of the employees in an organization has been highly proved as a major determinant of the job satisfaction and for the same reason the organizational culture has also been gaining significant importance in respect of job satisfaction and employees turnover in an organization. The organizational culture determines the effectiveness of job training of the employees and depending upon the organizational culture the employees may show different degree of satisfaction in an organization. Ameen, & Baharom, (2019), further presents that the organizational culture affects the work outcomes, behaviors and attitudes of the employees which ultimately determines the organizational performance.

Many organizations around the world have altered their organizational culture in order to develop a culture of innovation, creativity and that can retain employees for the success of the organization. It can be also noted from the behavior of certain organizations that they have adopted the culture and the strategies of the new successful startups for flourishing creativity and innovations within their organizations. These practices are adopted with the aim that as the organizational culture develops and the company evolves, there will have a large level of job satisfaction for the employees working in these organizations (Abdulla et al., 2011).

In contrast, to developed western markets it has been noted that the Asian emerging markets do not very much prefer proactive employees in their organizations. It has been noted that most of the leadership in the developing Asian markets is charismatic and directive and they are more interested in hierarchical or conservative organizational behavior that results in low level of innovation and creativity in these organization (Junejo, Ashraf, & Shaikh, 2020).

According to Son and Kuchinke, (2015), organizations in Asia are also realizing the role of training in enhancing the level of competency of the employees and also in retaining these employees within the organization. Smagina, (2020) also acknowledges the need for training for employees in order to develop their skills and to retain employees. Likewise, Smagina, (2020) argues that diversity in skills of the employees is much needed in the current context for the satisfaction of the employees, as the employees having diverse skills in order to perform their multiple job assignments will feel much satisfied with their work and will hence result in higher level of job satisfaction for these employees and thus a lower turnover ratio.

According to Tlaissa and Dirani, (2015) there has been limited work regarding the role of the training in enhancing the level of job satisfaction and the role of organizational culture in enhancing the level of effectiveness of training in an organization in Asian markets. In context of Pakistan there has been extensive studies in respect of job satisfaction and its determinates however, little work exist in context of training and organizational culture contributing towards job satisfaction of employees working in these organizations. In this regard, more studies in respect of identifying the role of culture in training and its ultimate impacts on job satisfaction and thereby affecting the turnover of the employees will lead to more significant insights from the Pakistani market.
2. Problem Statement

It has been a widely held phenomenon that employee job satisfaction is one of the most important deterrent of employee turnover intentions in an organization as presented by previous studies such as (Kundu & Gahlawat, 2015). In this regard it is also extensively advocated that the job satisfaction of the employees is very much influenced by the organizational culture (Zhang & Li, 2013). Previously studies such as Masuda et al. (2011) and Green (2010) have concluded that job satisfaction is the main determinant of employee turnover and a higher job satisfaction of the employees has resulted in lower turnover ratios for the organizations. The current research thus focusing on how the organizational culture adds to the effectiveness of training of employees in Pakistan and its ultimate impacts of job satisfaction of the employees will help in filling this gap in the human resource development literature.

Other studies such as (Demirkol, 2020), have presented significant influence of training on job satisfaction of employees working in organizations; other studies such as Rahman, S. M. (2020) suggest correlation between training and job satisfaction in an organization. Costen and Salazar (2011) has emphasized on the need of training and organizational culture in considerate the job satisfaction and retention of employees working in different organizations. Hosie et al., (2013) presents those previous studies shows that opportunities for developing new and diverse skills of the employees are significantly related to the level of job satisfaction of the employees working in these organizations and also reduces the chances of employee’s turnovers.

It has been widely acknowledged that competent and skill workers can help achieving the goals of an organization. It has been also presented by Schmidt, (2007) that opportunities to train and develop will ultimately result in the satisfaction of the employees that is considered as the most beneficial factor for the employer. The need for addressing the role of different organizational cultures and the significant attributes thus exists for explaining its relation with job satisfaction and the turnover of the employees (Yap & Holmes, 2010). In few studies that training contributes to level of job satisfaction however the issues also need to be addressed in context of emerging markets as well (Costen and Salazar, 2011).

3. Research Question

The main questions of the study are as follow,

- What are the characteristics of organizational cultures in Pakistani Banking Industry?
- What is the relationship between job satisfaction and organizational culture in Pakistani Banking Industry?
- What is the relationship between job satisfaction and training in Pakistani banking industry?
- Does organizational culture moderate the relationship between job satisfaction and training? In Pakistani Banking industry?

4. Significance of the Study

This study investigates the relation among job satisfaction, training and organizational culture and will add to the existing knowledge of Human resource development literature around the world. The study will further provide insights into the training strategies, implementation of effective training policies, organizational culture and factor contributing to the job satisfaction of employees in an organization. The practitioners will have significant idea of how training can influence job satisfaction of employees and the role of organizational culture in effecting the impacts of training on job satisfaction in banking industry in Pakistan.

This study offers new insights for Human resource development (HRD), particularly focusing on training for learning at workplace. Therefore, HRD practitioners can learn from considerate training’s effect on job satisfaction and can help to promote training in the workplace. Furthermore, this study will help HRD practitioners to implement more actual training activities for workers.
5. Literature Review
5.1 Theory of Work Adjustment (TWA)

This theory was presented by George England, René Dawis and Lofquist in the year 1964. This theory is focused on explaining the relationship among individual behavior and their environment and how the association amid these two variable effects job satisfaction of employees at organizations. This theory states that stronger relationship amid organization demands and individual’s abilities (e.g. experience, attitude and expertise) leads to better job performance at organizations. On the other hand, the greater tendency of organization work and incentives to respond to individuals’ values (money, recognitions, promotion etc.) leads to greater job satisfaction. Therefore, a strong relationship amid individuals and their works results in greater job performance, satisfaction and tenure. The above explanation of (TWA) indicates that it is important to study that how an individual adjust himself within different organization cultures and environments, as the individual’s ability of adaptation affects their job satisfaction.

Employees are expected to meet the organization demands and will be satisfied only if the organization first fulfills their requirements and desires. On the other hand, if the organization is incapable to meet the requirements of their employees, then employees are expected to be unsatisfied and would be less likely to meet the organization demands. Therefore, TWA is focused on the process and outcomes of the association amid individual’s satisfactions and organization environment. Recently, (Chen et al., 2015; Lyttle, Foley & Cotter, 2015) used TWA to explain that how individual career growth affect their job satisfaction. They argue that employees career growth is tend to positively affect their job satisfaction. Using TWA, Shamsir and Ismail, (2013) stated that employee’s job satisfaction and job performance are positively correlated with each on the other. Furthermore, greater employee’s job satisfaction leads to lower employee’s turnover in the organization.

According to Nicholson (2020), in the early 1990s Person-Environment Correspondence (PEC) theory was used interchangeably to TWA. He asserts that (PEC) theory is the extended version of TWA and was used in very few studies. Eggerth, (2008) stated that PEC theory explains the effect of individual’s personality on the adjustment ability of these individuals, including that how these individuals interact and react inside as well as outside the organization climate. Inkson, (2007) argue that working environment often differs from employee’s satisfaction but employees need to adjust themselves according to the environment. Therefore, training plays an important role which improves employee’s skills or competencies and encourages employee’s adjustment to the working environments. According to McGuire, (2014) non appreciation of adjustment reduces the correspondence amid individuals and working environment. He also asserts that the individual must have the necessary skills to perform a particular job. In addition, an organization must provide an environment which shows that organization encourage creative activities, thus valuing employee’s creativity. TWA can evaluate such variables e.g. employee’s skills and competencies, abilities, experience and job satisfaction. According to Leung, (2008) different adjustment style leads to different correspondence amid individuals and working environment namely, namely perseverance activeness, reactivates and flexibility. First of all, perseverance refers to the degree of commitment by employees to adjust in a particular environment. Activeness indicates the ability of individuals to change their working environment to reduce the degree of dissatisfaction. Reactivates shows that whether the organization climate is self-adjustable or not to the individual’s requirement. At last, flexibility shows the level of tolerance, which indicates the stage in the corresponding process amid individuals and working environment at which dissatisfaction of individuals begins. TWA also displays that once an individual engaged in a specific job then individual characteristic and job demands affect each other reciprocally. Based on TWA employee’s satisfaction is a major dependent variable which explains the means through which environmental and personal values interact. According to Leung, (2008) one can predict job satisfaction by analyzing the interaction amid environmental and personal values. Previous studies such as (Dahling & Librizzi, 2014) stated that job satisfaction, dissatisfaction and turnover decisions are the primary variables associated with TWA.
5.2 Job Satisfaction

Job satisfaction is a subjective notion which is attached with promotions, coworkers, wages, Job itself, workplace environment, supervisor attitude and other factors. Thus, employee’s behavior and organization outcomes can be understood by analyzing the job satisfaction (Choi, & Hyun, 2020). Employee’s job satisfaction has direct impact on employee’s behavior and decisions which in turn influences organization outcomes. Therefore, greater job satisfaction leads to positive employee’s behavior and reduces turnover decision which as a result helps the organization to achieve the desired goals (Rowden & Conine, 2005). Recent studies in the field of job satisfaction such as Crocetti, Hawk & Meeus, (2014), have been focused on examining the linkage of job satisfaction, job commitment, job identity, burn out and citizenship behavior. To understand job satisfaction, it is better to review earlier studies conducted in this area covering diverse variables incorporated individual characteristic (e.g. gender, age, role, job experience, employment type and tenure (Huang & Ysai, 2012). Employees job satisfaction is related with role ambiguity, supervisory support, environment, autonomy, peer support and monetary incentives (Patiar, Creed & Davidson, 2015). According to Guzman and Jesus (2010) that interaction with work itself, supervisors and coworkers were the major determinants of job satisfaction. Deshpande and Zhao (2011) assert that job satisfaction related to supervisory support, environment, autonomy, peer support and monetary incentives was significantly attached with employee’s job commitment. Organization culture plays an important role in the understanding of job satisfaction through providing norms and standards for employees and affecting the fit amid individual and organizational values (Lund, 2003).

5.3 Organization Culture

According to Worakamol Wisetsri and Maaz Ud Din (2020), culture is a set of values and beliefs followed by a specific group of people. They argue that several organizations have made every effort to understand an importance of global culture. It has been shown that a balance between local and organizational culture is essential for the success of an organization (González-Rodríguez et al., 2019). Organizational culture is a collection of different meanings and behaviors in a given organization. According to Adeinat & Abdulfatah, (2019), organizational culture includes distinctive practices and languages. Culture means a set of values and beliefs assimilated by a group of people in a specific context to ensure their survival in the external environment, as well as to solve problems arising from internal integration (Harel, R., Schwartz, D., & Kaufmann, D. 2020).

According to Liu, et al., (2019) the culture has a significant impact on organizational change, as the division of labor and functions due to the growth of the organization lead to subcultures for each unit of the organization. Research conducted by Daneshmandinia, (2019). has shown that organizational culture is closely related to employee behavior in the organizational climate. Organizational culture can influence employees' performance, satisfaction and motivation to learn. An environment that provides a culture of support can allow employees to capitalize on new knowledge that can improve the organization's performance. Most organizational cultures are a collection of visible characteristics, such as values, beliefs, myths, languages, norms, stories, and rules(Engert, Kaetzler, Kordestani, & MacLean, 2019). A supportive organizational culture can increase employees' loyalty, improve their ability to work, and demonstrate the organization's cultural characteristics. According to Belias and Castellius, (2014) employees prefer a culture that suits their population. Human Resource Development (HRD) professionals agree that certain cultural characteristics can lead an organization to innovation and creativity through organizational development or learning (McLane, 2005). Understanding an organization's culture can help employees meet organizational expectations and behave more positively in a new cultural environment. A strong organization based on culture prefers people who understand the values of the organization, because new employees have to accept these existing organizational values (Werner & Desmond, 2012).
Training refers to a systematic process of enhancing individual’s job performance by providing new knowledge, positive attitude learning and skills (Blanchard & Thacker, 2013). In today’s world, companies are more focused on creativity and innovation; training has been found the best means to develop new knowledge and expertise which as a result enhances employees’ overall performance (Swanson & Holton, 2009). Employee’s satisfaction can be enhanced by providing a specific training which helps them to perform their job with improved knowledge and skills. However, Xie, Luong, Hovy, & Le, (2020) argues that irrelevant training for a specific job had a negative impact on employee’s job satisfaction and a mismatch amid training and job responsibilities have a strong negative influence on employee’s job satisfaction. Training has been found as a most important component of HRD, therefore organizations with superior performance takes training as an effective method to face technological development in a competitive environment. Selecting a proper training media and method is a challenging task as it critical for the success of training itself and also for the overall performance of organization. To determine a proper training programs and activities, organization resources, money, time and trainee characteristic must be take into consideration (Werner & DeSimone, 2012). Training does not only help the individuals to perform the current job but also assists and guide them for future jobs, career changes and developments. Effective training programs and activities can also lead the organization toward greater productivity, quality and productivity (Hendrycks, Lee, & Mazeika, 2019).

According to De Grip and Sauermann (2013) appropriate training programs has a positive association with employee’s performance and job satisfaction. Badillo-Amador and Vila (2013) stated that mismatch amid training and job responsibility has a significantly negative impact on job satisfaction. Training programs and activities helps individuals to gain more knowledge and expertise which in turn enable them to perform efficiently and effectively. Accurate training enhances productivity, quality, reputation and profitability, and can reduce cost and employees turnover (Aguinis & Kraiger, 2009). Organization can achieve and maintain high performance by taking training programs seriously, as it improves knowledge and skills. Werner and DeSimone (2012) explains that training programs have a significant impact on employee’s attitude and job performance by providing diverse skills, activities, counseling programs and coaching.

### 5.4 The Relationship among Training, Organizational Culture and Job Satisfaction

The focused of this study is to examine the theoretical association amid and among job satisfaction, training and organizational culture. Training is a process aims to improve employee’s knowledge and skill to perform their responsibilities and employees perform well when they are trained as compared to untrained employees (Manyathi and Niyimbanira, 2014). Various researchers such as Leppel, Brucker, and Cochran (2012), and Yukawa (2014), agreed that training is significant for employing and maintaining qualified workforce. Additionally, they suggest that sufficient training can enhance the job fit and satisfaction of the employees currently working at the organization. Training is an important concern for employees as well as for the employers of an organization, particularly in term of improving job satisfaction. Special attention should be paid to gender treatment in the organization to get better knowledge of the association amid training program and job satisfaction. According to Gegenfurtner, Knogler, & Schwab, (2020) training programs leads to different job attitudes for genders. He suggested that male gender receives greater job satisfaction related to their work compare to female, who are gives more value to interpersonal relationships. Burgard and Görßitz (2011) also concluded different level of job satisfaction for men and women undergone from the same training programs.

### 6. Theoretical Framework

![Diagram of adhocracy, clan culture, hierarchical culture, and market culture]

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Based on the review of the literature and theoretical framework presented above the following hypotheses of the study are developed.

