# JINNAH BUSINESS REVIEW

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# Analysis of Factor Affecting e-Commerce Potential of any Country using Multiple Regression

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**Abstract.** The advancement of Information Technology and Telecommunication has opened new avenues for business. These astonishing developments have led to rapid diffusion of e-commerce which is gaining popularity around the globe and it is contributing to the economic growth of country. This study aims to develop an integrative model based on different factors which can affect the growth of e-commerce in any country. For this purpose, data of 145 countries for year 2014 was obtained from different sources. Nine different Multiple Regression Models were proposed by combination of different factors in order to analyze their relative effect on growth of e-commerce. Findings suggest that the sensitivity of the e-commerce potential was highest for GNI per Capita and Readiness Sub-Index, respectively. Similarly, other factors such as education level, urbanization and social media users were also found significantly associated with e-commerce potential. However, Cyber Security and Business Prospects were found to be statistically non-significant in few of the models. The paper concludes with few suggestions for government and policy makers to increase e-commerce growth in the country.

## 1   Introduction

During the last three decades, there has been a rapid advancement in information processing and telecommunication, and it has profound effects on the society and organization. Internet, along with information technology, has become an active source of conducting commercial activities (Jehangir et al., 2011; WASEEM et al., 2018). This has opened new avenues for business firms and led them to make drastic changes in their business activities. An ever growing number of internet users have encouraged many firms to enter in online business (Kumar et al., 2014) which has been warmly welcomed by their traditional customers. Consequently, an increasing number of conventional brick and mortar firms are also operating their business online. Use of internet for conducting businesses has given rise to a new form of transaction between buyers and sellers which is known as e-commerce. E-commerce is defined as sharing of business information, maintaining of business relationship and conducting of business transactions by means of telecommunication network (Zwass and Kendall, 1999).

Businesses that are conducted on the World Wide Web are different from the conventional brick and mortar businesses since there is no physical interaction between the buyer and the

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seller. Buyers can now shop from their homes without having to physically travel to shops. E-commerce has extended unique prospects for firms and customers as it has reduced the need of physical markets (Arano, 2008). Now both buyers and sellers can transact in virtual market (Lawrence, 2011), and it has given new opportunities to both sellers and buyers.

In spite of its importance, incorporation of e-commerce in a country is gradual, evolutionary process and this process is affected by economic, socio-cultural, political and legal factors of that country (Hariharaputhiran, 2012; Rogers, 1995). However, a review of the extant literature in the field of e-commerce suggests that most of the studies have been limited to a single country (Ahmed and Hasan, 2016; Jalava and Pohjola, 2008; Jehangir et al., 2011; Kutlu and Özturan, 2008; Quayle, 2002; Samadi et al., 2015; Wong, 2003; Zafar et al., 2014) and individual factors have been considered in it (Blythe, 2008; Fianyi, 2016; Kyobe, 2008; Litondo and Ntale, 2013; Toraskar and Lee, 2006). Most of the studies have focused on technical factors such as information system, cyber security, marketing and business models (Jehangir et al., 2011). Little work is done in determining those national factors that may prove to be critical in determining the success or failure of e-commerce in a particular country. In order to fill this gap in literature, this study aims to develop integrative models through combination of different factors in order to see how these factors interact together in determining the potential of e-commerce in a country. Main focus of this study is Business to Consumer which is driven under and influenced by local factors of a countrys (Gibbs et al., 2003). Therefore, it is more suitable to develop an integrated framework that incorporates a number of different technological, social, and economic factors having potential affect in the growth of e-commerce.

This study is conducted to shortlist such factors which will help governments and their policy makers to take necessary steps for facilitation of e-commerce. E-commerce is still relatively new, and it is in infancy stage in developing countries where micro or small size enterprises could become driving force of a nations economy (Steinfield and Scupola, 2006). But, SMEs face economic, legal, technological, infrastructure and social impediments while entering into e-commerce (Jehangir et al., 2011). Therefore, growth in these SMEs has not been as rapid as other large firms (Pool et al., 2006). For developing countries, e-commerce can bring about a break-through by enhancing the growth of SMEs and bring positive social and economical changes. For this purpose, this study demonstrates the impact of technological, social and economic factors on e-commerce potential as these are most pertinent to the growth/inhibition of e-commerce especially in developed countries (Kshetri, 2007).

## 2   E-Commerce: A review of literature

Electronic business and commerce started in 90s when few firms started to take advantage of growing internet use for carrying out different business functions. Tremendous growth in information technology and communication has encouraged the firms to conduct their business and financial transactions through internet. E-commerce and its related capabilities have enabled firms to create different value propositions (Zhu, 2004). It has changed the way businesses are conducted and it has put forth new ways of conducting business transactions (Harshita and Tanwar, 2016). Contrary to other technologies, internet and e-commerce is not limited to big enterprises. Small and medium firms are also using internet to expand their operations and these micro-electronic commerce initiatives are gaining popularity (Zhang et al., 2014). For SMEs, internet can reduce cost and enable them to operate in a particular market niche (Zafar et al., 2014). They can also present their product and service to global client which were previously inaccessi-

ble (Lawrence, 2011). Such changes have presented unique opportunities for the business firms as well as a threat to their very existence if they are not embracing this immanent change.

Nowadays, internet has become an integral part of modern firms. Firms are using internet and social media before and after sales. It has also enabled firms to perform important non-financial activities at their own level at minimum price, which were hitherto either too cost ineffective or carried out by third party. These activities range from information about the product and services provided to the customers, online tracking of orders, and digital catalogues to customize any product to specific needs of the customers (Zhu, 2004). Firms are using internet as a tool to gather valuable information about their suppliers and competitors. Development in the Information and Communication Technology has assisted in reaping advantages from e-commerce. In addition, ICT is helpful in cost reduction, better customer relation and market niche development (Kutlu and Özturan, 2008). These ICTs have produced positive changes in participation of customers, product advertisement and promotion. All these factors combined with expansion in the field of ITC has encouraged firms to conduct their business online and become digital (Kumar et al., 2014).

All this is resulting in popularity of e-commerce among sellers. Firms can enter into online business at a comparatively lower cost as there is little capital cost associated with startup or subsequent advertisements of e-business. E-commerce gives firms a chance to directly interact with their customers through interactive websites (Ayo et al., 2011; Zhu, 2004). This direct interaction also helps in reducing costs of product and service which tends to be high in traditional business because of the market intermediaries. Moreover, conducting business through internet allows interaction with distant partners (Steinfield and Scupola, 2006). This can reduce the bargaining power of suppliers and stakeholders. Organizations that are using internet as a tool to conduct business online can reap benefits of lower cost, better customer service, and easier access to pertinent information (Quayle, 2002). Lastly, e-commerce has enabled firms to use internet for better information sharing, improved logistics, superior customer service and back-end integration (Zhu, 2004).

On the other side, it has given a certain degree of luxury to buyers who can shop irrespective of their time and place. These benefits include easier access to information, comprehensive comparison between similar products, convenience in conducting purchase, and saving of time and money (Kaur and Kaur, 2015; Samadi et al., 2015). Now customers can make purchase and book their order online from virtually anywhere in the world. Many prospective buyers conduct an online search about products or services before making the actual purchase. E-commerce has extended greater bargaining power to the customers through in depth comparison between products. Better access to information about available products and services results in reduced transaction cost for customers (Pool et al., 2006). This has induced changes in the buying behavior of the customers, which has presented incentives for the business to move their business online (Jehangir et al., 2011).

Without doubt internet and e-commerce has proven to be of extreme use, people are adopted it rapidly. This has inspired firms operating in online business to make e-commerce more and more user friendly and interactive for their customer. However, there is a high degree of risk associated with e-commerce. These risks stem from certain characteristics of e-commerce as well as few intentional or unintentional practices being carried out in this business. These characteristics and practices act as cognitive barriers to adoption of online business (Kshetri, 2007). For example, the difficulties encountered in returning of sold goods (Ahmed and Hasan, 2016) create distrust among buyers. In addition, there is a severe lack of brand awareness of online firms. People have the habit to buy from well recognized brands because they doubt the level of

service of unknown brand. These doubts are giving rise to various issues of trust among buyers (Samadi et al., 2015). As a result, all these factors inhibit growth of e-commerce.