**Hypothesis 1**: There is a significant association between Adhocracy Culture and job satisfaction of employees in Banking sector in Pakistan

**Hypothesis 2**: There is a significant relationship between Clan Culture and job satisfaction for employees in banking sector in Pakistan

**Hypothesis 3**: There is a significant relationship between Market Culture and job satisfaction for employees in banking sector in Pakistan

**Hypothesis 4**: There is a significant relationship between Hierarchy Culture and job satisfaction for employees in banking sector in Pakistan

**Hypothesis 5**: There is a significant relationship between sufficient training and job satisfaction for employees in banking sector in Pakistan

**Hypothesis 6**: There is a significant relationship between Organizational concern for training and job satisfaction for employees in banking sector in Pakistan

**Hypothesis 7**: There is a significant relationship between training opportunities and job satisfaction for employees in banking sector in Pakistan

**Hypothesis 8**: The factors of organizational culture moderates the impacts of training on job satisfaction in banking sector in Pakistan

7. **Methodology**

7.1 **Population and Sample**

This study analyzes the relationship between the variables in Pakistani Banking sector. For the purpose of the study the focus will be on banking sector employees in Khyber Pakhtunkhwa, Pakistan. There are almost 27 banks operating in Pakistan and has more than 500 branches across KPK. However, keeping in view the accessibility to all these branches this study will focus on banking sector employees in Peshawar Pakistan. There are almost 57 different branches of different banks in Peshawar KPK and all these
branches are included in population of the study. In these 57 branches have almost 800 employees working in different designations and operations.

7.2 Sampling procedure
In order to select the sample this study uses different sampling techniques. In the first phase of the sampling of the study, a sample frame of employees working in different branches of the banks operating in KP (Khyber Pakhtunkhwa) is collected. The study will randomly select a sample of 50 branches from the population of the study using random sampling technique. In the next stage of sampling this study will collect a sample of 200 employees from the sample frame using the simple random sampling technique. These respondents are then used in the study for collection of the data.

7.3 Reliability of Questionnaire

<table>
<thead>
<tr>
<th>Sr.No</th>
<th>Variable</th>
<th>Chronbach`s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Job Satisfaction</td>
<td>0.761</td>
</tr>
<tr>
<td>2</td>
<td>Clan Culture</td>
<td>0.698</td>
</tr>
<tr>
<td>3</td>
<td>Adhocracy and Market Culture</td>
<td>0.82</td>
</tr>
<tr>
<td>4</td>
<td>Hierarchy Culture</td>
<td>0.798</td>
</tr>
<tr>
<td>5</td>
<td>Professional Regulation Culture</td>
<td>0.713</td>
</tr>
<tr>
<td>6</td>
<td>Training</td>
<td>0.841</td>
</tr>
</tbody>
</table>

In the table above it can be observed that chronbach`s alpha value for all the variables of the study are close to or greater than .70, hence imply the reliability of the items of each construct under analysis.

8. Data Analysis
8.1 Descriptive Analysis
Table-1 of the study presents the distribution of male and female participants in the sample of the study and it can be observed from the table that there are a total of participants in the sample of the study which includes 96 females with 48% of the sample, while remaining 52% are male having a frequency of 104.

Table 1: Gender distribution of sample

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td>Female</td>
<td>96</td>
<td>48.0</td>
<td>48.0</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>104</td>
<td>52.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table-2 of the study presents the designation wise distribution of the sample of the study and it can be observed that highest number of participants as per their designation is operation manager having a frequency of 70 and percentage of 35%.

Table 2: Designation

<table>
<thead>
<tr>
<th>Designation</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td>BDO</td>
<td>43</td>
<td>21.5</td>
<td>21.5</td>
</tr>
<tr>
<td></td>
<td>Tellers</td>
<td>36</td>
<td>18.0</td>
<td>39.5</td>
</tr>
<tr>
<td></td>
<td>GBO</td>
<td>25</td>
<td>12.5</td>
<td>52.0</td>
</tr>
</tbody>
</table>
The next highest numbers of participants are Business development officer BDO, with the 21.5% having a frequency of 43. The teller has a percentage of 18% and a frequency of 36. The BM has a frequency of 26 and a percentage of 13% while GBO has a percentage of 12.5% and frequency 25.

In order to analyze the normality of the data distribution this study used the skewness and Kurtosis test and the results of the test are presented in Table-1 of the study.

### 8.2 Regression Analysis

In order to examine the impacts of training on job satisfaction with mediating effects of organizational culture the study used multiple regression model. The model evaluates the relation between each factor of JS and the training with mediating role of organizational culture using two step regression model.

Table-5 of the study presents the model summary statistics for the impacts of Training with mediating effects of organizational culture on job satisfaction of the employees. In the table it can be observed that the correlation coefficient R value in model 1 is .203 while in model 2 the R value has increased to .43 this suggest that the association increases with the inclusion of the organizational culture in the model and supports the mediating role of organizational culture. The value for R square in the table has increased from .041 to .189 suggesting that the training with mediating effects of organizational culture explains almost 18% of the variation in satisfaction with pay of the employees. The value of adjusted R square also supports the results of the R-square and suggests a greater explanation is provided by training with the inclusion of the mediating variable.

<table>
<thead>
<tr>
<th>Model Summary Impacts on Satisfaction with Pay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Opportunity for training, Organization’s concerns for training, Sufficient training
b. Predictors: (Constant), Opportunity for training, Organization’s concerns for training, Sufficient training, Clan Culture, Market Culture, Hierarchy Culture, Adhocracy Culture

The ANOVA table below presents that the F value in the original model is 2.80 however, the F value increased to 7.481 after the inclusion of the mediating variable organizational culture. The results of the F value also suggest that the model is accurately predicting the relationship and the inclusion of the organizational culture enhances the goodness of fitness.

The Table-7 of the study presents the coefficients of the regression model for the relationship of the variables. In the table it can be observed that coefficient for the relationship of organizational concern for training is .104 suggesting a positive association between organization concern for training and satisfaction with Pay. In the table the T value for the coefficient is 2.45 and the P value is .046 suggesting significance of the relationship at P<.05. In the table it can be observed that coefficient for the relationship of sufficient training is .135 suggesting a positive association between sufficient training and
satisfaction with Pay. In the table the T value for the coefficient is 1.67 and the P value is .096 suggesting significance of the relationship at P<.10.

The coefficient for the relationship of sufficient training is .084 suggesting a positive association between opportunities for training and satisfaction with Pay. In the table the T value for the coefficient is 1.76 and the P value is .088 suggesting significance of the relationship at P<.10.

Table 4: ANOVA for Impacts on Satisfaction with Pay.

<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>13.955</td>
<td>3</td>
<td>4.652</td>
<td>2.803</td>
</tr>
<tr>
<td>Residual</td>
<td>325.225</td>
<td>196</td>
<td>1.659</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>339.180</td>
<td>199</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Regression</td>
<td>64.000</td>
<td>6</td>
<td>10.667</td>
<td>7.481</td>
</tr>
<tr>
<td>Residual</td>
<td>275.180</td>
<td>193</td>
<td>1.426</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>339.180</td>
<td>199</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: Satisfaction with Current Salary
b. Predictors: (Constant), Opportunity for training, Organization’s concerns for training, Sufficient training
c. Predictors: (Constant), Opportunity for training, Organization’s concerns for training, Sufficient training, Clan Culture, Market Culture, Hierarchy Culture, Adhocracy Culture

The coefficient for the relationship of Hierarchy culture is .051 suggesting a positive association between Hierarchy Culture and satisfaction with Pay. In the table the T value for the coefficient is 2.310 and the P value is .057 suggesting a significance of the relationship at P<.10.

In the table it can be observed that coefficient for the relationship of Market Culture is .611 suggesting a positive association between Market Culture and satisfaction with Pay. In the table the T value for the coefficient is .924 and the P value is .109 suggesting an insignificance of the relationship at P>.10.

The coefficient for the relationship of Adhocracy Culture is .211 suggesting a positive association between Adhocracy Culture and satisfaction with Pay. In the table the T value for the coefficient is 5.924 and the P value is .000 suggesting a significance of the relationship at P<.01. In the table it can be observed that coefficient for the relationship of clan culture is .087 suggesting a positive association between Clan Culture and satisfaction with Pay. In the table the T value for the coefficient is 1.542 and the P value is .858 suggesting an insignificance of the relationship at P>.10.

<table>
<thead>
<tr>
<th>Model Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Opportunity for training, Organization’s concerns for training, Sufficient training
b. Predictors: (Constant), Opportunity for training, Organization’s concerns for training, Sufficient training, Clan Culture, Market Culture, Hierarchy Culture, Adhocracy Culture

The value for R square in the table has increased from .052 to .139 suggesting that the training with mediating effects of organizational culture explains almost 13% of the variation in satisfaction with work of the employees. The value of adjusted R-square also supports the results of the R square and suggests a greater explanation is provided by training with the inclusion of the mediating variable.

The ANOVA table below presents that the F value in the original model is 3.599 however, the F value
increased to 5.174 after the inclusion of the mediating variable organizational culture. The results of the F value also suggest that the model is accurately predicting the relationship and the inclusion of the organizational culture enhances the goodness of fitness of the overall model.

9. Results and Discussion

The study in order to analyze the impacts of training on job satisfaction of employees in banking sector in KP, with mediating role of the organizational culture, used a survey technique for collection of the data. The self-administered questionnaire of the study was distributed among 200 employees in banking sector in KP to collect the primary data from the participants of the sample. The data collected was then analyzed using the descriptive statistics, T tests and the regression analysis technique.

The results presented above suggest that Adhocracy Culture is one of the most dominant organization culture in banking sector in Pakistan accompanied by Hierarchy Culture as the second most dominantly prevailing organizational culture in banking sector in Pakistan. The culture of adhocracy has been seen as one of the most creative and dynamic cultures, as it attaches importance to new challenges, the acquisition of new knowledge, change and the production of unique results and services. Employees with strong characteristics related to flexibility and initiative do better in this type of culture. Hierarchical cultures have different influence on employee’s job satisfaction. The organization cultures which is based on better management and control, professionalism and result orientation may lead to higher job satisfaction. Organizational culture which encourages measures related to performance recognition leads to higher level of employee’s job satisfaction.

The results of the regression model of the study presents that all the individual factors of training of the employees has positive association with the satisfaction of the employees with the Pay itself in banking sector in Pakistan and the same is mediated by the Adhocracy and Hierarchy culture in banking sector of Pakistan. Employees’ job satisfaction depends on their current salary and higher pay compensation leads to higher level of job satisfaction. Employees pay perception is weakly correlated with job satisfaction. In contrast, pay compensation has a significantly positive association with the job satisfaction of middle level managers in the hotels. The policies related to employee’s salary have lesser effect than supervisory relationship on employee’s satisfaction.

The purpose of training programs is to enhance employee’s skills, knowledge and competencies for the better performance. It can be expected that training improves employee’s performance which in turn contributes to the overall success of their organization. Training refers to a systematic process which develops individual’s skills, attitude, knowledge and expertise related to their jobs.

The results further presents that all the factors in training explains the satisfaction of employees with the work itself under the mediating role of Hierarchy and Adhocracy culture. Individual’s satisfaction relies on the nature of work they performing, therefore job characteristics such as skill variety, autonomy and feedback have a significant effect on employee’s motivation and satisfaction. Job nature has a strong association with employee’s satisfaction as compared to other factors influencing job satisfaction. He suggested that employees can achieve higher level of job satisfaction only when they feel that their job is more attractive and fit to their abilities such as qualification, skills and experience. This as a result enhances employee’s motivation and job satisfaction.

Similarly, the training is also found to have significant association with the satisfaction with the interpersonal relationship of the employees in the organization. The better relationship with peers and supervisors have greater effect than other rewards on employee’s job satisfaction. It shows the significance of interpersonal relations. The middle level managers in the hotels achieve low level of satisfaction by the mean of establishing strong relationship with the coworker as compared to satisfaction achieve through other rewards. The supportive and friendly relationship with the coworkers and supervisors leads to higher job satisfaction. In contrast, unfriendly relationship with the colleagues and
supervisors has a negative impact on employee’s job satisfaction. The strong relationship among coworkers has a significant impact on the overall job satisfaction of employees.

10. Conclusion
It has been widely acknowledged in literature that competent and skill workers can help achieving the goals of an organization. Opportunities to train and develop will ultimately result in the satisfaction of the employees that is considered as the most beneficial factor for the employer. It is also extensively advocated that the job satisfaction of the employees is very much influenced by the organizational culture. The need for addressing the role of different organizational cultures and the significant attributes thus exists for explaining its relation with job satisfaction and the turnover of the employees. There has been limited work regarding the role of the training in enhancing the level of job satisfaction and the role of organizational culture in enhancing the level of effectiveness of training in an organization in Asian markets. In context of Pakistan there has been extensive studies in respect of job satisfaction and its determinates however, little work exist in context of training and organizational culture contributing towards job satisfaction of employees working in these organizations. Identifying the role of culture in training and its ultimate impacts on job satisfaction and thereby affecting the turnover of the employees provided more significant insights from the Pakistani market.

The study analyzed the role of training in determining the job satisfaction of the employees in banking sector in Pakistan with the mediating effects of the organizational culture. A sample of 200 participants from different bank branches in KP, Pakistan was selected. Using the self-administered questionnaire, the study collected primary data for all the variables of the study and was then analyzed using the descriptive statistics, T test and regression analysis technique. The overall results of the study presented that Adhocracy culture and the Hierarchy culture are the two most dominant culture prevailing in the banking sector in Pakistan. The results further suggest that sufficient training, training opportunities and organizational concern for training has significantly positive association with satisfaction of the employees with their pay, work itself and the interpersonal relation of the employees in banking sector in Pakistan. It is also evident from the results that the organizational culture of Adhocracy and Hierarchy are significant in moderating the relationship between the training and each factor of job satisfaction of the employees in banking sector of Pakistan.

11. Recommendations
Based on the review of the literature and the findings the following main recommendations are presented.

- In order to increase the satisfaction level of employees in banking sector the banks have to provide sufficient training to their employees. Skillful employees feel a lot better while performing their duties and can better adjust in their work environment. Additionally, employees view training as an additional fringe benefit of their job and are therefore also satisfied with their pay.
- Opportunities for training should be provided to every employee in the organization based on their respective skill level and job responsibilities. The potential training opportunities to the employees make them feel better and optimistic in terms of their future growth and development and thus results in positive impacts on the level of their job satisfaction.
- Employees perception regarding the organizational concern for developing and improving their skills also establish to them the value organization places in their employees and the tasks assigned to them therefore organizational concern for training also play a positive role in level of satisfaction.
- Organizational culture of Adhocracy and Hierarchy holds important position in moderating the impacts of training on the satisfaction level of the employees and hence need due consideration from the management of the banks.
References


counseling: Vocational psychology as positive psychology. Journal of Career Assessment, 16(1), 60-74.


An Overview of the Necessities, Challenges & Outcomes of Building Information Modeling (BIM) Framework Used in Project Management

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ARTICLE DETAILS

ABSTRACT

Building Information Modeling (BIM) is gaining attention worldwide due to its assistances during the entire building’s construction life cycle covering all phases of project from commencement to accomplishment. BIM integrates different disciplines by effective communication, analyzes the project systems for constructability, estimates the cost and time of projects at any time using quantity takeoffs. Notwithstanding that fact Pakistan like other developing countries is lagging in Building Information Modeling (BIM) adoption. To facilitate the adoption of Building Information Modeling (BIM) in the AEC industry, the purpose of this research study is to identify the important factors for BIM adoption among construction engineers of Pakistan to carry out the awareness. It is found statistically that Building Information Modeling (BIM) capability is most important factors for the adoption of BIM among the construction engineers in Pakistan having the factors of motivation and management support which positively effect on BIM adoption in Pakistan. The trainings are very important to increase the BIM adoption in the industry.

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1. Introduction
Construction industry of Pakistan is rising day by day, the development rate of construction sector is 11.5 percent during the period of 2017-2018 while it was 9.05 percent during the period of 2016-2017 (Ali,
Construction is the single sector in Pakistan that produces major employment. Similar to many other countries in the world, the construction industry in Pakistan has not considerable record in terms of project completion within cost, schedule, and quality baselines. As the nature & size of construction projects is growing, the stakeholder’s prospects at advanced level. Due to flexibility of construction projects most of the information is required to communicate between project team members and important stakeholders at accurate time. Indecorous information flow among the stakeholder leads to the meager coordination which puts adverse impact on the performance such as on schedule, cost, quality of project (Ding, 2015).

Many research studies all over the world showed that use of technology (ICT) like BIM against traditional management approaches can increase the performance of construction projects. BIM has gained much consideration in the Engineering & Construction industry (Masood, 2014) due to its various purposes like more visualization (Adoption of Building Information Modelling, 2014), progress monitoring facility (Masood, 2014), Building performance prediction (Ding, 2015) and better communication between parties (Hatem, 2018). Engineers are the professionals that are one of the most vibrant contributors of BIM adoption in all over the world for the design purpose of buildings.

2. Literature Review and Research Hypothesis

2.1 Building Information Modeling (BIM) Meaning

Building Information Modeling (BIM) is defined as “a digital representation of physical and functional characteristic of a facility” by National Institute of Building Science (NIBS, 2007). In 1970, first time concept of BIM is used by Chuck Eastman and Robert Aish (J, 2007). In the earlier times BIM was known by different names like virtual building, intelligent object and product model (Ozorhon, 2016). BIM is getting great attention of architects and project managers as BIM can be used for the planning, execution and operations for the project. In a nutshell BIM is not just software but a process (Azhar, 2011). Building Information Modeling portrays the geometry, geographic special relationships, quantities and features of the building elements, material inventory management, cost and schedule performances (Bazianic, 2004). BIM role is just like a stage where you can easily share the knowledge and communicate without difficulty with the project stakeholders (Hergunsel, 2011). BIM is the software that accomplishes the function of producing and managing the data during the complete life cycle of the building. BIM is a new technology that can be functional to the design, construction management and facility management in which digital representation helps in exchanging necessary information between all project stakeholders. While working at building project with BIM in progress, there is complexity of gathering related information, due to this some companies have developed software that work within the framework of BIM. This software is different from AutoCAD as they provide additional functional from drafting that are time, cost control and product specifications etc. Autodesk Revit is one of the greatest examples of BIM tool that software used not only by architects but also from structure engineers, mep engineers, designers and contractors as well (Latiffi, 2013).
2.2 Assistances of Building Information Modeling (BIM)

Building Information Modeling (BIM) is one of the latest and most promising developments in the construction industry (Hussain, 2013). BIM adoption is very convenient for the forecasting of building performance and operation (Azhar, 2011). In a research study conducted in 1997 by Mendelsohn, it was established that more than 75% of the difficulties at site are directly/indirectly due to the flaws in the design, that are emphasized by execution team of the projects. These design flaws lead to the rework. In United Kingdom, BIM is obligatory for all the contractors to gain new government contracts. BIM can be used as a automobile for the communication between project stakeholders in a project environment (BIM Handbook) as Project management body of knowledge (PMBOK) gives communication a great importance. During the 50th ASC Annual International Conference Proceeding, 18 design-phase functions of BIM relevant to architects were identified included Clash recognition, Constructability, Building Drawings, Database Information Management, Design of multifaceted structures, Estimation, Facility management, Initial Presentation, Interior environmental analysis, LEED, Municipal code, Parametric design, Performance optimization, Site examination, maintenance and renovation, Sustainable design, value engineering and last but not the least visualization. The study additionally tells us that the most adopted function of BIM by architects is visualization and initial presentation. Visualization gives more strong vision about what the finishing product may look like (Hergunsel, 2011). BIM adoption deliver more control to project manager on variables such as reducing the cost, reducing the completion time and refining the quality of project during the all phases of the project. (Azhar S., 2008). BIM acceptance also recovers the document management and integration as well (Fazli, 2014). BIM adoption provides support and facilitates in decision making process, increasing of financial control, squeeze down time in documentation, improves construction quality free of defects products and collaboration. (Mesároš, 2017).
2.3 Obstacles in Building Information Modeling (BIM) Adoption
The significant barrier in BIM acceptance is the absence of engagement of other consultants Structural, MEP etc in the BIM procedure by engineers (Mankani, 2009). People in Pakistan are not ready to accept the variations so it’s a big obstacle for adopting the novel and state-of-the-art technologies like BIM (Masood, 2014). BIM can have economy and interoperability issues (Hong, 2016). In a new research study conducted in India, attitude and cultural blockades were noted as main challenges in BIM adoption (RICS, 2014).

2.4 Challenges Precarious Factors for Building Information Modeling (BIM) Adoption
Many critical factors are identified for efficacious BIM acceptance in worldwide from researchers. In a recent study conducted in China, all the critical factors identified are divided in the five categories that are BIM capability, motivation, knowledge structure, technical defects of BIM and management support (Ding, 2015).

2.5 Building Information Modeling (BIM) Necessities & Competence
BIM capabilities like partnership, following and involvement of using BIM of a project team are most important to indorse BIM adoption (Mutai, 2009). In a project team, numerous persons have not elementary training of BIM to apply throughout the whole life cycle of the project. Meanwhile the beginning of BIM technology, education and training are trials for adopting BIM. Partnership between the disciplines is very critical for BIM adoption (Azhar, 2011). The importance of BIM capability is also reflected by the rising demands of acquaintance to BIM for graduates from built environment related programs.

2.6 Building Information Modeling (BIM) Motivation
BIM Motivation is one of the foremost factors which is also considered as critical for the BIM acceptance. Motivation has two types; internal motivation and external motivation. Personal motivation mentions to extent to which an individual team member prepared for the usage of the new technologies for enhanced performance and productivity. Perceived usefulness is a concept that can be used under the umbrella of personal motivation; perceived usefulness a term that displays the degree to which an individual trusts that using a novel system will improve its performance (Hong, 2016). External motivation notices the stimulus from participants or other stakeholders in the construction business. Customers even use BIM as a part of tendering and bidding processes, not only in public projects but also for private projects.

2.7 Building Information Modeling (BIM) Management Support & Outcomes
A systematized and efficient management will offer employees’ acceptable education and BIM competence which bring out the factor of management support. Management Support is one of the
utmost extensively accepted condition for innovation adoption in any organization (Kumar, 1999). Added self-confidence and gratitude from top management helps to escalation the BIM adoption benefits (xu, 2014).

2.8 Building Information Modeling (BIM) Knowledge Structure
For execution of any novel technology all the allied knowledge is needed. As far as concerned about BIM, it is very exclusive domain in the AEC industry which is rising day by day (Succar, 2009). Knowledge about BIM should be identified in the BIM. The knowledge also protections the material characteristics, material specifications, Productivity, cost thresholds, time. Knowledge management principles should be joined into the BIM (Motawa, 2006). Change management plan should be incorporated in the BIM to deal changes i.e. addendum (Ding, 2015).

2.9 Building Information Modeling (BIM) Technical Defects
Numerous studies emphasized that there are possible flaws in BIM. Several studies have explained the potential technical defects of BIM. Individuals asked BIM software in hard form which has cost constraints (Olatunji, 2011). BIM is well-thought-out as an overhead by different business owners. The compatibility of BIM software with other software is also one of the major technical defects of BIM. Due to complexity of BIM software, problems are established in the operations.

![Figure 2: Conceptual Model](image)

- **H1**: Motivation has a positive effect on engineer’s intention to adopt BIM for better outcomes?
- **H2**: Challenges have a positive effect on engineer’s intention to adopt BIM?
- **H3**: The Necessities of other consultants will have positive effect on engineer’s intention to adopt BIM?

3. Research Method
3.1 Research Design and Sampling Method
Quantitative research is used to collect and transform specific data that is used to evaluate. Quantitative research is the measurement of quantity. On the other hand qualitative research gives confidence to respondent to express his views more openly. Qualitative research is directly concerned with qualitative phenomenon (Kothari, 2004).
For present study quantitative approach has been used.

3.2 Data Collection Method
The following methods for the data collection were used; the selection of relevant method is dependent on the aim, objective of type of the research. Below few methods are given that was highlighted by Efron and Ravid (2013).

3.3 Observation
This tool was used in both type of researches qualitative and quantitative method. In qualitative method, it is used in the form of behavior logs, photographs, videos and audio recordings. In the quantitative method, it is used in the form of checklists, tally sheets and rating scales. In a general perspective observation is most suitable for quantitative research.

3.4 Interviews
This tool was used for qualitative research. Interviews were taken in the form of structured, semi structured, unstructured, focus groups and online interviews.

3.5 Questionnaire Design
The survey question was designed to check our research framework. The questionnaire consists of five sections: in first section the demographics of survey respondents while in the other sections questions related to all variables designed. The second, third, fourth and fifth section of the survey questionnaire engages the respondents to give their response against each question to degree to which they are agree or disagree (Batarseh, January 2018).

4. Data Analysis/Results and Discussions
Data was analyzed to answer the research question and hypothesis. An electronic and paper based survey comprising of five (05) sections was conducted to collect the data. Data retrieval was made after its execution.

a) Sample Profile
b) Reliability Analysis
c) Results and Discussions

All the engineers working in different organization in all over the Pakistan were targeted to get responses; however, 131 responses had been received out of total 166 architectures working as engineers in different organizations of Pakistan.

<table>
<thead>
<tr>
<th>Sr.</th>
<th>Description</th>
<th>Count/%age</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Number of engineers for this research study.</td>
<td>166</td>
</tr>
<tr>
<td>2</td>
<td>Number of engineers responded.</td>
<td>131</td>
</tr>
<tr>
<td>3</td>
<td>Rate of Response.</td>
<td>70%</td>
</tr>
<tr>
<td>4</td>
<td>Total responses received (projects data).</td>
<td>131</td>
</tr>
<tr>
<td>5</td>
<td>No. of discarded/ incomplete responses</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>No. of final acceptable responses</td>
<td>131</td>
</tr>
</tbody>
</table>

4.1 Sample Profile
4.1.1 Gender
Following table shows the gender of the respondents who has taken interest in giving their responses for this study.

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>112</td>
<td>83.9</td>
<td>82.9</td>
<td>82.9</td>
</tr>
</tbody>
</table>

878
Respondent’s professional experience shows that 27% of the respondents have less than 2 years of experience, while 55.8% have experience 2-5 years, 7% have 6-10 years and 11% of the population having experience more than 14 years of experience in engineering

### 4.2 Building Information Modeling (BIM) Capability
#### 4.2.1 In Academia, Education of BIM should be Necessary

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;2</td>
<td>35</td>
<td>27.1</td>
<td>27.1</td>
<td>28.1</td>
</tr>
<tr>
<td>2-5</td>
<td>78</td>
<td>58.8</td>
<td>58.8</td>
<td>85.9</td>
</tr>
<tr>
<td>6-10</td>
<td>8</td>
<td>6.2</td>
<td>6.2</td>
<td>91.1</td>
</tr>
<tr>
<td>&gt;14</td>
<td>10</td>
<td>7.9</td>
<td>7.9</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>131</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

30 respondents out of 131 were strongly agreed that the education of BIM is very necessary in our curriculum to increase the BIM capability in the industry. More than 59% of the respondents gave consent that the universities must include BIM in their curriculum. Table and graph shown below:

#### 4.3 Motivation

**B1:** Project team members are motivated to use new technologies for innovation 42% of the respondents confused whether they are motivated to use new technologies and to accept new challenges, they responded neutral response against this question which was quite surprising for me. On the other hand 52% of the respondents said that they and other team members are motivated to adopt new technologies for innovation and to find new trends.

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>19</td>
<td>14.8</td>
<td>14.8</td>
<td>14.8</td>
</tr>
<tr>
<td>Agree</td>
<td>50</td>
<td>37.8</td>
<td>37.8</td>
<td>52.6</td>
</tr>
<tr>
<td>Neutral</td>
<td>57</td>
<td>43.0</td>
<td>43.0</td>
<td>95.6</td>
</tr>
<tr>
<td>Disagree</td>
<td>4</td>
<td>3.7</td>
<td>3.7</td>
<td>99.3</td>
</tr>
</tbody>
</table>
4.4 BIM Outcomes

**D1:** BIM Outcomes is progressing in engineering industry in Pakistan

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>1</th>
<th>.7</th>
<th>100.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>131</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

**D2:** There is Key role of engineers in BIM Outcomes

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>19</td>
<td>17.0</td>
<td>17.0</td>
<td>17.0</td>
</tr>
<tr>
<td>Agree</td>
<td>53</td>
<td>37.8</td>
<td>37.8</td>
<td>54.8</td>
</tr>
<tr>
<td>Neutral</td>
<td>54</td>
<td>40.7</td>
<td>40.7</td>
<td>95.6</td>
</tr>
<tr>
<td>Disagree</td>
<td>4</td>
<td>3.7</td>
<td>3.7</td>
<td>99.3</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>1</td>
<td>.7</td>
<td>.7</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>131</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

**D3:** Motivation is mandatory for BIM Outcomes

<table>
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<tr>
<th>Strongly agree</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>18</td>
<td>14.8</td>
<td>14.8</td>
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<tr>
<td>Agree</td>
<td>56</td>
<td>42.2</td>
<td>42.2</td>
<td>57.0</td>
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<tr>
<td>Neutral</td>
<td>48</td>
<td>36.3</td>
<td>36.3</td>
<td>93.3</td>
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<tr>
<td>Disagree</td>
<td>8</td>
<td>5.9</td>
<td>5.9</td>
<td>99.3</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>1</td>
<td>.7</td>
<td>.7</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>131</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

**D4:** BIM Outcomes is a tool that is helpful to increase the productivity
5. Measurement Model

5.1 Reliability Testing

In the initial phase of data analysis, we checked reliability and validity of all the constructs. Reliability is basically the internal consistency of the variables which is governed by the value of Cronbach’s alpha. Cronbach’s alpha value should be greater than 0.7, the greater value of alpha shows that instrument is reliable which is going to be used for the study. Basically reliability is the fluency of an instrument in measuring the intended concepts. The value of Cronbach’s alpha for all the variables used for our research given the range is between 0.74 and 0.875 which clearly shows that reliability within range and fit for use. Below mentioned is a systematic process flow of validation of the instruments to be used in the study:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIM Outcomes</td>
<td>0.875</td>
</tr>
<tr>
<td>Necessities</td>
<td>0.753</td>
</tr>
<tr>
<td>Challenges</td>
<td>0.832</td>
</tr>
<tr>
<td>Motivation</td>
<td>0.744</td>
</tr>
</tbody>
</table>

The Cronbach’s alpha values are shown below in histogram. Composite Reliability is another measure for internal consistency which is mostly used in social sciences. Ideally scenario the value of composite reliability ranges from 0.810 to 0.90. In the current study the values are slighter high but within the acceptable threshold. The value of composite reliability is given below:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Composite Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIM Outcomes</td>
<td>0.905</td>
</tr>
<tr>
<td>Necessities</td>
<td>0.823</td>
</tr>
<tr>
<td>Challenges</td>
<td>0.895</td>
</tr>
<tr>
<td>Motivation</td>
<td>0.818</td>
</tr>
</tbody>
</table>

5.2 Validity Testing

After performing reliability, the data were checked for validity. The Average Variance Extracted (AVE) has been checked to confirm the convergent validity. Convergent validity refers to how well the indicators of a construct load or converge on their respective constructs. The value of AVE should be greater than 0.50 in case of reflective constructs. In this study, the values of AVE for all the constructs are greater than 0.6 which depicts good convergent validity. The table for average variance extracted shown below:
<table>
<thead>
<tr>
<th>Factor</th>
<th>Average Variance Extracted (AVE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIM Outcomes</td>
<td>0.914</td>
</tr>
<tr>
<td>Necessities</td>
<td>0.643</td>
</tr>
<tr>
<td>Challenges</td>
<td>0.676</td>
</tr>
<tr>
<td>Motivation</td>
<td>0.803</td>
</tr>
</tbody>
</table>

The value of rho A is given in below table:

<table>
<thead>
<tr>
<th>Factor</th>
<th>rho_A</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIM Outcomes</td>
<td>0.911</td>
</tr>
<tr>
<td>Necessities</td>
<td>0.823</td>
</tr>
<tr>
<td>Challenges</td>
<td>0.875</td>
</tr>
<tr>
<td>Motivation</td>
<td>0.841</td>
</tr>
</tbody>
</table>

### 6. Conclusion and Recommendations

For the execution of BIM technology in AEC industry the acceptance and vast knowledge about BIM mechanism is very critical for BIM experts. For the achievement of the model on the key factors established from the data collected by different professional registered engineers throughout in Pakistan. After the examination of data, it clearly shows that three factor Necessities, Challenges and Motivation with management support has a positive impact on the BIM Outcomes in Pakistan. Furthermore, it is found statistically that “Necessities” is one of the significant factors for the Outcomes of BIM among the professional engineers in Pakistan. The sources of “Necessities” are education in the academic world, training in industry and skill enhancement.