# 3  Factors affecting growth of e-commerce

Aim of this paper is to investigate and shortlist factors which are important for spread of e-commerce in any country. For this purpose, certain technological, social and economic factors are considered. Due to time constraint, only a limited number of factors have been included in this study. These factors operate at national level and are widely cited in the literature of e-commerce. A brief description of these factors is as follows:

## 3.1  Technological Factors

### 3.1.1  Infrastructure of Information Communication Technology

An important national factor contributing towards the growth of e-commerce in a particular country is the infrastructure of Information Communication Technologies (ICT). ICT is defined as diverse set of technological tools and resources to create, disseminate, store, bring value addition and manage information (Nath, 2001). The explosion of e-commerce today can be attributed to the revolution in the field of ICT (Smith, 2009) since e-commerce is combination of progress in ITC with traditional institutional framework (Pool et al., 2006). Organizations are now using ICT to improve their logistic system (Rao et al., 2010), supply chain management and reverse logistics. ICT facilitates firms in improved coordination, better information processing, superior decision making, and effective data and knowledge management (Zafar et al., 2014). ICTs also provide means for interacting with customers, stakeholders, suppliers, dealers, business regulators as well as communicate with both downward and upward side of supply chain (Warkentin, 2001; Zhu, 2004). In short, e-commerce facilitated through ITC has become a potent weapon for organizations to achieve long term profitability and competitive advantage in the market (Jehangir et al., 2011).

Like most of the advanced technologies, e-commerce was originated in the developed countries. Companies in such countries took advantage of the infrastructure for ITC which was developed by their government. A major factor which contributes to lower diffusion of e-commerce in third world countries is their poor overall infrastructure in general and ICT infrastructure in particular. This hurt their ability to start business online (Sarokolaei et al., 2012). Thus, any government should work in providing the necessary infrastructure for the growth of ICT. A prominent example in this regard is Singapore where appreciable existing infrastructure of ICT has facilitated easy diffusion of e-commerce (Wong, 2003). In addition to infrastructure, it is imperative that the citizens of a country posses the required skills for effective use of modern technologies. Many entrepreneurs in the developing countries fail in e-commerce due to their lack of knowledge and skills in ICT (Zafar et al., 2014).

With a better infrastructure and skill level of the citizens, the usage of e-commerce will increase. This will encourage people to carry out majority of their routine purchases from internet which will further boost economic activity. Jalava and Pohjola (2008) demonstrated that in Finland the increase in multi level factor production caused due to growth in ITC was around 60% which was almost 66% more than that of electricity. Therefore, it can be concluded that infrastructure of ITC in a country coupled with better skill level of its citizen can enhance the growth of e-commerce.

### 3.1.2    Mobile Phone Subscription

Mobile phone is one of the most preferred equipment for ICT. There has been an exponential increase in the mobile phone users throughout the world. The innovation of 3G and 4G communication system has turned mobile phone into an all round device. This has also led to the emergence of M-commerce, which is considered an extension of e-commerce. Any transaction, whether monetary or non-monetary, carried out with the help of wireless telecommunication is referred to as mobile commerce (Barnes, 2002). M-commerce complements e-commerce (Yin et al., 2016). In 2012, an increase of more than 50% in mobile commerce was observed (Zhang et al., 2014), which has in turn increased the volume of online business (Kim et al., 2015). Due to mobile phones, internet traffic to e-commerce websites has increased from 3% to 37% (Schöder et al., 2016). In 2013, people in US made 7.4% of their online purchases through tablets, whereas contribution of mobile phones for this purpose was 5.3$ (Venkateswaran, 2013). These figures are likely to grow as more and more people are using mobile application for various online retail purchase. Resultantly, many firms such as E-bay, Amazon, etc. have developed their own mobile applications in order to capture a larger market segment. Mobile phones and tablets have become an important source to excess global e-market. Therefore, mobile phone subscription can have a positive effect on the growth of online sales.

### 3.1.3    Social Networking Sites

Social media is defined as an online platform which allows people to share their experiences and opinions with each other (Lai and Turban, 2008). The use of social networking sites is also on the rise. (Zhao et al., 2015) believe that rapid growth of social networking sites is blurring the boundary between e-commerce and social networking. Numbers of firms who are using social media to promote revenue are steadily increasing (Han and Kim, 2016). Firms are effectively using social media in creating brand and product awareness. Social networking sites such Facebook, Twitter, Instagram and many other similar websites help firms in socially relating with their target customers (Montague, 2011). Many social networking sites are being used by the sellers to interact with buyers. These websites provide an excellent platform for advertisement of product and service as they allow paid content and advertisement (Hariharaputhiran, 2012).

Another interesting use of social media is the spread of word of mouth which is an extension of Electronic Word of Mouth (EWOM). The latter term is described as an informal communication which tells customers about characteristics of product or service through digital means (Berger, 2014). The emergence of Web 2.0 has increased the User Generated Content (UGC) on networking sites (Yan et al., 2016) which is quickly becoming a wide source of word of mouth. After every shopping, customers share their experiences and opinions about their purchases on different social networking sites (Yan et al., 2016). Many people refer to these online reviews, blogs and other forms of UGC before making actual purchase (Cheung and Thadani, 2012) in order to improve their product/service selection related decision. Therefore, UGCs and EWOM have an impact on the buying decisions of people. However, there is a negative side to such endorsements as people are not aware of the authenticity and reliability of the reviewer (Yan et al., 2016). Therefore, organizations are giving due care to this and they are constantly monitoring different social forms to check their brand and product image (Kotler and Armstrong, 2010).

On the basis of above review of literature, we can propose our first hypothesis:

$H_1$: *Different technological factors such as Infra-structure of ICT, Number of Mobile Subscribers and Social Virtual Network Users are positively related with e-commerce potential.*

## 3.2   Social Factors

### 3.2.1   Urbanization

An understated factor that has promoted the use of e-commerce is the migration of people living in rural areas to urban settlements. Throughout the world, people are migrating to urban cities in order to get better education, health, jobs and business opportunities. They work relentlessly in order to have better earning and meet ends. Such people try to give much of their time to work and they are, thus, left with very little time to spend on shopping. In an attempt to save their time, they resort to online shops and place orders ranging from common grocery items to home appliances. Many firms are offering their product by keeping in view the specific needs of such customers. The development of ICTs has made matters simpler and people can save their time by shopping from online stores. Moss (1987) had predicted before time that good infrastructure of ICT in cities will help their residents in doing online shopping. Firms also use this infrastructure to their advantage (Steinfield and Scupola, 2006). On the other hand, people and SMEs working in the cities enjoy access to internet and better roads facilities (Kyobe, 2008). On the contrary, rural areas of countries are usually less developed due to lack of good roads and telecommunication infrastructure (Dhliwayo, 2008) and they have less access to computers and internet. This halts the growth of entrepreneur SMEs in rural areas.

Due to urbanization, industries usually form clusters in urban areas and cities (Breschi and Malerba, 2001). They are concentrated in a particular area to obtained geological benefits from it (Porter, 2000) or proximity to buyers and suppliers (Sonn and Storper, 2008). These clusters are important for economic activities in a particular region as buyers take advantage of low transportation cost for being closer to firms (Sonn and Storper, 2008). Therefore, urbanization is an unsung factor increasing the use of e-commerce.