The second statistically significant factor is “Motivation” which is the key factor for “BIM Outcomes” in the engineering industry in Pakistan. In a study conducted in china “Motivation” factor was not found statistically significant while other studies conducted in world showed that “Motivation” is one of the vital factors for “BIM Outcomes”.

Moreover, “Motivation” will also increase the influence of “BIM Outcomes” among the engineers. Motivation is of two types one is related to project team and other one is related to clients, government and regulatory bodies. In earlier study by Z. Ding, “Motivation” was the most important factor for “BIM Outcomes” but in our study it is also the significant factor for “BIM Outcomes”.

Overall if we see about the awareness of the BIM among the professionals to increase as compared to the previous study. Engineers are interested in the Outcomes of BIM. But in the AEC industry we are still lagging the progress as compared to other developing countries like India, Iraq, and Malaysia.

Almost all the respondents know about the basic of the BIM but miserably few of them were using the BIM in their respective organizations. The reason was the administration still considers it overhead as we studied in the literature that the payback period of this technology is pretty long and individuals do not want to diminish their profits from their business at instance.

Due to time and resource limitations, only one of the AEC professions was chosen as research respondents. For future study other professions like construction managers, project engineers, project managers etc should be selected to investigate the BIM Outcomes and issues in Pakistan. Moreover, the
comparison can be done in the two professional like architects and civil engineers. This study conducted in the Pakistan as whole other studies can be done the zone wise or province wise to know about the exact status of “BIM Outcomes”.

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Impact of Managerial Competency and Learning Orientation on Job Performance

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History
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ABSTRACT
The study empirically investigates the impact of managerial competency and learning orientation on job performance of individuals working in the software industry of Pakistan. Social skills have been introduced as a moderator alongside entrepreneurial leadership which acts as a mediator in both relationships. The data from 384 respondents, collected through survey, was analyzed using Structural Equation Modeling (SEM) through SmartPLS. The results suggested that managerial competency and learning orientation are positively related to job performance, and entrepreneurial leadership partially mediated the relationship of managerial competency and job performance, and learning orientation and job performance. Social skills moderate the relationship of managerial competency and job performance, while the moderating role of social skills was not found for the association of learning orientation and job performance. To the best of our knowledge, this is the first investigation of its kind, incorporating technical and behavioral aspects (social skills) in a single framework. The study contributes to the existing literature by analyzing the impact of aforementioned relationships in the Pakistani organizational context. The study may present vital insights for organizations to prioritize development of managerial competencies, learning orientation, entrepreneurial leadership and social skills for improved job performance.

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1. Introduction
1.1 Managerial Competency
In current era of globalization and intense competition organizations require experienced, qualified and informed managers to achieve the objectives of their firm (Langton and Robbins, 2007). In order to
achieve competitive advantage, organizations continue to strive for improving employee skills set and managerial competencies. Managerial competency is vital for ensuring organizational productivity and high performance. In 1973, the American psychologist and consultant McClelland first described the term competence to signify the human factors which are necessary for achieving success at personal and professional levels. Current management literature seeks to describe the aspects of organizational success that are related to productivity and performance from a variety of viewpoints (Fraser and Zhu, 2008). Breman and Bruinsma (2006) examined whether a higher level of competence is associated with a higher level of performance using a 360-degree feedback instrument. In this study, a positive association between competence and performance was illustrated. The researchers also highlighted that managerial skills can contribute to an increased level of employee and organizational performance as a whole. According to Ketchen et al., (2011), the relationship between managerial skills and business success remains an important subject of research.

1.2 Learning Orientation
The organizational value that impacts an institution’s tendency to exploit and produce knowledge is known as learning orientation (Zhao et al., 2011; Wang, 2008). The significance of learning orientation and its influence on innovation has been highlighted in several studies (Rhee et al., 2010; Chung et al., 2015). There are multiple learning methods in which an organization can develop itself, including knowing the customer requirements and gathering information about developments in the external environment in order to build the necessary competencies to meet the new requirements in a timely manner (Kozlowski et al., 2001). A strong impact of learning orientation (organizational learning) on the output of the organization has been explicitly shown in a study conducted by Kropp et al., (2006). Organizational learning is a vital requirement for the success of not only small but also large scale companies that operate in a dynamic and competitive business environment (Ghoshal, 1987). According to Boud et al., (2000), innovation and creativity is influenced by an employee and manager’s ability to learn. Marsick and Watkins (2001) argued that informal learning is focused towards acquiring and sharing knowledge and information with coworkers and team mates. Information sharing positively influences performance, creativity and innovation in peripheral assignments and initiatives undertaken by teams. It is revealed in several studies that the performance of an organization can be augmented by institutionalizing the elements of learning orientation and innovation (Ozmen and Eris, 2012; Breen et al., 2011).

1.3 Job Performance
Job performance is the aggregate anticipated sum of one’s discrete behavioral episodes around a standard time span in an organization. For any particular task, the job performance is the anticipated output of an individual in terms of quality and quantity. The key determinant for an individual's performance is motivation, will and capacity to do the task (Motowidlo et al., 2008). Moreover, the extent to which an employee carries out prescribed organizational work role expectations is known as standard job performance (Jex, 2002; Katz and Kahn, 1966). It has also been found that job autonomy improves employee responsiveness and employee ownership within the organization (Morgeson et al., 2005). Moreover, job autonomy also encourages workers to transfer and share a wider range of essential knowledge for completing a task within the organization (Parker, 1998).

1.4 Entrepreneurial Leadership
Leadership has always been indicated as one of the facilitating and inspiring factors that impacts various dimensions related to performance and work behavior of employees (Park et al., 2017; Xie et al., 2014; Soriano and Comeche, 2007). Entrepreneurial Leadership is relatively a new concept in leadership approaches, becoming more and more popular among many scholars in the 21st century (Karol, 2015). The Entrepreneurial Leadership (EL) is an approach in which the leader influences followers’ individual performances towards accomplishment of organizational goals through recognition and exploitation of entrepreneurial opportunities (Renko et al., 2015). The importance of leadership in the execution and generation of innovative ideas at work is given due credit (Yoshida et al., 2014). The entrepreneurial
leadership approach has been centered rather than other leadership approaches, say creative leadership, as it not only encourages the followers to participate in innovative behavior but also inspires them to generate innovative ideas for commercial gain (Tierney and Farmer, 2004; Epitropaki et al., 2015). Entrepreneurial leadership has been considered as team-level concept as suggested by the previous literature (Lord and Dinh, 2012). The role of entrepreneurial leadership is said to be more concentrated as compared to the other leadership styles i.e. participative and transformational leadership (Jin et al., 2014).

1.5 Social Skills
Social skills are the ability to effectively interact with others (Wu, 2008). Social skills have become particularly important in today's organizations as the increase in service-oriented roles have made organizational structures flatter (Wu, 2008). Social skills have been investigated in various domains, which include industrial psychology, clinical psychology, interpersonal psychology, communications, leadership, vocational, trainings, and occupational sociology as suggested by various scholars (Hollin and Trower, 1986; Hargie and McCartan, 1986; Attewell, 1990). Strong social skills can promote interpersonal connections, which surely augments job performance (Wu, 2008; Hattrup and Jackson, 1996). Few researchers have studied social skills to act as predictor of job performance (Hogan and Shelton, 1998). Social skills have been conceptualized by management, with respect to relational/interpersonal strategies that are fitting for a specific outcome (Ferris et al., 1989). As suggested by Wayne et al. (1997), interpersonal skills influence job performance evaluations.

1.6 Managerial Competency & Job Performance
Managerial competency plays a vital role in ensuring organizational effectiveness (Veliu and Manxhari, 2017). A study conducted by Wahab and Tyasari (2019) investigated this relationship in light of Social Cognitive Learning theory and saw that managerial competency was vital to increase job performance. Moreover, Veliu and Manxhari (2017) found that managerial competency and SME performance are positively related. Abbaszadeh et al., (2012), conducted research in chemical industry of Iran and found a positive association between managerial competencies and employee productivity in the said industry. Managerial competencies were analyzed from two aspects i.e. managerial skills and general characteristics. Furthermore, employees’ productivity was analyzed from three aspects i.e. optimum use of organizational resources, organizational commitment improvement in working style, and motivation. It is established by the researcher that managerial competencies substantially impacts employees’ productivity.

![Research Model](image)

Figure 1. Research model.
The association between managerial competence and job performance has been studied in literature. According to Sanda et al. (2011), competency is an important underlying characteristic that is often related to superior job performance and managerial effectiveness. It is suggested that competency is viewed as a dimension of behavior and is related to both individual and organizational performance. It is noted that managerial competence is demonstrated by skills, knowledge, abilities and personal traits of managers required for effective work performance. Moreover, Kuffour (2008), explained the vital role of managerial competencies in SMEs and demonstrated that SMEs can achieve competitive advantage by ensuring that executives exhibit managerial competencies that can help motivate and increase employee productivity and performance. Therefore, performance is an outcome of executive and employee competencies and hence managerial competencies have a positive relationship with superior performance (Sanda et al., 2011).

\[ H_1: \text{Managerial competency is positively related to job performance.} \]

### 1.7 Learning Orientation & Job Performance

Some studies have studied the association of learning orientation and job performance but the link has not been widely explored in the literature (Long, 2013). A study examining the impact of Learning Orientation on the performance was carried out by Wang (2008) for UK firms. According to Wang (2008), it has been suggested that learning orientation is positively associated to job performance. Moreover, an investigation on the influence of learning orientation on job performance has also been carried out by Wahab and Tyasari (2019) for university leaders of Pakistan. The researcher studied the relationship between aforementioned variables in light of social cognitive learning theory and suggested that learning orientation is positively associated to job performance. An investigation conducted to study the association of learning orientation and performance in Turkish logistics companies, it was carried out by Eris and Ozmen (2012). According to the researcher, it is concluded that the learning orientation effectively contributes to knowledge sharing and achievement of organizational goals, hence learning orientation and performance are positively related. Wahab and Mahmood (2015) also investigated this relationship and found that learning oriented university leaders perform better. The impact of organizational learning on the business performance has been investigated by Jiménez and Valle (2011). The study was conducted in Spanish firms and the outcomes advised that organizational learning and business performance are positively related.

A study conducted by Sawaean and Ali (2020) advised that learning orientation and performance are positively related. The social cognitive learning theory upholds the view of learning orientation and managerial competency’s effect on job performance, which proposes that learning competencies regulate the behavior and performance of individuals (Wood and Bandura, 1989).

\[ H_2: \text{Learning orientation & job performance are positively related.} \]

### 1.8 Managerial Competency & Entrepreneurial Leadership

An entrepreneur plays a pivotal role for brining innovation, creativity, innovation and change in an organization (Zijlstra, 2014). In an era of changing customer demands, entrepreneurs explore new opportunities for business. In order to survive, leaders need to adapt to change in a dynamic business environment and thus should practice entrepreneurial leadership style. Entrepreneurial leadership is not widely studied in literature; however, its mediating impact has been addressed in few studies (Wahab and Tyasari, 2019). Wahab and Tyasari (2019) explored the mediation of entrepreneurial leadership among the association of managerial competency and job performance. The findings advocated that entrepreneurial leadership does mediate the aforementioned relationship. Zarefard and Cho (2018) combined managerial competencies and entrepreneurial competencies and introduced a new concept of entrepreneurial leadership competencies. The author suggested that entrepreneurial leadership competencies produce entrepreneurial attitude. Moreover, entrepreneurial leadership provides foundation to take innovative actions and measures that favor organizational goals accomplishment. Thus, empirical evidence suggests that there is a positive impact of managerial competency on entrepreneurial leadership.

\[ H_3: \text{Managerial competency & entrepreneurial leadership are positively related.} \]
1.9 Entrepreneurial Leadership & Job Performance

Entrepreneurial thinking is necessary in a business environment characterized by redefined markets, restructured the activities and revised operating models (Ireland and Webb, 2007). The effect of Entrepreneurial Leadership on innovation work behavior (IWB) and opportunity recognition (OR) has been investigated by Bagheri (2017) in Irani business context and the results advocated of a noteworthy influence of EL on IWB & OR of workforce in high-tech SMEs of Iran. Leaders in extremely volatile and dynamic environments like high-tech companies believe the development of new ideas and the identification of entrepreneurial opportunities is an important way of improving their business processes, employee performance, competitiveness and growth (Ireland et al., 2003). The impact of entrepreneurship orientation and attitude on the project performance has been examined by Sabahi and Parsa (2020). The outcomes of the study revealed that entrepreneurship orientation and entrepreneurial attitude are the most important predictors of project performance. An investigation conducted by Trivellas and Drimoussis (2013) examined the relationship between managerial competency and leadership styles on project performance and success in Greece. The study was conducted through survey research method and the findings of the study suggested that managerial competency and leadership styles are the best predictors of project success and performance.

As reported by Wahab and Tyasari (2019), there exists a mediation among managerial competency and job performance over entrepreneurial leadership, while contingency theory upholds the entrepreneurial leadership view and resource-based theory upholds the individual’s performance view and its impact on organizational performance. Therefore, it can be deduced that entrepreneurial leadership positively impacts job performance.

H4: Entrepreneurial leadership and job performance are positively related.

H5: The association of managerial competency & job performance gets mediated by entrepreneurial leadership.