### 3.2.2   Education and Technical Literacy

In addition to urbanization, education and technical, literacy level is another social factor which affects the use of internet and online shopping. Wu et al. (2016) consider employees with relevant knowledge of e-commerce to be critical for the success of any firm carrying out business online. The same reasoning can be extended to countries. Education and literacy level of entrepreneur of SMEs interested in conducting their business through internet also effect the growth of e-commerce (Kyobe, 2008). Taiwan government has managed to become leaders of B2C through the used technical oriented literature and scholarships which have equipped their citizen for better diffusion of e-commerce in the country (Ahmed and Hasan, 2016). On the contrary, low level of education of entrepreneurs can affect their ability to handle technology and make them more prone to cyber-attacks (Kyobe, 2008). Kumar et al. (2014) have argued that Generation Y is more connected and familiar with internet than their preceding generations. Due to their better education level and awareness, Generation Y is using internet for shopping and buying of products and services. To conclude, education level of citizens of a country can significantly increase the adoption process of e-commerce.

### 3.2.3   Cyber Security

Yet another important factor which can potentially be detrimental to the growth of e-commerce is the threat of online frauds and cyber crimes. E-commerce security entails protection against risks and threats that tend to target the sensitive information and system being used in e-commerce activities (Kyobe, 2008). As stated earlier, there is no physical interaction between

buyers and sellers in online business (Gnanasekar, 2010). The perpetrators of cyber crime take advantage of this anonymity and they commit crimes to make illegal money for themselves. Payments in online businesses are made to firms own account or third party system. For this purpose, buyer has to provide his/her credentials and important personal information. This poses the threat of identity theft, stolen credit card number, stolen national security numbers and abuse of similar information. The situation is made worst by the development of sophisticated hacking software (Fianyi, 2016). Since mostly buyers in e-commerce and some sellers are ordinary people with little knowledge about cyber threats, they remain unable to detect such perils. These fraudulent practices are a serious challenge to e-commerce because the more an online business grows; higher are the chances of such malicious practices (Turban et al., 2015). Unfortunately, firms also give less attention to these security aspects and are somewhat complacent towards cyber threats (Kyobe, 2008). To make things worse, several governments have done little to protect their citizens from transaction disputes and online frauds. All these factors contribute towards low level of trust exhibited by the customers towards online transactions. For instance, Kumar et al. (2014) reports 60% Indians dont trust online payment channels. At their own level, firms operating in online businesses should work hard to increase their technical capacity in combating this threat (Vorley and Rodgers, 2014). Similarly, governments should take appropriate steps to protect consumers interests by making strict legislation in this regard.

Based on above argument, our second hypothesis is given as under.

$H_2$:*The social factors such as Urban Population, Expected Years of Schooling and Cyber Crime Security are positively related with e-commerce potential.*

## 3.3 Economic Factors

### 3.3.1 Income Level of Citizens

Many studies have concluded that e-commerce is particularly less popular in developing countries. People in developed countries are more inclined towards shopping through online means. A major region is the economic progress and higher per capita income. According to Information Economy Report 2015, the top 10 countries with highest B2C revenue are those who enjoy higher GDP and GNI. In the same report, it is highlighted that largest internet retail companies in US, Europe, Asia and Latin America for 2012-13 are based in US, UK, Germany, China, Brazil and France. This shows that an active economy will provide more business opportunities to its nationals. Also, economic and financial factors decide whether venture capitalists have enough resources to start online business (Gibbs et al., 2003). Contrary to this, poor economy and lack of financial resources in developing countries have adversely affected spread of e-commerce (Lawrence, 2011). Lack of ability to generate constant streams of funds from their own resources or stockholder is a big reason in failure of e-business firms (Zafar et al., 2014). Furthermore, there exists a substantial difference in the business models for e-commerce between developing and developed countries (Jehangir et al., 2011). All these factors lead us to assume that level of income in a country will encourage its buyers and firms to venture into online business.

### 3.3.2 Business Activities

Advancement in e-commerce has enabled governments to expand business activities in their countries as ICTs have provided thrust to local and global business. Computer, internet and ICTs are quickly becoming part of any firms business setup (Hariharaputhiran, 2012). Countries are

now effectively utilizing their previously untapped resources. Due to this, their economies are approaching the optimization state, resulting in improved economic status (Allen et al., 2001). E-commerce helps in development of secondary and tertiary industries in the countries (Rao et al., 2010). These better business prospects will encourage firms and enter into online market to tap its advantage. However, the role of a stable political and economic system; and an effective legal system is essential for growth of e-business. Ahmed and Hasan (2016) noted that many countries such as Singapore, Taiwan, Malaysia, Thailand etc have used tax reliefs to encourage entrepreneurs and venture capitalists to start business. Contrary to this, various policies and red tapes regarding starting e-commerce have badly hurt Arab countries in online ventures. Therefore, the level of business opportunities in a country and incentive given to entrepreneurs has a positive effect on the growth of e-commerce.

### 3.3.3   Logistics Network

Lai and Turban (2008) regarded that e-commerce is marketing and distribution of goods and services through internet. This definition highlights the role of trade logistics and an efficient infrastructure in the advancement of e-commerce. But, this has gathered little attention in e-commerce related research (Wisner, 2003). Unlike conventional brick and mortar system, the online firms have to deliver varying quantities on order to their respective customers; therefore, an extensive and well managed logistic system is required (Rutner et al., 2003). Researchers have indicated that an efficient distribution system is an indicator of better customer service. Fontes et al. (2018) have proved a positive relation between logistic capabilities and firm performance in an e-market; thereby suggesting the importance of logistics in the success of e-commerce.

The above arguments lead us to hypothesize that:

$H_3$:*Economic factors such as GNI per Capita, Logistic Performance Index Score and Distance to Frontier Score are positively related with e-commerce potential.*

The above three hypotheses independently postulate about the role of different technological, social and economic factors in supporting or inhibiting growth of e-commerce in any country. It will be interesting to note how these three factors mutually reinforce each other in determining the overall potential of e-commerce in a country. H4: Different technological factors (Infra-structure of ICT, Number of Mobile Subscribers and Social Virtual Network Users), social factors (Urban Population, Expected Years of Schooling and Cyber Crime Security), and economic factors (GNI per Capita, Logistic Performance Index Score and Distance to Frontier Score) are positively related with e-commerce potential.

## 4   Operationalizing and Data Sources

This study is aimed at determining the country specific factors which may affect growth of e-commerce in a country. This is different from other empirical researches in e-commerce as the latter were more interested in determining the firm and customer specific factors, while none of them have taken into consideration the national factors which may increase online business activities. Therefore, the variables were divided into three categories.

1. Technological Factors

2. Social Factors

3. Economic Factors

The Technological factors included infrastructure of ICT, Mobile Phone and Virtual Social Network. Data of Infrastructure of ICT and Use of Virtual Social Network was obtained from Global Information Technology Report for Year 2014. This report is published by World Economic Forum, and it ranks countries on the basis of Network Readiness Index which is an aggregated score of four sub-indices. For Infrastructure of ICT, Readiness sub-index was used. This sub-index is based on three pillars which are infrastructure, affordability and skills. Similarly, use of Virtual Social Network under the pillar of individual usage of ICT was used as a measure of social media usage. The measure of mobile phone usage was adopted from the Mobile cellular subscriptions (per 100 people). Data of this variable was obtained from World Bank site.

For social factors, Urbanization, Education Level and Cyber Security were considered as relevant constructs. Data of urban population (as a percentage of total population) was obtained from World Bank site. To measure education level of a country, Expected Year of Schooling score from Human Development Report was used. Global Cyber Security Index (GCI), developed by ABI Research, was used to represent the cyber security rating of a country.

For economical factors, Income Level, Logistic Capabilities and Business Opportunities were considered. Data of GNI per capita was obtained from Human Development Report. Information regarding logistics capabilities of country was gathered from Logistic Performance Index. For Business Opportunities, Distance to Frontier Score from Doing Business Report, published by World Bank, was used as measure.

For the dependent variable, e-commerce potential of a country was measured from UNCTAD B2C E-Commerce Index from Information Economy Report. This index explains the potential of a country in carrying out B2C e-commerce.