1.10 Learning Orientation & Entrepreneurial Leadership

Entrepreneurial leadership emerged as a new study model the fields of entrepreneurship and leadership (Wahab and Mahmood, 2015). The notion of entrepreneurial leadership has become pivotal for companies to maintain sustainability, performance and adaptability (Gupta et al., 2004). The mediating effect of entrepreneurial leadership among the association of learning orientation & job performance has been investigated by Wahab and Mahmood (2015). The study was conducted through survey research method and the outcomes advocated of mediation of entrepreneurial leadership in the aforementioned relationship. The mediation of entrepreneurial leadership in the study can be seen in light of contingency theory which proposes that leadership skills discover the necessities of the environment that exist in the given situation (Fiedler, 1972). The individual performance (job performance) view has got the support of resource-based theory which proposes that the resources that are rare and difficult to imitate, position an organization for long-term success and superior performance (Wernerfelt, 1984).

H6: Learning orientation is positively related to entrepreneurial leadership.

H7: The association of learning orientation & job performance gets mediated by entrepreneurial leadership.

1.11 Social Skills and Job Performance

Social skills have been defined as social behavior, which is learnable and directed towards accomplishing social goals (Wu, 2008). An employee’s probability to succeed fundamentally depends on his/her ability to communicate and interact with others in the workplace i.e. social skills. The objective of effective job performance can be achieved by interpersonal connections, promoted by strong social skills (Beheshtifar and Norozi, 2013). The moderation of social skills has been investigated by Zaman et al. (2019) among the association of project complexity and project performance. The outcomes advocated that social skills significantly moderate the aforementioned association.
The moderating effect of social skills has also been analyzed by Yun and Lee (2017) among the association of R&D personnel’s knowledge sharing and job performance and the outcomes advised that social skills significantly moderate the aforementioned relationship. An investigation carried out by Beheshtifar and Norozy (2013) highlighted the impact of social skills on employee success. It is suggested that augmented social skills facilitate interpersonal interaction which in turn produces effective job outcomes. The impact of social skills (as a dimension of emotional intelligence) on job performance of teachers in Malaysia has been examined by Mohamad and Jais (2016), the outcomes of the study revealed that social skills substantially impact job performance. Wu (2008) investigated the association of social skills and job performance and the results advocated that there exists a substantial association among the said constructs. Social skills assist accomplishment of challenging goals and developing positive relationships at workplace (Wu, 2008).

H8: Social skills moderate the association of managerial competency & job performance.

H9: Social skills moderate the association of learning orientation & job performance.

2. Materials and Methods

2.1 Sample and Data Collection

Structured questionnaire were used to gather quantitative data for the purpose of the study. A total of 384 questionnaires were used to collect data. The sample consisted of 249 male respondents (64.84%) and 135 (35.16%) female respondents. The respondents were employees of different organizations (software houses) and were categorized on the basis of experience of working experience, educational qualification, and position in organization. As far as working experience is concerned, 58 respondents had working experience of less than 1 year, 109 respondents had experience of 1 to 3 years, 145 respondents had 4 to 6 years of experience, and 72 respondents had experience of more than 6 years. As far as educational qualification of the respondents is concerned, 45 respondents had intermediate qualification, 191 respondents had Bachelor’s degrees, 84 respondents had Master’s degree, and 64 respondents had educational MPhil/PhD qualifications. 167 respondents were first line managers, 135 respondents were middle managers, and 82 were in top management of the organizations.

The survey instrument paves a way to collect the data from the representative part of the target population. All the measurement instruments were adapted from the existing literature and 5-point Likert scale was used.

Table 1.

<table>
<thead>
<tr>
<th>Instruments used for data collection</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Variable</strong></td>
</tr>
<tr>
<td>-------------------------------------</td>
</tr>
<tr>
<td>Job Performance</td>
</tr>
<tr>
<td>Managerial Competency</td>
</tr>
<tr>
<td>Learning Orientation</td>
</tr>
<tr>
<td>Entrepreneurial Leadership</td>
</tr>
<tr>
<td>Social Skills</td>
</tr>
</tbody>
</table>

3. Results

3.1 Assessment of Measurement Model

3.1.1 Testing Reliability

The composite reliability for managerial competency, learning orientation, entrepreneurial leadership, social skills, and job performance are 0.868, 0.916, 0.841, 0.798, and 0.890 respectively. The cronbach’s alpha for managerial competency, learning orientation, entrepreneurial leadership, social skills, and job performance are 0.868, 0.916, 0.841, 0.798, and 0.890 respectively. The cronbach’s alpha for managerial competency, learning orientation, entrepreneurial leadership, social skills, and job performance are 0.868, 0.916, 0.841, 0.798, and 0.890 respectively.
performance are 0.837, 0.902, 0.787, 0.746, and 0.865 respectively which is greater than required threshold of 0.70 (Hair et al., 2006).

3.2 Testing Validity
3.2.1 Discriminant Validity
The discriminant validity was examined through Fornell-Larcker Criterion and Cross Loadings of the items of the constructs. The discriminant validity criteria was fulfilled for all items and constructs.

3.3 Convergent Validity
The convergent validity was measured through outer loadings and AVE. The outer loadings and AVE were significant i.e. both showed values greater than 0.5. The convergent validity criteria was fulfilled for all items and constructs.

3.4 Assessment of the Path Model
In order to test the hypothesis, bootstrapping with 500 subsamples procedure was applied through Smart PLS 3 to test the significance levels of the path coefficients and outer loadings of each item using t-statistics. The Table 2 shows that the Managerial Competency is positively related to Job Performance of employees (β=0.539). Hence, H1 is accepted.

Figure 2. Structural Model.
The direct impact of Learning Orientation on Job Performance of employees is also significant (β=0.271). Hence, H2 is also accepted. Both of the aforementioned relationships get mediated by entrepreneurial leadership (MC-EL β=0.449, LO-EL β=0.383, EL-JP β=0.216). So, H3, H4, H5, H6, and H7 are accepted. There is partial mediation because the direct relationships are positive and significant. Moreover, indirect impact is also positive. Additionally, the moderating effect of social skills in the association of managerial competency and job performance is positive and significant (β=0.287). So, H8 is accepted.
The moderating role of social skills in the association of learning orientation and job performance is not found (β= -0.015). The moderating effect of social skills is not proved. Hence, H9 is rejected.

Table 2. PLS-SEM Path Model Coefficients

|                  | Original Sample (O) | Sample Mean (M) | Standard Deviation (STDEV) | Deviation | T Statistics (|O/STDEV|) | P Values |
|------------------|---------------------|-----------------|-----------------------------|-----------|--------------------------|----------|
| EL -> JP         | 0.216               | 0.215           | 0.057                       | 2.034     | 0.042                    |
| LO -> EL         | 0.383               | 0.387           | 0.049                       | 7.786     | 0.000                    |
| LO -> JP         | 0.271               | 0.273           | 0.049                       | 3.490     | 0.001                    |
| MC -> EL         | 0.449               | 0.452           | 0.049                       | 9.134     | 0.000                    |
| MC -> JP         | 0.539               | 0.542           | 0.044                       | 12.161    | 0.000                    |
| SS on LO -> JP   | -0.015              | -0.010          | 0.039                       | 0.388     | 0.343                    |
| SS on MC -> JP   | 0.287               | 0.285           | 0.039                       | 2.227     | 0.026                    |

Table 3: Specific indirect effects

|                  | Original Sample (O) | Sample Mean (M) | Standard Deviation (STDEV) | Deviation | T Statistics (|O/STDEV|) | P Values |
|------------------|---------------------|-----------------|-----------------------------|-----------|--------------------------|----------|
| LO -> EL -> JP   | 0.036               | 0.038           | 0.018                       | 1.989     | 0.047                    |
| MC -> EL -> JP   | 0.058               | 0.060           | 0.028                       | 2.038     | 0.042                    |

4. Discussions

The results showed the positive relationship between managerial competency and job performance of employees. The findings were in accordance with the view of Swanson, Kim, Lee, Yang, and Lee (2020); Wahab and Tyasari (2019); and Abbaszadeh et al. (2012). Thus, from the results of this study, it can be inferred that managerial competency effectively contributes towards an increased job performance in organizations. Moreover, the results advocated of a positive association between learning orientation and job performance of employees. The findings were in accordance with the view of Sawaean and Ali (2020); and Wahab and Mahmood (2015). Therefore, it can inferred that learning orientation positively impacts job performance of employees. Partial mediation was found over Entrepreneurial Leadership in the relationship of managerial competency and job performance. The findings were in accordance with the view of Wahab and Tyasari (2019). Therefore, it can be inferred that individuals who demonstrate managerial competency are also more likely to develop entrepreneurial leadership during the course of the job. As a result, job performance of employees also tends to improve. In addition to this, partial mediation was found over entrepreneurial leadership among the association of learning orientation and job performance. Therefore, learning orientated individuals are more likely to develop entrepreneurial leadership during the course of their job and as a result job performance also improves. Lastly, the moderating role of social skills in the association of managerial competency and job performance of employees was tested and moderation was proved. Moreover, the moderating role of social skills in the association of learning orientation and job performance of employees was also studied, but moderation was not proved.

5. Limitations

Despite substantial contributions from the researchers, the present study has certain limitations. The study approached social skills as a unidimensional construct. However, the scope of the study may get broadened by incorporating additional dimensions of social skills. Moreover, the study was conducted in the software industry of Pakistan. The study was cross sectional in nature i.e. data was collected at a certain point of time. Due to time and resource constraints, convenience sampling technique was incorporated. Data was collected from a limited number of participants belonging to one city only. The results of the study can be improved by incorporating additional companies, sectors and participants. In addition to this, job performance was measured as self-rated job performance. In order to improve the
results, job performance can be measured through supervisor-rated job performance or secondary data available with the organization.

6. Conclusions
From the results of this study, it can be concluded that managerial competency improves job performance. The aforementioned relationship also gets mediated by entrepreneurial leadership as managerial competency promotes entrepreneurial leadership in organizations which results in improved individual and organizational performances. The findings of this study suggest that learning orientation helps in increasing job performance of employees, the aforesaid association gets mediated by entrepreneurial leadership as learning orientation promotes and develops entrepreneurial leadership in individuals which results in improved performance. This study makes a significant contribution to the previous literature by studying the importance of social skills in organizations as a moderating variable in the relationship of managerial competency and job performance, and learning orientation and job performance. It is found that the individuals having social skills and managerial competency always perform well on the job, as social skills paves a way to effective resolution to the problems and conflicts at the workplace and in result to this, the organization progresses. Talking about the software industry, the need for highly technical specialized skills for software development has always been the primary subject of discussion for long, the recruitment in software industry majorly revolves around candidate’s expertise or technical knowledge, while no concentration towards candidate’s social networking capability. So, it is found that social skills do not moderate the relationship of learning orientation and job performance.

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References


Privatization of National Assets: Solution to Fiscal Deficits

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ABSTRACT

This paper is exploratory in nature and shall investigate the nature of privatization law keeping in focus the impact this law has created on the fiscal deficits. State Owned Enterprises are the surfeit of a nation which provides those goods and services which the market sometimes is unable to provide. These enterprises have a large share in the macro-economic structure of a county that aims in providing goods and services at a rate that is affordable for everyone. Through this paper the attention of the concerned authorities shall be drawn towards the fact that privatization is not the ultimate solution to all economic problems and that there are numerous other options and choices which will to cater the declining nature of our economy and increase in the heavy debts. This paper also has some factual reasoning regarding the enterprise which have been privatized but are not working up to the mark. Hence the gap in the nature of the policy making must be addressed looking for policies that will revive the working of SOE’s. The recommendation proposed in this paper allows foreign investors to invest in the public assets as it would increase the trading between the countries.

Keywords
Privatization, National Assets, Fiscal Deficit, Privatization Pakistan, State Owned Enterprises, Public Goods, Public Services

JEL Classification
H3, H6

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1. Introduction

Privatization is basically a process of transferring the publically held entities to private owners either by selling the government enterprises or allowing the private individuals and business owners to intervene in the matters of Public Corporations (Pakistan G. o., n.d.). In Pakistan privatization of State owned
Enterprises is done in order to reduce the public debt and fiscal deficit. This paper will draw the attention of the concerned authorities towards the fact that handing over the State Owned Enterprises (SOE’s) to the private owner’s is not the only way to enhance the efficiency and reduce the deficit, as losing the national assets is synonymous to losing the control over public goods. In our reasoning, the National Assets must not be privatized as it has an adverse effect of national image on international forum declaring the government to be incapable of performing its duties. It can be seen that the desired outcomes of privatization is not achieved. It was felt that with the selling of enterprises the economy of Pakistan would shift from downfall to the increasing graph. But the outcomes were somewhat different then expected. The only thing the country had achieved since the initiation is the economic, social and political costs.

1.1 Privatization Law
The most important facet of Privatization Law was to address the cumulative debt and fiscal deficit which are related to the economic costs (Pakistan G. o., n.d.). Low expenditure related to poverty, rising poverty, unemployment, lack of provision of basic necessities, low expenditure on development, and more population driven towards poverty line all shows the social costs that the country had to bear. Last but not the least increased unrest in society, unstable politics of Pakistan, increase in threats to life and property all reflects the political costs. These three were the important facets which the government had aimed to overcome when they had passed the Privatization Act or Privatization Law.

1.2 Limitations of the Study
Due to lack of research in this field this research paper faces a large research gap. Not only this due to COVID outbreak we were unable to carry out field research. Some of the results may vary from what the actual situation is.

2. Research Methodology
This research is qualitative in nature and employs exploratory approach in reasoning and investigation of the topic. All of the data collected is through the different secondary resources and pertinent websites within Pakistan.

2.1 Research Question
This paper shall answer the following question:
- How does privatization of public enterprises help to reduce the fiscal deficit of Pakistan?

2.2 Research Objective
This paper has the following objectives:
1. To investigate why Privatization Law was promulgated?
2. To investigate the impact of privatization on investments.
3. To investigate whether privatization helps in reducing the fiscal deficit.

2.3 Research Hypothesis
This research shall focus to evaluate the impact privatization of the SOE’s are creating to bridge the fiscal gap.

3. Literature Review
In European countries it is perceived that privatization is a main pre-requisite for expanding markets, but studies reveal that privatization only leads to the enhanced gaps of fiscal deficits. This trend has been observed in almost all of the European countries where as evidence regarding the fact, privatization increases when fiscal deficit reduces, lacked (Ordh, Walker, & R. Hunt, 2016). Europe has seen the fastest privatization after 2008 in order to overcome the 2008 financial crunch (Voszka, 2019) Whereas in developing countries privatization is often attributed to the economic efficiency, expansion of internal and external markets, generation of governmental revenues, provision of customer preferred goods and etc., but the case is not the way it appears to be. In developing countries the privatization programs are put forth by the donor agencies and thus in order to acquire funds and loans the requisites of those agencies have to be fulfilled prior to privatization hence the true essence of privatization is always lost
creating negative social and political implications (Haque, 2000). In Pakistan, Privatization came into the light with the motive to reduce government subsidies to public entities and also to enhance the tax revenue generation from the private enterprises. With the rise of this process a total of 166 State owned enterprises were sold out in order to gap the budget deficit of the then acting government but this selling was of no use. In return, the government not only lost control of the SOEs but also failed to bridge the deficit gap (yar, Arif, & Ab. Rahim, 2013). In order to achieve the privatization objectives at fullest, organizational Development Perspectives must be incorporated into the privatization programs. Using different dimensions of OD interventions, like change of planning/ implementation etc. will help the governments to achieve the set objectives of nationalization like reducing fiscal deficits, reducing budgetary costs, enhance organizational efficiency and much more (M. Pheko, 2013). The privatization policy of Taiwan has seen a lot of setbacks due to numerous flaws it has. Investigation reveals its due relation with the liberalization and democratic policies at the same time (Tom, 2010). Similarly, Sub-Saharan African countries privatize its nationalized assets due to inflation, least focus of government on infrastructure and income disparity. But these factors lack the efficiency and potential to achieve the true essence of denationalization (Adam & Mengistu, 2008). Due to limited employment opportunities in the public hospitals, a new trend has been observed to privatize the hospital sector in order to reduce unemployment. But through detailed analysis of privatized hospitals of Germany it has been seen that no such employment related effects have been observed (Heimeshoff, Schreyögg, & Tiemann, 2014). But if the dynamic model of privatization will be adopted financial constrains can be reduced which makes it difficult for the government to finance the fiscal year (Che, 2009).