# 5  Results

Data of above mentioned variables for 145 countries were obtained from various sources as mentioned in Table No 1. Year 2014 was taken as the base year for data collection. Descriptive statistics was used to perform Uni-Variate Analysis on the variables. Means was used as a measure of central tendency; however, for those variables whose Skewness Index Coefficient was outside the permissible limit, Median was used. Standard Deviation was used to indicate spread of the variables. Results on these Descriptive Statistics of variables are shown in Table No 1. After performing Uni-Variate Analysis, Bi-Variate Correlation Analysis was carried out to check the association between variables. Pearson Correlation was used as it is the most appropriated variable in case of continuous variables. A strong correlation of E-Commerce Potential Score with other variables was found. All these relations were positive suggesting that all these variables have a positive effect on e-commerce potential. Furthermore, all relations were statistically significant. E-Commerce Potential Score has strongest correlation with the Readiness Sub-Index as the value of Pearson Correlation was greatest between these two variables. On the opposite side, E-Commerce Potential Score has the weakest relation with Mobile Phone Subscription. Results of Bi-Variate Correlation analysis are shown in Table No 2.

In order to prove hypotheses, Multiple Regression Analysis was used. Table No 3 shows the results of different Regression Models. Models 1, 2, 3 and 9 are used to test the research hypotheses while the remaining models are developed through combination of different variables. Each of these models was found to satisfy all requisite conditions of Regression Analysis.

The first model demonstrates the effect of technological factors such as infrastructure of

Table 5.1: Descriptive Statistics of Variables

| Name of Variable | Data Source | No of obs | Mean/Median | Std. Dev. |
|---|---|---|---|---|
| B2C e-commerce index | Information Economy Report | 122 | 49.24 | 24.17 |
| Readiness Sub-Index score | Global Information Technology Report | 140 | 4.56 | 1.14 |
| Mobile phone subscription | World Bank database | 149 | 110.18 | 38.11 |
| Use of virtual social network | Global Information Technology Report | 140 | 5.48 | 0.72 |
| Urban population | World Bank database | 149 | 58.87 | 22.75 |
| Expected years of schooling in years | Human Development Report | 149 | 8.25 | 3.16 |
| Cyber security index | Global Cyber Security Index | 145 | 0.35 | 0.22 |
| Gni per capita | Human Development Report | 149 | 12190.00* | 19,513.35 |
| Logistics performance index | World Bank database | 149 | 2.80* | 0.76 |
| Distance to frontier score | Doing Business | 149 | 63.03 | 12.47 |

*Since the value of skewness index was outside the range of -1.3 to 1.3 therefore, median is taken as a measure of central tendency. For all others, value represents mean value.*

ITC, mobile phone subscriptions and number of social networking site users. Un-standardized coefficient of all three variables has positive sign which shows that all these three factors are positively related with e-commerce potential. This result is consistent with views of Schöder et al. (2016) who regard growth of ITC, mobile phone and social media to have significant impact on e-commerce. Out of the three factors, infrastructure of ITC has the highest value of un-standardized coefficient which means that e-commerce potential is more sensitive to this variable. The result of Model No 1 shows that our first hypothesis has been proven.

The second model shows the impact of social factors on the success of e-commerce. The three variables involved were not only positively related with the e-commerce potential score but also statistically significant. This proves our $2^{nd}$ hypothesis. The overall strength of the model was pretty high which means that 80% variation in the value of E-Commerce Potential Score is described by these three variables. This model also demonstrates that among different social factors, e-commerce is most sensitive to cyber security.

Model No 3 shows that the third hypothesis is also supported as all three variables involved in it are positively related with e-commerce potential. Among all three variables, GNI per Capita had highest sensitivity towards e-commerce since its value of un-standardized coefficient was 35.5. The value of R2 for this model was 0.884. This result gives a plausible account on why development of e-commerce is more conspicuous in developed countries such as USA, China, UK etc. (Pool et al., 2006). Citizens of these countries enjoy higher income level which promotes buying online. Moreover, superior business regulatory system in these countries is also

Table 5.2: Correlation between Variables

| Name of Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| B2C e-commerce index | 1** | - | - | - | - | - | - | - | - |
| Log GNI per capita | 0.846** | 1 | - | - | - | - | - | - | - |
| Readiness sub-index score | 0.915** | 0.678** | 1 | - | - | - | - | - | - |
| Mobile phone subscription | 0.555** | 0.527** | 0.571** | 1 | - | - | - | - | - |
| Use of virtual social network | 0.801** | 0.628** | 0.780** | 0.531** | 1 | - | - | - | - |
| Urban population | 0.733** | 0.693** | 0.645** | 0.587** | 0.627** | 1 | - | - | - |
| Expected years of schooling | 0.859** | 0.587** | 0.865** | 0.559** | 0.701** | 0.604** | 1 | - | - |
| Cyber security index | 0.659** | 0.503** | 0.646** | 0.349** | 0.553** | 0.484** | 0.542** | 1 | - |
| Logistics performance index | 0.495** | 0.225** | 0.332** | 0.118 | 0.227** | 0.296** | 0.311** | 0.364** | 1 |
| Distance to frontier | 0.749** | 0.587** | 0.743** | 0.465** | 0.662** | 0.553** | 0.696** | 0.610** | 0.327** |

*\*\*Correlation is significant at the 0.01 level (2-tailed).*

Table 5.3: Different Regression Models

| Name of Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| Readiness sub-index score | 16.96*** (1.62) | - | - | 13.09***(1.21) | - | - | 8.359***(2.50) | 4.194**(2.11) | 8.594***(2.51) |
| Mobile phone subscription | -0.059*(0.037) | - | - | - | - | - | -0.167***(0.039) | - | -0.126***(0.03) |
| Use of virtual social network | 6.384**(3.03) | - | - | 4.718**(2.84) | - | 14.669***(3.91) | - | - | 4.629***(1.79) |
| Urban population | - | 0.235*** (0.07) | - | 0.217*** (0.047) | 0.115** (0.05) | - | - | 0.116** (0.45) | 0.114*** (0.06) |
| Expected years of schooling | - | 4.419*** (0.44) | - | - | 1.774*** (0.39) | - | - | 1.179*** (0.56) | 0.837 (0.53) |
| Cyber security index | - | 24.153*** (6.13) | - | - | - | 16.808** (8.22) | 2.466 (4.97) | 0.208 (3.99) | -3.789 (4.41) |
| Log GNI per capita | - | - | 35.504*** (2.95) | - | 29.582*** (2.88) | - | 30.376*** (5.27) | 22.787*** (3.58) | 15.451*** (4.89) |
| Logistics performance index | - | - | 4.085* (2.06) | 4.525*** (1.27) | - | 4.990 (3.61) | 3.744*** (1.23) | - | 2.76** (1.89) |
| Distance to frontier score | - | - | 0.262** (0.11) | - | - | 0.579*** (0.20) | - | 0.104 (0.11) | 0.108 (0.11) |
| Constant | -56.124*** (11.15) | -11.246*** (3.08) | -98.071*** (5.48) | -61.709*** (7.19) | -89.771*** (7.58) | -88.992*** (15.82) | -88.071*** (10.75) | -83.079*** (10.19) | -89.962*** (12.02) |
| No of Valid Obs | 117 | 120 | 116 | 109 | 115 | 111 | 107 | 104 | 105 |
| Probability of Shipro-Wilk test | 0.527 | 0.192 | 0.105 | 0.066 | 0.098 | 0.052 | 0.062 | 0.053 | 0.213 |
| Durban Watson Statistics | 1.922 | 2.076 | 1.932 | 1.817 | 1.802 | 2.164 | 1.886 | 1.964 | 1.886 |
| Value of $R^2$ | 0.837 | 0.796 | 0.884 | 0.885 | 0.905 | 0.698 | 0.907 | 0.919 | 0.923 |

*Note: Values represent un-standardized coefficients while those in parenthesis are standard deviation of un-standardized coefficients.*
*\*\*\* $p<0.01$, \*\* $p<0.05$, \* $p<0.1$*

important in the growth of e-commerce (Jehangir et al., 2011).

Model No 9 represents the effect of all variables on online business potential. This model shows that a unit increase in GNI per capita and Readiness Sub-Index produces a respective increase of 15.6 and 8.6 units in the value of e-commerce. In the same model, Use of Virtual Networking Sites and Urban Population are positively related, whereas Mobile Phone Subscription Score is negatively related. The remaining four variables were statistically insignificant. Result of this model partially supports our fourth hypothesis. This model has the highest value of R2 and this model explains 92% variation in the value of E-Commerce Potential Score.

In the remaining models, different combinations of variables were used to examine their effect on the outcome. Models No 4, 7, and 8 demonstrate the importance of infrastructure and affordability of ITC in the growth of online business. In all these models, the score of Readiness Sub-Index was statistically significant and positively related with E-Commerce Potential Score. This is true since countries that have higher potential of e-commerce are characterized by superior infrastructure of ITC. For example, Singapore with better infrastructure and higher readiness was able to ensure diffusion of e-commerce at a faster pace (Wong, 2003). On the other hand, poor infrastructure of ICT is a biggest problem which developing countries face during the adoption of e-commerce. In most of these countries, a large population doesnt have access to internet (Papastergiou and Solomonidou, 2005) which is creating a digital divide in the country. Governments should take immediate steps to minimize this digital divide. Similarly, considerable effect of GNI per Capita on online business can be observed from Models 5, 7 and 8. In all these models, the value of un-standardized coefficients was very high. This confirms the notion that countries with higher income have more budding prospects for growth of e-commerce. Country with higher level of national income have different consumer behavior and business environment (Jehangir et al., 2011) as compared to developing countries. Their high level of income allows them to carryout bulk of their shopping from online market. This leads to creation of more online firms which in turn leads to more economic activities in the country.

Same is the case for Virtual Social Network which appears to be positively related with the potential for online business. Many people are now part of social networking sites. Taking advantage of this, online firms are using these sites for marketing and advertisement of their products. Scholars believe that social networking sites are being used as a platform for advertising for both traditional brick and online firms (Hariharaputhiran, 2012; Zhang et al., 2014). Firms are reaping good return from such advertisements as around 5% of all online sales are attributed to social media and volume of such sales are estimated to be around 14 billion (Schöder et al., 2016).

Urban population was found to be significantly associated with E-Commerce Potential Score. But, the value of un-standardized coefficient for this variable was low as compared to other variables which indicate its impact is not as strong as other variables. These results indicate that the recent global trend of urbanization will facilitate growth of e-commerce since people living in the urban areas resort to online shopping in order to save time. However, such benefits are not limited to urban population as people living in the rural areas of countries are also obtaining benefits from e-commerce (Samadi et al., 2015). Same is the case with education level which is found to be positively and significantly related with e-commerce. This supports previous studies investigating the role of education and e-commerce. For example, Naqvi (2009) has found a positive relationship between knowledge of computer, internet and similar capabilities and e-commerce.

Result of this study is aligned with the previous studies that Logistics Performance had a substantial effect on e-commerce. Off late, flexibility in both location and time of delivery has been demanded by customers (Schöder et al., 2016). For this purpose, an efficient logistic system is required. Therefore, importance of a reliable and extensive distribution network is evident in any online business (Rabinovich and Knemeyer, 2006) since it can facilitate or inhibit growth of such businesses.

Surprisingly, Cyber Security Index was insignificant in many of these models. This variable was significant when few variables where included in the model. However, inclusion of other variables renders cyber security non-generalisable. Likewise, the impact of Business Opportunities (Distance to Frontier) was very little and it was insignificant in the presence of variables

such as Readiness Sub-Index and GNI per Capita.

# 6    Recommendations

Business conducted through internet presents equal opportunities to both developed and developing countries. Since every country can benefit from e-commerce, it has enabled developing countries to keep abreast with developed countries. The use of e-commerce can lead to economic growth of the country for it may provide a new direction for economic growth (Yin et al., 2016). Rao et al. (2010) in their research on relationship between Chinese e-commerce transactions and GDP have concluded that there is long term positive relation between e-commerce and economic development of China.

In order to do so, governments of these countries should develop social and economical policies that are supportive for e-commerce (Jehangir et al., 2011). Local, regional and national governments should work to build up necessary infrastructure and devise policies for the growth of ITC (Steinfield and Scupola, 2006), because this infrastructure has positive effect on the confidence level of important stakeholder (WASEEM et al., 2018). A better regulatory frame for online business can be beneficial for growth of e-commerce. Although this study could not establish the importance of cyber security in the growth of e-commerce, in spite this, the importance of cyber security cannot be ignored. Today, both buyers and sellers have serious reservations about the security of online transactions (Harshita and Tanwar, 2016). Therefore, dedicated efforts towards sophisticated legislation are required by governments to thwart fraudulent practices in e-commerce (Namazifard et al., 2015).

Likewise, higher education institutes should also customize their curriculum of e-commerce according to market demands. Wu et al. (2016) note that mangers of e-commerce firms complain about qualified e-commerce graduate while e-commerce graduates feel skeptical about appropriate job opportunities. Literature shows that e-commerce related education and curriculum should be more theory-driven (Toraskar and Lee, 2006). The curriculum of e-commerce should adopt a multi-disciplinary approach (Toraskar and Lee, 2006). There is a need to relate e-commerce education with business management (Tomkovick et al., 2000).

Similarly, firms should also develop innovative business models for e-businesses in order to attract customers. There is a strong need to develop trust between buyers and sellers which becomes more paramount in online shopping. Good quality of relationship will increase customer loyalty in e-businesses. In order to build customer loyalty, online firms should strive toward providing better quality service to their buyers by meeting or even exceeding their expectation (Kotler & Armstrong, 2010). Use of ITCs can serve the purpose for firms. For instance, firms are using social media as a potent tool to attract large number of online customers. Therefore, development of dedicated apps can also be used to increase traffic towards online shopping sites.

Firms should also work to develop an efficient logistic network. In urban areas, there is a growing apprehension about increase in the level of air pollution caused due to large number of vehicles. Therefore, an environmental friendly logistic system is need of the time. For example, e-commerce firms can switch to horizontal cooperation and crowd logistics distribution points for supplying parcels to urban and highly dense areas (Verheyen, 2016). Such third party delivery arrangements can be used to overcome delivery and environment related problems.

# 7   Conclusions

The aim of this study was to investigate the impact of different social, technological and economic factors on growth of e-commerce in a country. E-commerce Potential was found to be positively associated with different social, economic and technological factors. GNI per Capita was the most important factor in the growth of online business. The second most important factor was Readiness Sub-Index (which is an aggregated measure of Infrastructure of ICT, Affordability and Skills level). Variables such as Urban Population and Virtual Networking Sites were a significant predictor of E-Commerce Potential. However, the results of factors like Logistic Performance Score and Expected Years of Schooling were mixed as sometimes these variables become statistically insignificant. To utter surprise, Cyber Security had persuasive effect on e-commerce in few, cases but more often it was found to be non significant in many instances. Similarly, the impact of business prospects was found to be very little and non-generalisible.

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# Performance Appraisal of Open-ended Equity Funds in Pakistan: An alternative Approaches of Performance Measure

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**Abstract.** There are more than one hundred portfolio performances, which have been proposed in financial literature, (Cogneau and Hübner, 2009), but extensively used performance measure is a Sharpe ratio and in Pakistan Asset Management Companies (AMCs) also prefer to exhibit their performance in Sharpe ratio. However, financial literature has ample of evidence that recommend Sharpe ratio is valid under normal distribution of returns. The financial returns are not distributed normally as result of which standard deviation may not adequately measure risk (Bodie et al., 2009). Whereas, standard deviation of negatively skewed distribution underestimates and positively skewed overestimates volatility that would be misleading Sharpe index. In this study, we concluded that for skewed and non-normal distribution Omega ratio or Sharpe-Omega are alternative performance measures.