4. Research Analysis

4.1. Promulgation of Privatization Law
The idea of privatization or Denationalization program came into existence after the Soviet Union economic collapse during the economic reign of politically elected government of Nawaz Sharif, with the aim to improve GDP and economic conditions of Pakistan. The privatization program was formally launched on January 1991 under the prime minister ship of Mr. Nawaz Sharif, with a vision to promote free market economic principles, attract foreign investment and increase private ownership (Pakistan E., 2012). The top down hierarchal structure is maintained with having Board of the Privatization Commission (PC) on the top which decides what radical steps should be taken and what kind of course is suitable to be followed. The course of action is carried on after the approval from the Council of Common Interests. The task of Privatization Commission is restricted to the control of federal assets which are directly overseen by the Government and whose major shareholder is the Public Government. Apart from selling of the shares and assets, it can also offer some sort of rights and concessions to the private parties so that they can operate the publicly owned assets properly and efficiently (Pakistan E.-G., 2012). The fully handing over of assets to the private owners is carried out through certain procedure. Initially the non-controlled share of the company is floated in the market by the management. Such a type is called as “Partial or Limited Privatization”. This is not characterized by the complete transference of powers from the management into the hands of third party. Through the results it has been observed that “partial privatization” has little to no effect therefore slowly and with the passage of time this partial control shifts to entire control by the private owners. The workforce in the public sector organizations are very hostile and rigid towards the process of privatization. Back in 2005 a protest was staged by the PTCL workers on the passage of the resolution that the state corporation will be handed over to private owners by the then Prime Minister Shaukat Aziz. Despite the serious demonstrations the government did not paid any sort of attention over the unrest, and the bill was passed. This had resulted in workers’ losing their jobs and benefits. The reason behind the stubbornness of public servants is because the governmental jobs are one of the prestigious jobs having a bunch of perks and benefits. Not only that the employees have less workload and per week hours’ work is evenly distributed. The firms do not demand any sort of extra work or overtime from their employees. On the other hand, the privately-owned firms have their prescribed rules and regulations with predetermined workloads which do not have any concession. Many of the state-owned entities have been approved to be privatized. Some of them include
OGDCL, Mari Petroleum, Pakistan State Oil, Sui Sothern Gas, Sui Northern Gas, Habib Bank, United Bank, National Bank of Pakistan, State Life Insurance, Pakistan Steels Mills and many more to be named. But the fact remains the same this 100% transfer of shares of most of the entities still have not paved the way for any government to boost up the economy of the country. The country is still lagging behind the target and is facing serious economic recession along with increased inflation and devaluation of money.

4.2 Privatization Law and Investments
The Privatization Law says that 90% of the money recovery from the privatization is compulsory to be utilized in debt sequestration. As stated in The Fiscal Responsibility and Debt Limitation (FRDL) Act, the outstanding public debt must not surpass by 60% in the total GDP. From the statistics it has been observed that only during the period of 2006-2011 the public debt was controlled and was under 60%. It was not achieved wholly solely with the precedence of Privatization but it was achieved due to debt deferment and reform. In the period of two PML-N governments the debt had reached a high mark of 104% back in 1990’s. During 2003-2007 the privatization money was treated as nontax revenue receipts which is the only reason why the fiscal debt was 2.3-4.1%. Apart from this period, it was extremely high. The following table will show the basic relation between the socio-economic costs at the very initial stages of this law (Asian Development Bank, 1998).

<table>
<thead>
<tr>
<th>YEAR</th>
<th>PUBLIC DEBT</th>
<th>FISCAL DEFICIT</th>
<th>TOTAL INVESTMENT</th>
<th>POVERTY RELATED DEVELOP.</th>
<th>DEVELOP. EXP.</th>
<th>% POPULATION BELOW POVERTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1987</td>
<td>-</td>
<td>-</td>
<td>26</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1988</td>
<td>-</td>
<td>9.0</td>
<td>21</td>
<td>-</td>
<td>7.0</td>
<td>29.2</td>
</tr>
<tr>
<td>1989</td>
<td>-</td>
<td>7.0</td>
<td>21</td>
<td>-</td>
<td>6.0</td>
<td>-</td>
</tr>
<tr>
<td>1990</td>
<td>91.5</td>
<td>7.0</td>
<td>22</td>
<td>-</td>
<td>7.0</td>
<td>-</td>
</tr>
<tr>
<td>1991</td>
<td>-</td>
<td>8.8</td>
<td>26</td>
<td>-</td>
<td>6.4</td>
<td>26.1</td>
</tr>
<tr>
<td>1992</td>
<td>-</td>
<td>7.5</td>
<td>25</td>
<td>-</td>
<td>7.6</td>
<td>-</td>
</tr>
<tr>
<td>1993</td>
<td>-</td>
<td>8.1</td>
<td>20</td>
<td>-</td>
<td>5.7</td>
<td>26.1</td>
</tr>
<tr>
<td>1994</td>
<td>-</td>
<td>5.9</td>
<td>20</td>
<td>-</td>
<td>4.6</td>
<td>28.7</td>
</tr>
</tbody>
</table>

From the above table it is inevitable that, Investment which is the most powerful economic driven tool is on decline due to this deregulation and privatization. With a high investment of 26% of GDP pre-privatization in 1987 it has crumbled to 20% in 1994 and with much deterring nature has fall down till 14% in 2013-14. In reality, it is thought that on freeing the public resources from loss-incurring SOE’s the left one would be used in social sector and human development. But it is evident from the table that development expenditure has declined from as high as 7% in the 1988 to 4% of total GDP in 2014 (Bank, 2014 ). Apart from other things, the privatization has increased the prices due to which more parties are attracted into the private sector thus inviting the serious competition. An investigation conducted back in 1990’s which clearly showed that the prices of the privately producing goods had enlarged; despite the expectation of reducing it (A.R. & A.R, 1997, Winters). The daily life products in consumer basket and the basic capital of production were overpriced which eventually increased the consumer price index. The Whole Sale Price Index was even higher, as shown in another study, which showed its bigger contribution to general upsurge (Akhter Hassan, 2012 ). Switching the context from social costs to political costs, the autonomy still vested into the hands of the elites. Despite it was aimed at taking important decisions which might be effective in the betterment of workforce as well as the general public. But the fiscal policy was made only to bridge the competing interests of the elites. This privatization was nothing but only the change of powers of “assets for the private parties by the private parties”. Hence it can be concluded that there was no reduction in the top-brass over-powering the workers’ interests and simultaneously this privatization law was unable to attract foreign and internal investments as promised.
4.3 Privatization and Fiscal Deficits

Privatization does not enhance efficiency or competition. The major concern should be shifted over to the regulatory bodies which should work hard in order to satisfy consumers’ rights without harming the investments. Privatization often leads to cartelization, a condition in which firms join hand together in order to pursue their interests and demands; this is worst condition then the public monopolies. Therefore, it has neither reduced the public debt, nor has it improved a kind of financial condition. Recently it can be seen that that the national flag carrier of Pakistan, which is Pakistan International Airline has been targeted to be denationalized. It is one of the major asset and the only left flag carrier of Pakistan which is a source of dignity and picturing of our country on the international medium. The reason given behind this act is that past many decades the national flag carrier is experiencing losses and it has become a huge liability on the state pal, therefore ever government has the first priority of ridding national airline. The net loss that the airline had faced in 2017 was Rs325 billion. It is claimed that by selling the enterprise it will not be beneficial for the people but also for the country and the travelers as they will be having high quality services and flexible rates. The concerned authorities have reported that due to the losses it had impacted on the country with a total of 600 billion in the past three decades. It has been seen that every time public government is unable to provide capitals to an enterprise or it is undergoing any sort of economic pressure it decides to sell-off the national asset just to acquire some financial funds. But it must also be noted that these monetary funds are not being used to overcome the deficits but they are only being used for either paying-off the salaries of governmental officers or being used for the things which have significantly low importance in the growth and development of the country and economy. The major work of the government is to provide public goods to the population and once it fails to do so it cannot compel the private sector to provide the goods as both the sectors are opposite in nature; private sector tantamount to profit making whereas public sector synonymous to welfare making. Privatization is not that glossy as it appears to be. It cannot turn around the state of government entities or the economy of Pakistan. From the past experience it has been observed that the public corporations used to provide the goods at a very low market prices as compared to the private enterprises. Not only is that loss of billions of rupees also incurred by the national exchequer due to non-submission of revenues. . From the following examples the point of investigation can be defended and explained.

I. **OGDCL**; during the fiscal year 2014-15 it generated a total profit of PKR 91 Billion and provided fuel and gas at a price 40-50% lower than the private sector (OGDCL, 2014-15).

II. **PSO**; which generated the after-tax net profit of around PKR 125,558,000,000 and was added to the end of fiscal year on 30th June 2013; which was an increase of 39% revenue generation from the previous year (PSO, 2013).

III. **PTCL**; during the regime of Musharraf control of PTCL was given to Etisalat, a Public Sector Enterprise of UAE, in which all the shares of PTCL were given to a minority shareholder and an agreement was made that the sum will be paid in installments. The iconic fact is that the proponents of privatization say that the state cannot run its vital functions but they do not care that they have given the enterprise in the hands of foreign public entity. To analyze how successful this scheme was we can realize the fact that the same firm which was generating billions of net profit is now incurring heavy losses despite increased charges and a drop in standard and quality of customer services (PTCL, 2015).

IV. **KESC**; again, was sold to a private party with the hopes that it would enhance its performance, but it has become a liability on government which is on and off rescued from being drown in debts. The failure of private owners to invest in infrastructure has led to the shortfall in electricity storage and ultimately increased the load-shedding (K-Electric, n.d.).

From the above examples it can be concluded that the government of Pakistan has only faced losses in the shape of low revenues and falling share prices which has ultimately resulted in the sufferings of public with deteriorating services and high prices of commodities. Hence in a nutshell, by handing over the services provision to any other party only averts the claims and grievances regarding the public organizations it does not enhance the production, provision, efficiency or economy.
5. Recommendations
In response to the proposed hypothesis, the failure and inappropriate working of enterprises cannot be attributed to denationalization of those assets just to make them as profit-making institutions with low efficiency and effectiveness along with diminished services at a higher rate. As for those entities like PIA which are incurring the losses since last 10 years, those policy options must be taken into account which will not only benefit the National Asset but will also be helpful for the country on a whole. Following are some of the policy alternatives:

5.1 Decentralization of the Enterprise
The elite management and top-down hierarchal structure must be abolished and the decision making power must go down till the grassroots levels. More public administrators must be inducted so that they coach and guide the labor force towards what decisions are right and what are wrong and what are best in the interest of the corporation. The state must open up the entity for the civil societies to intervene and help the government to take best course of action. Pros: in this way the state will be able to attain better accessibility, more power over decision-making, empowerment over the expertise, and comfortable relationship between the labor force and management which will enhance the efficiency and working of the employees. Cons: the decentralization might increase the lack of consistency of workers due to low scrutiny, involvement of personal connections for more benefits, and might take time for the management to accept the radical change.

5.2 Unions to be Established
Unions are often established that not only pursue the demands of the workforce to the management but also unite together to take decisions which will be best in the interest of the corporation. In public organizations, unions must be created by law so that both the management and labor force align their goals and objective with that of organization along with no submission of individual rights. Not only had that unions also set a standard below which no labors accepted. Pros: The union, and not the employer, has to maintain the discipline of workers with the legal right that it can terminate the labor who is not abiding by. This enhances the working scrutiny of labor force. Not only that they have power to provide better wages, improved benefits and enhanced working of the labors which will more or less be helpful in enhancing the efficiency and productivity of corporation. Cons: this might increase the tension between the employees and the employer resulting in the hostility of nature in the organization. Resultantly it will welcome the cascade of galvanized strikes by the labor force.

5.3 Inviting the Expertise of Knowledge in the Management
The government must have an open invitation for the expertise in the knowledge of management and public dealing. It must encourage their involvement in the management, finance other departments so that they can oversee and direct the course of actions along with motivating the employees by an incentive pay plan that if they work efficiently, produce large quantity at low rates and work for the betterment of the country they will be rewarded for that. Pros: the new generation has increased knowledge of sharing and collaboration. They share information with no hesitation just as an open software shares. This will enhance the sharing of expertise information which will eventually produce more skilled and professional workforce. Cons: the thumb rules management and administration style will adhere to this concept of outside intervention. They will not be ready to allow any third person to interfere in their style of dealing. This might eventually create a disturbance resulting in third party to quit.

5.4 Involvement of International Collaboration
There is a vast variety of researchers globally who are willing to share their experiences, their information and abilities with the underdeveloped countries’ governments in order to enhance their working capability and guide them towards the ways in which they are able to reduce their fiscal debt and boost up their economy. They will also introduce competitiveness and innovation and will produce goods and services according to international standards. Pros: the goods and services produced according to the
international standards will have a major share in international markets also. This will increase the exports of the country with increased balance of trade and will finally be adding a lot of monetary funds in our capital and current account thus reducing our fiscal deficit. Secondly, the general public will also be interested in buying high quality products thus the demand for goods produced by the government at high quality and low rates will increase eventually adding to the revenue generation. **Cons:** the problem in adopting this policy will be that of the difference in the governing practices of our country. Our government is a mixture of dictatorship and democracy with much involvement of external forces. The differences in the government practices will adhere to achieve the desired goals.

### 5.5 Encouraging Foreign Investment

Foreign investment in the public entities will enhance the working capability of the enterprise. It is characterized by the involvement of the foreign investors in the management role as the shareholders with no control or ownership over the asset. Foreign investment brings in capital flows from the country investing. The increased foreign exchange will fill the gap between domestic savings and expenditure. Not only will that be helpful in raising our economy and reducing budget deficits. **Pros:** with the advent of foreign investment Pakistan will be able to provide more job opportunities to its people, the balance of payments will be more favorable, followed by technology exchange which will enhance the quality and efficient resources will be produced. Hence, with the regional development much funds will be added to the economy. **Cons:** it might result in the intervention of foreign governments in the domestic affairs of Pakistan. There is a risk that domestic business practices might disrupt allowing foreign investors to gain control over the corporate sector.