## 1 Introduction

Historically, mutual fund as a mean of investment started functioning about two centuries ago in Europe and the USA. Europeans have been practicing it since 1800s and Americans since 1890s. In those days, these funds were close-ended funds that had fixed number of shareholders. In 1924 in USA first open-ended fund was launched by Massachusetts Investors Trust and this fund still exists (Burrows, 2013).

There has been phenomenal boom in mutual funds industry witnessed all over the world as result of great interest and demand for investment in mutual funds by investors. Since the main focus of finance suggests evaluating fund manager's ability to maximize return by keeping risk at minimum level. Therefore, to achieve this end practitioner and academician brought in numerous measuring tools to estimate portfolio that yields maximum return and minimum risk (Kapsos et al., 2014). Within context methods to measure performance were studied widely and number of methods of evaluation has been developed to measure portfolio performances.

In Pakistan, National Investment (Unit) Trust (NIT) is a pioneer of Mutual Funds industry licensed by the Security Exchange Commission of Pakistan as a non-banking finance company in 1962, and in the same year it issued first open-ended mutual fund. Guide Mutual Fund. Asset Management Companies are bound to invest at least 70% of their net assets in listed equity assets in case of equity fund and rest to be invested in cash or near cash instruments (Nafees et al., 2011).

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Mutual Fund Industry of Pakistan showed encouraging results and added value, however, at the same time some of these funds have not been able to perform well due to diversification problem (Shah and Hijazi, 2005). At present there are 184 mutual funds in Pakistan out of which 164 open-ended funds, 3 close-ended and 17 are pension funds. Within the open-ended funds, there are 21 categories like money market fund, income fund, equity funds capital protected funds and other types of funds (MUFAP, 2010).

These funds are managed by professional managers by investing investor's money into stocks, bonds, short-term money market instruments and in other securities. In this process, they realized capital gain/loss and dividend (on stocks), interest (on bonds & sort-term money market instruments). These proceeds pass on to investors in form of Net Asset Value (NAV). NAV which is value of share in mutual fund is computed on daily basis (Gandhi and Perumal, 2016). The idea behind fund performance analysis is that whether fund managers offer investors value for money. Since, investor bears certain cost like opportunity cost of poorly diversified portfolio, transaction cost and management fee, therefore, fund manage should have sufficient skills to compensate for all these costs (Amin and Kat, 2003).

The main task of fund managers is to maximize wealth of investors, whereas the focus of risk controllers is to minimize risk. Both views are relevant and pertinent, therefore, mere maximizing return is not sufficient but we must consider the quality of return by resolving this conflict of risk & return (Bacon, 2008).

More than a hundred analytical methods are there which can compute portfolio performance or fund manager performance and each one has its own strengths and weaknesses and categorized as asset selection vs. market timing, standardized vs. individualized, absolute vs. relative and excess return vs. gain measure (Cogneau and Hübner, 2009). Caporin et al. (2014) summarized the performance measuring methods into a family of four, namely, "*Measures of Relative Performance, Measures of Absolute Performance, Measures explicitly based on the Return Distribution and Measures directly derived from Utility Functions.*"

Sharpe ratio that belongs to first method of families of four is based on mean-variance theory and validity can only be confirmed when distribution is normal or Gaussian. Performance in mean-variance analysis can be improved significantly with the application of appropriate weights and rebalancing them periodically (ZAIDI et al., 2017). A simple assumption of Gaussian distribution may lead to an underestimate of the portfolio total risk (Amin and Kat, 2003; León et al., 2015).

Other than mean and Standard deviation all other moments are known as higher moments and important ones are skewness and kurtosis. Omega incorporates all the moments of the distribution as it is a direct transformation of it (Bacmann and Scholz, 2003).

Recently suggested measure by Keating and Shadwick (2002), which they termed "Omega Ratio" is computed by partitioning the whole distribution into two i.e. one which is above the threshold and second below the threshold. Returns that exceed threshold are considered as profit and other which are less than the threshold considered as losses (Kapsos et al., 2014).

Omega function is a smooth downward sloping curve from (a, b) onto (0, ∞) from which it follows that it takes the value 1 precisely once (when MAR is equal to mean of data) (Keating and Shadwick, 2002).

Avouyi-Dovi et al. (2004) stated that the Omega has fine properties that integrate all the moments of the distribution and it considers the investor's set threshold; furthermore, Omega is computed directly from return distribution. No additional assumptions are required for neither risk preferences nor utility function only a simple decision rule is required to define.

De Wet et al. (2009) also concluded that shape of distribution doesn't matter as far as mea-

surement of Omega and empirical results confirm that Sharpe ratio and Omega ratios are quite different from each other when distributions is non-normal and both ratios are similar when distribution is symmetric.

There are two interesting properties of Omega ratio while ranking the portfolio; first when minimum acceptable return (threshold) is set equal to the mean of the distribution, the Omega ratio is one. Second property is that it can rank investment even with negative threshold, whereas, it cannot be possible to rank with negative ratio in case of Sharpe ratio. Further, investors like probability of more positive returns or statistically positive skewness and dislike negative skewness and high kurtosis (skewness & kurtosis are higher moments and mean & standard deviation first two moments) (Bacmann and Scholz, 2003).

The minimum acceptable ratio (MAR) that serve the purpose of threshold in computing the Omega ratio is critical in a sense that if it is too high it may portray the sound investment as an unfavorable one and if it is too low it will not adequately capture the risks that concern the investor. Some studies recommends using risk free rate as a MAR (Boudt et al., 2012).

Several of these alternative performance measures, however, fall short of having firm theoretical foundations (considering the Sharpe ratio is based on the expected utility theory) and do not permit accurate ranking of portfolio performance given that ranking based on these measures depends significantly on the choice of threshold.

As Van Dyk et al. (2014) observed that other than Sharpe ratio, several alternative performance measures don't have firm theoretical base; whereas, foundation of Sharpe ratio is based on the expected utility theory. Gaspars-Wieloch (2015) introduced the Sharpe-Omega with some variation that maintains all of its desirable features, provides the same information as Omega and always ranks investments the same as Omega (Van Dyk et al., 2014).

## 1.1  Research Gap

As far as Pakistani context is concerned, no study has been found that suggests alternative method, especially, when distribution don't take Gaussian bell shape. Hence, to fill this gap, we undertook tests necessary to ascertain whether returns are normally distributed or not and after applying all standard statistical tests found that returns (NAV) are not normality distributed. In the second phase, we presented alternative performance or ranking methods that work perfectly even under higher moments.

# 2  Literature Review

## 2.1  Mutual Fund in Historical Perspective

Historically, mutual fund traces its roots since 1800s in Europe and the USA Historically, mutual fund as a mean of investment started functioning about two centuries ago in Europe and the USA. Europeans have been practicing it since 1800s and Americans, since 1890s. In those days, these funds were close-ended funds that had fixed number of shareholders. However, in 1924 in USA first open-ended fund was established namely, Massachusetts Investors Trust and this fund still exists (Burrows, 2013).

## 2.2 Development of Mutual Fund in Pakistan

In Pakistan, National Investment (Unit) Trust (NIT) is a pioneer of Mutual Funds industry licensed by the Security Exchange Commission of Pakistan as a non-banking finance company in 1962, and in the same year it issued first open-ended mutual fund. Guide Mutual Fund. Asset Management Companies are bound to invest at least 70% of their net asset in listed equity assets in case of equity fund and rest to be invested in cash or near cash instruments Nafees et al. (2011).

Mutual Fund Industry of Pakistan showed encouraging results and added value, however, at the same time some of these funds have not been able to perform well due to diversification problem Shah and Hijazi (2005).

Mutual Funds Association of Pakistan (MUFAP) is the trade body for Pakistan's multi billion rupees asset management industry. Every Asset Management Company (AMC) is required to prepare a monthly Fund Managers Report (FMR) wherein has to report their performances indicator as per SECP's Circular No. 16 dated July 07, 2010 (MUFAP, 2010).