### 6. Conclusion

According to my knowledge the most efficient and effective policy will be of allowing foreign investors to invest in the public enterprises. Pakistan is a demographic country with no strict and rigid rules of the business. Foreign investors would happily finance their stake in assets of Pakistan. This is because Pakistan provides an assured freedom of establishment with no binding agreement. The investors would take back their stake any point in time if they are unable to carry on. For the declaration of assets the competent authority of Ministry of Finance and Board of Investment plays its part. This ensures the investors that they will not be held more than what they are liable for. Last but not the least SECP regulates all the investment activities and has separate constitution which tells about the rights and duties of investors. Apart from the benefits on the part of investors, Pakistan will too benefit from the FI. It will enhance the average yearly income of the country and its populace. Along with this disparity between the revenue generation and cost will also be reduced. By taxing investors we will be able to generate high tax revenues due to high exchange rates. The increased revenues will be added in the budget at the end of the fiscal year which will be used to pay off the debts. It is often noted that the State Owned Enterprises enjoy a lot of perks and benefits including subsidies and grants and moreover, 80% of the total bank loans goes into the account of SOE’s. The idea of mixed ownership with foreign investors will be a way forward in making the enterprises more efficient and accountable. This will be possible because of the domestic way of treating the foreign stakeholders. As the reform is inculcating third party ownership, the non-state firms will be encouraged to take part in this reform by buying shares, stakes or bonds from the enterprise and sharing their part of stake for the betterment of a nation. Another reason why this recommendation is considered to be successful is that the state owned corporation will be categorized in two ways; one which will have foreign investors and will be working to make profits and the other which will be providing public goods and welfare. Both the factions will work together and will pave way for more revenue generation and also this will reduce the fiscal deficits. This will also change the shape of the management style along with more decision-making power distributed among the board of directors and shareholders. Through this an outcome or fiscal and welfare policy shall be drafted which will prove itself best in the working of government for providing public good. This will not alter the status of corporation as being the National Asset but will only alter the style of working along with the elimination of corruption and mal-practices. The investment agreement will be drafting according to the OECD principles so that no threat to national security shall be feared. This agreement will be mutually beneficial
and will provide adequate autonomy the state to take its shares back from the investors if they perceive that the investors are not abiding by the pact or if they are trying to take hold of the corporation. One retaliation will be observed from the management as they will not be ready to share their powers with a third party that happens to be a foreign party. They might show rigidity towards the new styles and might not agree upon being accountable. Here the government must intervene and give sufficient knowledge so that they are able to understand what sort of consequences they will have to bear if they do not agree with the stance. It can be concluded that outsourcing the national assets is not a way to eliminate inadequacy, shortfall or incompetency. More problems arise when the government sells-off its national asset; the government becomes more corrupt, inefficient and the graph of economy goes down. Not only that levels of accountability and transparency are not maintained, and it drowns deeper into the debts.

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E-governance as a Roadmap to Good Governance: A Digital Punjab Perspective

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ARTICLE DETAILS

ABSTRACT

A new wave of technology hit at the turn of millennium which inspired millions around the world to utilize information technology in their daily lives. Governments have also started taking technological initiatives, as it makes their processes cost and time efficient – but the question remains, does e-governance make the government activities transparent as well? What is the level of accountability in the e-governance mechanism? Innovations in the government processes are flowing easily after the advent of e-governance. Even though there is a huge digital divide between the rural and urban areas of Pakistan, which consequently translates into slower implementation of technological services, in backward areas, the Punjab Information and Technology boards is taking leaps in delivering the public service which spans but is not limited to the health, education and law and order sectors.

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1. Introduction

Technological leaps have made revolutionary advancements in the past decade. This not only impacts the business world, but also have brought tremendous changes to the lives of every individual, by making them more well-informed of their surroundings and especially their governments. Due to advancements in technology, knowledge is widespread, and citizens have prompted closer ties with both legislature and administration – which has stimulated a dynamic system known as e-Government. Information and Communication Technology (ICT) has enhanced the lives of people, especially those in the developing countries (Jaeger & Thompson, 2003). E-governance can enrich the processes of government at all levels.
including healthcare, education, law and order, and business.

Good governance is the mechanism through which political, economic and administrative affairs of the country are managed at all levels. The process of governance can be enhanced by ICT as it connects people, businesses and governments efficiently. The objectives of good governance can be synchronized with e-governance to achieve optimum results. ICT can be used as a vital tool to connect citizens to important stakeholders of the government in both developed and developing countries (Haque, et al., 2014).

Pakistan, as many developing countries has a relatively low implementation and adoption of online services in the government sector due to the lack of trust in the internet-based services, digital divide and less awareness (Ali, et al., 2018). For this purpose, the Punjab government has taken numerous steps, starting almost two decades ago, the impact of which can be observed today.

Punjab Information Technology Board (PITB) was established in 1999, and at the same time merged with the IT department of Punjab. This led to a consolidated organization which could take on all IT initiatives under one roof. PITB works in different social sectors in the province, including Healthcare, Education, Law and Order and Municipality Services. PITB claims that their procedures have gained international recognition and the IT enabled solutions have enhanced accountability, transparency, efficiency and effectiveness across the province, especially at grassroots level.

Through Digital Punjab, PITB has enhanced public services with the help of technology and completed more than 270 IT projects during 2012-2017, with employees reaching a score of 1,000. PITB has assisted other provincial governments as well as foreign governments. Moreover, PITB has been the pioneer in establishing Pakistan’s public sector start-up incubator, which has facilitated the growth of a number of start-ups and has inspired private sector incubators as well.

This paper includes a brief overview of the enhanced e-governance infrastructure and practices in the Province of Punjab through PITB, and provides an analysis of how certain aspects of good governance are impacted by e-governance through a model inspired from (Heeks, 2001). The paper concludes with whether e-governance is the roadmap to good governance in Punjab, or otherwise. Furthermore, the limitations to e-governance system are also identified in a developing country.

2. Objective of the Study

The main objective of this paper is to analyze whether certain components of good governance are achieved through incorporation of e-governance in different sectors of Punjab. The investigation will entail an impact of Digital Punjab.

To attain this objective, this paper attempts to answer the following research questions:

1. Has the implementation of e-governance through Digital Punjab ensured accountability and transparency in the province?

2. Has e-governance systems through Digital Punjab ensure effectiveness and efficiency in the government working?

3. Literature Review

E-governance or electronic governance is the use of information and communication technologies (ICTs) for enhancing governance at different levels of government and the public sector (Dre’ze & Sen, 2015). E-Governance enhances the productivity and viability of the government. In addition to electronic administrations, e-governance also refers to the innovations in data and enhancements of procedures to strengthen government communication with the citizens (Butt, et al., 2019).

Numerous studies have been carried out to evaluate the impact of e-governance on good-governance since the advent of Information and communication technologies. In 2001, Richard Heeks overviewed
the impact of ICT on good governance objectives, and outlined three main contributions of e-governance in his paper, which are: 1. E-administration (improving government processes), 2. E-citizens and e-services (connecting citizens), and 3. E-society (building external interactions). Heeks observed that many e-governance initiatives failed due to lack of readiness regarding ICTs among citizens and the design-reality gaps. Since the key to good governance is for information to be widespread and accessible, Heeks has elaborated that ICT is an essential ingredient in achieving good governance. He further argues that e-governance is using ICTs as servants to master good governance (Heeks, 2001). E-governance makes it incumbent upon a government to introduce innovative to deliver public service. Governments all over the world are aiming to achieve good governance components through e-governance, which needs major reforms in the government organization (Ciborra & Navarra, 2005). E-governance aims to achieve transparency, accountability, efficiency and effectiveness, which are the underlying theme of good governance as well. In this digital age, for good governance and e-governance to be achieved, both have to go hand in hand. As the advancements of ICT improved, many countries conducted research to analyze whether e-governance was improving their overall performance. In almost each case, it was deduced that with the help of enabling the human resources with skills of the new onset, good governance components were achieved (Haque, et al., 2014).

Governments worldwide are grasping an administration framework which is electronic in nature. Each nation whether developed or developing, rich or poor are operating electronic structure intending to stream data for its stakeholders. The main focus of e-governance is to enhance the capacity of all individuals to receive knowledge and to improve the proficiency and viability of various types of government organizations (Arfeen & Khan, 2009). By gaining optimism in internal and external communication of a government organization, ICT achieves speed, precision and simplicity of processes. ICT provides a safe transition between the government and its stakeholders (Ahmed, 2018).

Traditional methods of governance provided space for forgery; the systems were slow and inefficient due to the pace at which they worked. For this reason, the trust upon government among common man was very low. ICT has provided efficient and effective ways for the public services to be delivered, and has created mechanisms through which common man can approach the government organizations with a few clicks (Subramanian, 2012). The emergence of a knowledge society based on ICT has improved the nature of governance. The proper functioning of democracy can only be achieved if public services are accessible to all, at all times, without any discrimination (Kalsi & Kiran, 2015). (Bala & Verma, 2018) after an extensive study on the e-governance projects in India conclude, that e-governance indeed is a key to good governance, given that proper planning and infrastructure is in place for the projects to be deemed successful.

The Ministry of Information Technology is the national focal Ministry and enabling arm of the Government of Pakistan for planning, coordinating and directing efforts to initiate and launch Information Technology and Telecommunications programs and projects aimed at the economic development of the country. In October 2002, the Electronic Government Directorate (EGD) was established in pursuance to a decision of the federal cabinet. EGD is a dedicated wing of Ministry of Information responsible for two types of services i.e; 1) In-house software development and 2) Advisory Services. NADRA has also introduced Smart ID Cards that contain 36 Security Features and it would help the holders of the cards access to easily available transactions and other services.

Pakistan Software Export Board is an apex Government body mandated to promote Pakistan’s IT Industry in the local and International markets. PSEB facilitates the IT industry through a series of projects and programs in development and promotion of Innovation and technologies. PITB in collaboration with Planning and Development Department of Punjab are providing Cloud Computing, Tier III standard Data Centre, IT infrastructure deployment and optimization, Centralized Service Desk, Citizen Contact Centre, improving online presence of the government of Punjab, Province wide connectivity, Arfa Software Technology PARK, Identity Management, Consulting, Microsoft licenses.
and product testing labs. Citizen Feedback model is another initiative to ensure transparency.

E-governance is a relatively newer concept for the developing countries, which is justified by the digital divide in the society, and hence becomes a complex procedure to implement as the citizens still lack trust and skills to be facilitated by ICT (Qaisar & Khan, 2010).

E-governance all over the globe, and especially in Asian developing countries have had a positive relation to the components of good governance, such as provision of better governmental performance, which subsequently impacts in better accountability and better transparency. E-governance also tends to lower costs regarding infrastructure and provide flexibility and more services in a short period of time, which ensures efficiency (Malik, et al., 2016). Pakistan has developed a very clear and strategic e-government policies, but due to major shortcomings like energy shortfall and lack of infrastructure, service delivery is impacted extensively.

An Indonesian study suggests that E-governance and good governance are correlated; to achieve the components of good governance e-governance is necessary in the modern age, and to fulfill the demands of e-governance, the principles of good governance should be established (Suhardi, et al., 2015).

4. Theoretical Framework
Good governance is the underlying current of how power is exercised in a country, and its scope reaches out to institutions, traditions and processes. Good governance is achieved when the resources are allocated efficiently to the citizens, the authorities are transparent in their process, and accountable for their actions. Good governance promotes the interests of the citizens and makes policies according to them. The principles of good governance strengthen institutions and provides basic services including healthcare, education and rule of law.

This research focusses on the efficiency and effectiveness, and transparency and accountability aspect of good governance, in three major service delivery areas identified in Digital Punjab. This is a qualitative research which analyzes the impact of incorporation of e-governance on good governance in Punjab. The model is developed with inspiration from Heeks E-Gep model (Heeks, 2001), where indicators and sample measures for service delivery sectors are identified. The study analyzes the impact of e-governance on good governance through secondary data, and latest research done in each service delivery sector in Punjab.

The components of governance are identified which are used to verify the impact of e-governance in the following table:

<table>
<thead>
<tr>
<th>Service Delivery Sectors</th>
<th>Good Governance Indicators</th>
<th>Sample Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>Efficiency and Effectiveness; Transparency and Accountability</td>
<td>Attendance of teachers and students&lt;br&gt;Fair examination system&lt;br&gt;Online admission system</td>
</tr>
<tr>
<td>Health</td>
<td></td>
<td>Attendance and performance of field workers and health facilities&lt;br&gt;Availability of data and early warning system for diseases&lt;br&gt;Access and assurance of quality drugs&lt;br&gt;Electronic registration, tracking process, record-keeping of criminals</td>
</tr>
</tbody>
</table>
5. Service Delivery Improvements in each Identified Sector

5.1 Education

The Punjab Information Technology Board has worked closely with the School Education Department of Punjab, to assist the latter in developing ICTs based system. Through the help of ICTs the school department is able to make well-informed and timely decisions which are based on facts and figures. PITB has enabled the schools to monitor students Learning outcomes, automation of examination system and admissions, and providing real-time monitoring of public schools (Digital Punjab, 2017).

Information Technology was introduced to education sector in Punjab in 2011. PITB has enabled the education department in Punjab to acquire real-time data, to ensure performance of schools and teachers’ presence (Waqar & Bokhari, 2017). To ensure the presence of both students and teachers, the education department has digitized attendance system. All the schools are regularly monitored and the report is entered into a centralized server, which ensures effectiveness and accountability from the faculty of each school.

E-learning is another initiative taken by the Punjab School education department, which provides digitized textbooks and tablet-PCs to teachers. This initiative has transformed the education system of the province, since students are taught with creative and new techniques, and tested on the Intelligent Tutoring System which is a unique application to individually cater each student.

For the purpose of improving education through monitoring and evaluation, many initiatives have been taken by the Secondary Education Department in collaboration with the Punjab Information Technology Board. These initiatives are regularly monitored by a centralized system, gathers feedback and makes improvements in the system based on real-time data. These initiatives have helped improve the transparency regarding education system in Pakistan. Some of them have been evaluated below:

5.2 Smart Monitoring

For any initiative to be successful, the effective implementation of its monitoring scheme is crucial. The Punjab Information Technology Board has developed a monitoring mechanism called ‘smart monitoring’ in 36 districts of the Punjab Province to improve the condition of schools (MAHMOOD, 2015). The new monitoring strategy has set target performances for teachers and students, and with the help of geo-tagging of the visited sites, real-time pictorial evidence reporting and the automated SMS alert for schools with low targets achieved. All of these indicators are monitored in a centralized database which ensures informed decision-making and trend analysis.

The School Education department upon the directions of Government of Punjab employed over 950 Monitoring and Evaluation Officers for fieldwork and real-time survey. These field officers are responsible for reporting key statistics of students and teachers’ presence, increase and decrease trend of student enrollment and the availability of utilities across 52,695 schools across the province. The Monitoring and Evaluation Officers are regularly shuffled and re-assigned different schools for monitoring visits to avoid any form of bias and promote fair reporting. The Program Monitoring Implementation Unit (PMIU) is responsible for the oversight of these field officers and ensures their adherence to the schedules assigned.

This effective monitoring mechanism has ensured positive results in the Education sector of Punjab Province. Students enrollment has increased along with the presence of teachers in class-rooms. The concept of ghost schools, teachers and students have reduced and all schools have the basic utilities
updated in them.