## 2.3 Expectation of Better Returns

Investors prefer fund managers who provide better returns to their investment. Amin and Kat (2003) stated that the idea behind fund performance analysis is to evaluate whether fund managers offer investors value for money. Since, investors bear certain cost like opportunity cost of poorly diversified portfolio, transaction cost and management fee, therefore, fund manager should have sufficient skills to compensate for all these costs. Bacon (2008) said that Performance measurement is a key function in an asset management firm and the main task of fund managers is to maximize wealth of investors, whereas the focus of risk controllers is to minimize risk. Both views are relevant and pertinent, therefore, mere maximizing return is not sufficient but we must consider the quality of return by resolving this conflict of risk & return (Gandhi and Perumal, 2016).

These funds are managed by professional managers by investing investor's money into stocks, bonds, short-term money market instruments and in other securities. In this process, they realize capital gain/loss and dividend (on stocks), interest (on bonds & sort-term money market instruments). These proceeds pass on to investors in form of Net Asset Value (NAV). NAV which is value of share in mutual fund is computed on daily basis.

Feibel (2003) and Gay et al. (2014) stated that rolling period return analysis is considered by experts as stronger and reliable return analysis. In this analysis, we break many periods into smaller and overlapping periods. Wherein we compute returns for fixed frame of time by adding new period and dropping earlier period.

## 2.4 Categorization of Mutual Fund Performance Measures

There are more than a hundred analytical methods which can compute portfolio performance or fund manager performance and each one has its own strengths and weaknesses; these methods have been categorized as asset selection vs. market timing, standardized vs. individualized, absolute vs. relative and excess return vs. gain measure Caporin et al. (2014). Steinki and Mohammad (2015) posited that there are five popular performance ratios, i.e. Calmar Ratio, Omega, Sharpe Ratio, Sortino Ratio and Treynor Ratio.

## 2.5   Non-Normal Financial Returns

Testing the normality of returns distribution is pivotal while stating performance by using Sharpe ratio, however, ample of studies state evident of non-normality. For example, Aggarwal et al. (1989) exhibit that Japanese stock market showed evidence of significant presence of skewness kurtosis in its monthly returns. Researchers use certain tests to arrive at conclusion about normality of data by employing numerical methods like skewness and kurtosis indices, graphical methods (histograms, boxplots, Q-Q-plots) and four formal tests of normality: Shapiro-Wilk (SW) test, Kolmogorov-Smirnov (KS) test, Lilliefors (LF) test and Anderson-Darling (AD) test Razali et al. (2011).

## 2.6   Weaknesses of Sharpe Ratio under Non-Normal Return Distribution

Since Sharpe ratio follows mean-variance model and is based on assumption of normally distributed returns, however, positive or skewness fatter tail is commonly observed in financial return distribution (De Wet et al., 2009). The assumption of normality drew criticism from analysts and recent international papers have highlighted that return distributions are not necessarily normal; especially in the context of increasing acceptance of options, futures and hedge funds in portfolios have led to probability distributions that are far from normal. Hence, Sharpe ration inadequately account for all risk to which investor are exposed (Bacmann and Scholz, 2003; León et al., 2015). Validity can only be confirmed when distribution is normal or Gaussian. Performance in mean-variance analysis can be improved significantly with the application of appropriate weights and rebalancing them periodically (Zakamouline and Koekebakker, 2009).

## 2.7   Alternative to Sharpe measure, Omega and Sharpe-Omega

The current study used Omega ($\Omega$) as a performance evaluation measure, which accomplishes the task of incorporating all of the higher moments of a returns distribution. It provides a full characterization of the risk reward characteristics of the distribution in a way which is intuitively appealing and easily calculated Keating and Shadwick (2002). Instead of estimating any individual moments it measures their total impact, which is of course precisely what is of interest to practitioners. It was developed to overcome the shortcoming of Sharpe ratio which arises due to standard deviation of non-normal distribution. An important feature of Omega is that it is not plagued by sampling uncertainty, unlike standard statistical estimators–as it is calculated directly from the observed distribution and requires no estimates.

It also provides a risk-reward evaluation of a returns distribution which incorporates the beneficial impact of gains as well as the detrimental effect of losses, relative to any individual's loss threshold (Bertrand and Prigent, 2014).

Omega ratio, as it was named by Keating and Shadwick (2002) is a ratio of whole distribution portioned into two – one that is above the threshold and second below the threshold. Returns exceeding the threshold are considered as profit and which are less than the threshold considered as losses Kapsos et al. (2014).

Avouyi-Dovi et al. (2004) postulated that the Omega has fine properties that integrate all the moments of the distribution and it considers the investor's set threshold; furthermore, Omega is computed directly from return distribution. No additional assumptions are required for risk preferences or utility function only a simple decision rule is required to define. Van Dyk et al. (2014) described it a Performance measures based on lower partial moments (LPMs) and it indirectly adjusts for both skewness and kurtosis. Bertrand and Prigent (2011) stated that main

advantage of Omega ratio is that at any level of threshold, ranking is always possible and achievable even if distribution is skewed or kurtosis.

Gupta and Kazemi (2008) presented their study and in this study, they showed that Omega is ratio of call and put price and intuitively explained what it is and what are its limitation. Secondly, one can trace its roots from call and put option. Moreover, vast literature in option pricing can help to estimate precise Omega and better understanding of its properties. This paper present new version of Omega, named as Sharpe-Omega, which provides same information as of Omega but in formulation familiar to Sharpe ratio.

# 3 Methodology

## 3.1 Sample Schemes

In this study, we have adopted purposive sampling and the elementary purpose was to draw the inferences based on reliable samples (extracted from Mutual Funds Association of Pakistan (MUFAP)) which are in existence during whole study period i.e. year 2007-2017. We have evaluated data of twenty equity mutual funds pertaining to fourteen Asset Management Companies (AMCs) and PSX-100 index (formerly known as KSE-100 index) as benchmark. Net Asset Value (NAV) of open-ended equity funds of these AMCs taken since the inception ranging from 2006-06-30 to 2016-06-30.

## 3.2 Sources of Data

We employed secondary source of data. The data of NAV, dividends and Ex-Dividend NAV obtained from the website of Mutual Fund Association of Pakistan (MUFAP). Data pertains since inception of fund to December 31, 2016 of each AMC, T-bill data obtained from the website of State Bank of Pakistan (SBP) and data pertaining to market index (Pakistan Stock Exchange -PSX) is obtained from the website of Business Recorder.

## 3.3 Models

### 3.3.1 Sharpe Ratio

Sharpe ratio, also known as the reward-to-volatility ratio was proposed by William Sharpe and since then used extensively all over the world to evaluate performance of fund managers. Sharpe ratio (for portfolios) = where numerator of Sharpe ratio is excess return (annualized return of fund over minus risk free return) and denominator of this ratio is annualized Standard Deviation of excess return. The criterion is higher the output higher the rank. Since the Sharpe ratio penalized equally downward and upward volatility, whereas investors are more concerned about downward volatility. However, Sharpe ratio is only valid for either normal distribution or quadratic preferences Zakamouline and Koekebakker (2009).

Furthermore, it is a well-established fact that some of financial instruments return distributions from normality are statistically significant and in that case the standard deviation underestimates the total risk and generates biased investment rankings León et al. (2015).

### 3.3.2   Omega Ratio

Problem with financial returns is that these are not normally distributed and skewness & kurtosis present in it Aggarwal et al. (1989). There are several researchers who exposed existences of skewness and kurtosis in empirical asset return distributions (Arditti, 1967; Cootner, 1964; Fama, 1965).

The dissimilarity between Omega and Sharpe is that former take into account for all moments and latter is influenced by the first two moments. Omega as an alternative to Sharpe was developed by Keating and Shadwick (2002) to improve deficiencies of traditional performance measure that are used to apply on non-normal distributed return distributions (Gaspars-Wieloch, 2015).