5.3 Literacy and Numeracy Drive
The Punjab Information Technology Board took another initiative to eliminate ghost schools and register both teachers and students by verifying them through their Computerized National Identity Card Number in the NADRA Database. This initiative was called the Literacy and Numeracy Drive and it was implemented through the already recruited Monitoring and Evaluation Officers, who were responsible for field visits to schools across the province for real-time data collection. This initiative was taken to ensure the quality of teaching and learning by eliminating ghost-concept in the education system.

Only a few developed countries have been able to achieve the implementation of this mechanism and it is a huge step forward for Government of Punjab to be able to implement this project on such low-costs. The student assessment application is created, linked with a wide question bank that is then tagged with the relevant student outcome. This application is used by the field officers during their monthly visits to collect real-time data, conducting quality assurance of teaching and learning, as well as recording the missing facilities such as washrooms, boundary walls, electricity and water at schools. These missing facilities were identified and then subsequently improved.

Through this drive 329,000 students are assessed monthly and the data is shared on real-time basis with the administrators through an online SMS-alert system or dashboard. Many schools lagging in providing quality education have been identified and their performance has been improved (Ishaq, et al., 2019).

5.4 E.Learn
The e.learn is an initiative of the Punjab Information Technology Board, which is specifically designed for teachers. The aim of this initiative is to train teachers in enhancing their classroom activities skills using information technology. Teachers will be equipped with the technical skills of using simulation and engaging video content in classrooms for better learning outcomes (Dubash & Jamal, 2018). The program started as a pilot experiment in 30 government schools of three cities in Punjab, namely Rawalpindi, Multan and Lahore.

Under this initiative, teachers are provided with tablets while television sets are installed in classrooms (Waqar & Bokhari, 2017). The teachers are trained to deliver according to the instructional content available on the tablets. Moreover, a learning management system is developed for each class.

A major hindrance to incorporating education with information technology was load shedding and the unavailability of electricity in schools during the day. The e.learn initiative has also taken steps to provide backup electricity system to schools in order to ensure a smooth interactive learning process. Moreover, an SMS based tutoring system has been introduced through which students can share their queries with teachers after school timing.

This entire mechanism is regularly monitored and on the basis of real-time data, constant improvements are being made as suggested by the concerned stakeholders. The Punjab Information Technology Board through their initiatives have not only improved the quality of education in Punjab but have also ensured that the transparency in the educational system in maintained by incorporating information technology with the traditional methods of teaching and learning. After the 18th Amendment, education has been devolved to provinces. Such state-of-the-art initiatives will create a competition among the provinces to improve their education system as well, and take advantage of the information technology.

5.5 Health
In collaboration with PITB, the Health department of Punjab has been updated with regards to ICTs. It was the first sector that used the expertise of PITB (Zareen, 2016). The reporting system and efficient data acquisition system has been implemented across the province. PITB has enabled the Health
department to establish a tracking system for infectious diseases such as dengue and others including polio etc. Several procedures including attendance for health facilities, drug inspection, drug testing and cleanliness systems have been automated (Digital Punjab, 2017).

Automation in the Health sector started in 2012 in Punjab. An information management system based on mobile phones was initiated as a pilot project in one district, and later extended to 18 more districts after its success. Health reports in each district were uploaded through this mechanism to be monitored, which resulted in reduction in absenteeism to a greater extent. The data regarding medical stock outs, and service delivery through functionality of equipment were regularly updated. An external monitoring system was established so that accountability and transparency could be deemed unbiased (Qazi, et al., 2016).

In the Health sector, tremendous changes have been seen since the advent of ICTs improving transparency and ensuring presence of health facilitators across province. The developed applications have ensured efficiency and effectiveness as well. After the worst outbreak of a nation-wide epidemic in form of dengue fever, the Punjab Province took an initiative in incorporating the Information and Communication Technology with Health sector of the province. They turned towards mHealth and developed android-based applications for communicable diseases after the success of controlling dengue fever in Punjab through this application.

5.6 M-Health
Mobile Health or mHealth is a newer concept which has emerged as a result of the incorporation of information and communication technology with the Health department in different countries. It entails the use of cellular devices such as mobile phones, wireless devices, personal digital assistants and patient monitoring devices for the purpose of public and medical health practices. mHealth is the use of the technologically advanced devices for the purpose of widespread healthcare (Burney, et al., 2013).

Pakistan is the 6th most populous country with a poor health infrastructure which makes it challenging for the government to provide healthcare in backward rural areas. The incorporation of Information and communication Technology with the Health has provided an opportunity for the government to have a widespread reach regarding provision of healthcare.

The Punjab Information Technology Board has taken lead in launching various mHealth applications, which has boosted the use of ICT in the public sector regarding health more than the private sector in Punjab. These mHealth applications are prepared after a widespread research, including consultation from all stakeholders from health department as well as environmental inspectors. When a mock-up of the mobile app is ready, its is tested by field officers before being used by health professionals. Among the creation of many applications, the Punjab Information Technology Board ensured creation for applications specific to the monitoring mechanism of health professionals which surveyed and monitored performance, absenteeism and quality of work. Some of these applications that strengthen the monitoring system and subsequently ensures transparency are mentioned below:

5.7 Integrated Reproductive Maternal New-born Child Health and Nutrition Program
This program was launched for the purpose of increasing the maternal health, child health and access to reproductive health. An extensive network of 1850 Lady Heath Supervisors (LHSs) with 46000 Lady Health Workers (LHWs) are working in the entire province to provide preventive, curative and rehabilitative services along with the promotion and awareness drives. The program has been able to achieve improved Child health especially relating to diarrhea through ORS and zinc. Moreover, improvements in skilled birth attendance, contraceptive prevalence rate, complete immunization program and institutionalized deliveries have been ensured. This program has been extended to both rural and urban areas to strengthen the health facilitation system at grassroot levels (Integrated Reproductive Maternal Newborn Child Health and Nutrition Program, 2020).
The major highlight regarding the assurance of good governance through e-governance is the development of monitoring mechanism which inculcates a performance-based incentive initiation and an accountability system. E-monitoring and e-reporting is conducted on regular basis to ensure transparency.

5.8 Lady Health Supervisor (LHS) Android App
The LHS Android application was essentially established to monitor the performance and attendance of Lady Health Supervisors, who are further responsible for direction Lady Health Workers. The application requires daily attendance of the Lady Health supervisors, along with the reports of Lady Health Workers, mentoring and verification of the LHWs house. This application ensures that all relevant stakeholders are monitored through a centralized system, and hold the responsible officials accountable.

5.9 Delivery Reporting
An SMS-based delivery reporting has been established which tracks all the daily cases on a central dashboard, and can be accessed by the relevant persons by just sending a text message to the designated code 9697.

5.10 Hospital Watch
The Punjab Province has prioritized Healthcare system and has a widespread network of hospitals including 3500 primary healthcare facilities, 115 secondary healthcare hospitals and 17 tertiary care hospitals, but even so being the most populous province, these healthcare facilities are not able to cater to a large number of populations. It has come to view that the primary reason for this lack of facilitation is the absence of health professionals due to no check and balance on their performance/ attendance. To cater to this problem the application “Health Watch” was launched in 2015 to enable the tracking and reporting of health professionals’ attendance and performance (Digital Punjab, 2017).

This application is administered and monitored by members of the Provincial Assembly, District Coordination Officers, Assistant Commissioners, Executive District Officers Health, Medical Superintendents and Director General Health Office, who are responsible for the oversight of Pediatrics, Obstetrics and Gynecology and emergency wards in 101 Tehsil Head Quarters and 21 District Head Quarters. All the relevant authorities that have access to this application are given training regarding the app and the Medical Superintendent of each hospital is require to submit a report at least 20 days per month.

A positive impact of this application has been seen in the following years after it was launched, since the attendance, utility and medication are monitored and patient’s perception regarding their treatment is recorded. Doctors’ and other health professionals’ attendance is ensured which has uplifted the morale of the masses to visit public hospitals regardless of their social and economic status. The patient’s data and doctor’s performance are recorded in real-time and analyzed regularly.

5.11 Law and Order
PITB has efficiently incorporated the use of ICTs in Punjab Police. Developing a role model for the rest of the provinces, and even for other developing countries, PITB has played an instrumental role in reforming the Punjab Police. According to the Digital Punjab report, PITB has worked extensively to reform the law and order situation in Punjab, which includes launching of Electronic FIR; introduction an HR Management Information system, Management Information system and Criminal Record Management system; computerization of the police stations; launching criminal identifier, IG Khuli Kachehri, Hotel Eye, and Crime Mapping; reformed the registration systems for vehicles and citizens, etc. All of these have a widespread impact on the security aspect inside the province. The Police organization which was once considered sluggish and corrupt now stands transformed with the help of ICTs (Digital Punjab, 2017).

A recent research study confirms the impact of PITB in law and order of the province, stating that Punjab
Police has been enabled with a mobile app through which citizens can report a crime in real time and using multimedia. For the convenience of the general public, the app is also available in Urdu language. The project is still in development stages as it is only available in the capital city of Lahore, but it has many features to identify crime patterns and offenders in certain areas. The project is efficient and can be multiplied in the rest of the province as well. The Punjab Police has also been able to launch a centralized operation center to interact more efficiently with citizens. Complaints can be sent through SMS or email and timely feedback is made available and ensured. The Punjab justice system has given a special priority to women by launching a helpline to provide instant relief to women dealing with violence or harassment (Maqsood, et al., 2019).

PITB has proven immense improvements in the performance of Punjab Police and the Prison department. The tracking system of criminals has been updated, through which they can be identified quickly as well. Moreover, the police stations are approachable, unlike in the traditional setup. Electronic complaint systems have improved the monitoring of complaints being filed, and the mechanism involves holding the Police Force accountable for each complaint. Some of the major initiatives with respect to law and order, which ensures the accountability of the relevant departments are discussed below:

5.12 Computerization of Police Stations
The first step in any law and order situation is filing a complaint, in every case, ranging from loss of important documents to theft, etc. The first point of intimation with the law enforcement agencies is the police station. In the past, police stations have been considered an unwelcoming and enigmatic platform, which the common citizens, especially women could not approach. Moreover, there was no mechanism for follow-up of any complaint lodged, and the police stations did not keep record of the total number of complaints. To amend this the Punjab Information Technology Board developed a web-based complaint management system. For this purpose, a front desk at each police station has been placed to enter the details of the complaint into the system. The complainants are provided with a complaint number through SMS which can be tracked for checking status. Designated police officials are given access to a dashboard through which they can monitor the progress of each compliant. An increasing trend has been seen in the number of complaints registered and resolved with daily monitoring mechanism (PITB, 2020).

5.13 Electronic FIR
Traditionally FIRs were registered manually, and the process that started after that required an immense amount of manual work, as the FIR went through several stages – nomination of suspect, proceedings of case and closure, etc. – which produced a pile of paperwork, that went through all levels of leadership for the purpose of investigation. This tedious process made the tracking process of specific FIRs very difficult – monitoring the FIRs and concluding the progress of each police station unheard of. It was essential to develop an automated mechanism to solve this problem, which was catered to by the Punjab Information Technology Board with the launch of Electronic FIR. The automated system of FIR includes the entire process of FRI through to the closure of the case. These electronic reports are shared with all relevant stakeholders to streamline the legal procedure, which increases the efficiency of the police stations and elimination of manual work. A significant increase in the number of FIRs registered were seen in 2017 after its launch in Punjab Province (PITB, n.d.).

5.14 Criminal Record Management System
The Punjab Information Technology Board relieved the Punjab police of the tedious and manual work regarding the record keeping of criminals. Since previously, no comprehensive mechanism was present to identify criminals, and required immense manual work which usually ended up being inaccurate as well. This electronic criminal record management system was launched to digitize all criminal data, which is accessible from a central database to all relevant officials. This system has also eased the issuance of character certificates to all citizens, as the relevant officials can check the criminal background of any individual by just entering their National Identity Card number. Complete criminal
records can be retrieved wither through CNIC numbers or latent or live finger prints. The criminal record verification can be retrieved in real-time through SMS, or on web through smartphones and PCs. The CRMS has the capacity of matching 20 million fingerprints per second (PITB, 2020).

The digitization of criminal record system has not only streamlined the data of criminals across all police stations of Punjab but also made the performance of police stations more efficient in their work. The identification of criminals has become easier through the CNIC numbers and fingerprints which is linked with NADRA and other law enforcement stakeholders to streamline the records.

5.15 Punjab Police HRMIS
The Punjab Information Technology Board has launched an application particular to the employees of Punjab Police. The major cause of low performance of police was linked with absenteeism and illogical transfers of police officials to various districts on an irregular basis. This automated system has ensured that such tampering in official personal file of each police official is hindered and all the information is available and accessible online. This initiative has also resolved the issue of fake hiring and postings, and all official proceedings regarding employees is carried out through a proper channel and against the set criteria. The SOPs in transfer and posting has been streamlined through the HRMIS, and absenteeism has been decreased (PITB, 2020).

5.16 Automation of Lahore High Court
The Lahore High Courts in collaboration with the Punjab Information Technology Board has incorporated the Information and Communication Technology with the judicial process to speed up the justice system for litigants. The features that have been automated are: Electronic Case Filing, Lawyer’s e-filing portal, case file digitization and document management, court performance analytics and dashboards, online hearing and case proceedings and a helpline with a mobile application and SMS alert. This initiative has decreased the amount of time litigants have to wait at courts as well as the time between their case-filing and hearing. This streamlining saves times of lawyers, judges as well as citizens and a calendar are shared online which provides a comprehensive plan for the proceedings of the court (PITB, 2020).

5.17 Hotel Eye
Since Pakistan has seen a dreadful wave of terrorism in the past couple of decades, it was essential for the law enforcing agencies to develop a mechanism to keep checks on all visitors that stayed at the province. A comprehensive mechanism could not be implemented in manual terms as all relevant stakeholders like NADRA, CRO or PSRMS could not be notified or intimated in real-time, so PITB took the initiative labelled “Hotel Eye”, for the purpose of accurate data reporting of criminals that check into hotels/motels in Punjab Province (PITB, 2020).

5.18 IG Khuli Kacheri
The Punjab Province facilitates its citizens by allowing them to lodge complaints against police in a designated cell in Inspector General’s office. The complaints were received through post or by hand in Lahore, with no follow-up mechanism or resolution status. The IG Khuli Kacheri initiative by the Punjab Information Technology Board allows citizens for an efficient method to submit their complaints. Citizens may submit their complaints inform of SMS, email or a voice call. Each complaint is designated a complaint number which can be follow-up from anywhere in the province (PITB, 2020).

6. Conclusion
With the changing global trends, it is impossible for the developing countries to lag behind the developed world in terms of incorporating the information technology in their bureaucracy. The variety of examples discussed in this paper show that efficiency is the key indicator of e-governance, followed by effectiveness as well. Across education, law and order and health care sectors, the Punjab Information Technology Board has developed mechanisms to ensure smooth procedures with desired and timely
results. The results indicate that these e-governance mechanisms have been reflected in the transparency and accountability of the performance of involved sectors. A dynamic shift has been observed from traditional methods to modern mechanisms in terms of approachability, reporting and service delivery.

The changing pattern of absenteeism and poor performance to the presence of employees and good performance after ICT was implemented in organizations is the evidence that e-governance ultimately is the roadmap to good governance. Previously, an immense amount of manual work was required to track records and keep checks and balances of employee presence, which was costly and time-consuming as well. This has been resolved by the initiatives launched by Punjab Information Technology Board, through centralized databases and real-time reporting for monitoring and evaluation.

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