Main advantage of Omega ratio is that at any level of threshold, ranking is always possible and achievable even if distribution is skewed or kurtosis Bertrand and Prigent (2006) by slicing the returns into losses and gains above and below the threshold. In contrast to Sharpe ratio (which rely on mean-variance model), Omega loss threshold is a function of the investor's preferences. Formula of Omega is as follow,

$$w(r) = \frac{\int_r^b (1 - F(x)dx}{\int_a^r (1 - F(x)dx} or \frac{UpsidePotential}{DownsidePotential}$$

Where:

- F(x) is the cumulative distribution of returns

- (a, b) represents the interval of returns

- r is the threshold level set

- is the probability-weighted ratio of gains to losses relative to the threshold

$$p = Ke^{-rT} \times N(-d_2) - S_0 \times N(-d_1)$$

$$p = Ke^{-rT} \times N(-d_2) - S_0 \times N(-d_1)$$

### 3.3.3   Sharpe-Omega Ratio

Where:

1. F(x) is the cumulative distribution of returns

2. (a, b) represents the interval of returns

3. r is the threshold level set

4. $\omega$ (r) is the probability-weighted ratio of gains to losses relative to the threshold r

### 3.3.4 Sharpe-Omega Ratio

Black-Scholes Equation

$$p = Ke^{-rT} \times N(-d_2) - S_0 \times N(-d_1)$$

Where:

1. $N(.)$ is the cumulative distribution function of the standard normal distribution.

2. $T$ is the time to maturity (expressed in years).

3. $S_t$ is the spot price of the underlying asset.

4. $K$ is the strike price.

5. $r$ is the risk-free rate (annual rate, expressed in terms of continuous compounding).

6. $\sigma$ is the volatility of returns of the underlying asset.

Sharpe-Omega equation as suggested by Caporin and Lisi (2009), made some changes to original Black-Scholes equation and derived formula for Sharpe-Omega from following equation.

$P(L) = exp\left(L - r_f\right) N\left(-d_2\right) - exp\left(x - r_f\right) N\left(-d_1\right)$ and formula is:

$E^{rf}\left(\Omega\left(L\right) - 1\right) = x - L/e^{-rf} E\left[max\left(L - x, o\right)\right]$

Where,

1. $x$ is the expected continuously compounded per period rate of return on the investment

2. $L$ is threshold

3. $rf$ is risk free rate

4. $P(L)$ is put option and initial price 1

5. $exp(L)$ is exercise price

Sharpe-Omega ratio is determined by taking subset of the returns that are more than the threshold and take the differences of those to the target. We sum the squares and divide by the total number of observations of entire series ($n$)

# 4 Empirical Results

In this section, we have described performance of fund managers by showing what value they have added to investment of investors. Where, we discussed calendar year returns, annualized return and cumulative returns to estimate their efficiencies. As we are not only interested in value these funds added, but wanted to know at what cost these returns were achieved by measuring volatility and validity of volatility. For this purpose, we tested the normality of distribution by applying different statistical tests.

## 4.1   Calendar Year Returns

Following table exhibits how much value is added by fund managers for the years 2009, 2012 and 2016 and 2017. Returns are calculated as NAV at the end of the year minus NAV at beginning of the year divided by beginning of the year NAV. Calendar Return = NAV $_{ending}-$ NAV $_{beginning}$ / NAV $_{Beginning}$. The highest returns were produce by ATSM & HBEF in the year 2009, however, 2008 was a bad year for the whole mutual fund industry. First row pertains to KSE-100 index and is shown for the sake of comparison, NAFA beat the index in the year 2007, ATSM, HBEF, MPSM and USAF in 2009, AKOP and NAFA in 2012, NIUF in 2014, AKOP, JSFE, JSLF and USAF in 2015, AKOP in 2016 and in the year 2017 except ASKF, ATSM, FCMF all other performed well as far as calendar returns are concerned.

Table 4.1: Calendar Returns

|      | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|------|------|------|------|------|------|------|------|------|------|------|------|
| INDX | 24.9 | -58.3 | 60.0 | 28.1 | -5.6 | 49.0 | 49.4 | 27.2 | 2.1 | 45.7 | 5.8 |
| ABSF | NA | NA | 29.7 | -4.5 | -21.5 | 24.8 | 4.6 | 2.7 | 1.7 | 42.2 | 11.0 |
| AKOP | NA | -40.7 | 53.3 | -27.0 | -12.8 | 65.9 | 25.8 | 13.8 | 17.7 | 47.0 | 7.8 |
| ALPF | NA | NA | 19.6 | 16.7 | -19.4 | 8.1 | 31.2 | 2.5 | 5.1 | 22.1 | 11.9 |
| ALSF | NA | -3.0 | 43.9 | -12.8 | -17.3 | 25.3 | 3.8 | -10.0 | 5.1 | 28.1 | 11.7 |
| ASKF | NA | NA | NA | NA | NA | 13.5 | 0.8 | 5.6 | -14.8 | 26.4 | 2.6 |
| ATSM | 2.8 | -36.8 | 103.9 | -12.4 | -23.6 | 36.1 | 11.1 | 4.4 | -7.5 | 48.1 | 7.6 |
| FCMF | 11.6 | -58.8 | 68.0 | 0.6 | -3.7 | 16.9 | 22.3 | 12.4 | -13.3 | 28.7 | 3.6 |
| FHSF | NA | NA | 1.1 | 11.7 | -20.0 | 28.3 | 0.2 | -1.6 | -14.7 | 30.4 | 6.5 |
| HBEF | 5.3 | -58.0 | 104.2 | 16.3 | -23.6 | 25.9 | 33.7 | -16.3 | 1.9 | 36.3 | 13.1 |
| HBEQ | NA | NA | NA | NA | -5.9 | 24.9 | 15.7 | -8.2 | 0.2 | 6.4 | 10.7 |
| HBSF | 0.1 | -23.3 | 60.9 | 4.9 | -11.0 | 25.9 | 15.8 | -14.4 | -9.6 | 29.6 | 9.6 |
| JSFE | 41.1 | -46.6 | -11.9 | -1.7 | -13.2 | 43.1 | 34.9 | 3.2 | 3.4 | 36.2 | 7.7 |
| JSGF | -3.0 | -59.0 | 51.0 | -1.6 | -24.5 | 45.3 | 28.7 | 0.5 | 0.0 | 40.8 | 11.1 |
| JSLF | 9.4 | -53.1 | 30.0 | 6.9 | -42.6 | 52.1 | 29.2 | 11.2 | 4.9 | 37.9 | 15.1 |
| LAKS | NA | NA | 1.8 | 16.1 | -22.0 | 28.5 | 16.1 | -7.4 | -19.4 | 39.4 | 9.0 |
| MPSM | -0.1 | -41.5 | 70.5 | -4.0 | -18.1 | 31.1 | 7.3 | 8.2 | 9.3 | 39.6 | 8.5 |
| NIUF | 23.0 | -44.2 | 34.7 | 2.7 | -17.6 | 28.2 | 49.9 | 32.8 | -4.2 | 38.4 | 10.3 |
| NAFA | 31.0 | -62.0 | 39.5 | 5.5 | -20.2 | 49.7 | 12.6 | 19.1 | 1.8 | 41.2 | 9.3 |
| USAF | 5.4 | -56.9 | 80.6 | -51.2 | -22.5 | 27.9 | 34.7 | 7.7 | 9.2 | 29.6 | 13.2 |

Table 1 depicts funds annualized return of nine years i.e. from 2009 to 2017 and constructed by taking end of year NAV minus beginning of year NAV, dividing by beginning of year NAV. Rolling period analysis is considered by experts as stronger and reliable return analysis.

In this analysis, we break many periods into smaller and overlapping periods. Wherein we compute returns for fixed frame of time by adding new period and dropping earlier period (Feibel, 2003; Gay, 2014). For example, in the following graph 7 years and 6 months returns of three funds are depicted comprising total 90 periods, e.g. Aug 09 to July 09 is one period, Sep 09 to Aug 11 second period, Oct 09 to Sep 11 third and so on. Hence, we can see over all AKOP shows upper returns in comparison to ABSF and ALPF except from Aug 10 to June 11 when AKOP plunged faster and greater than other two. On three occasions AKOP produced 60% annualized return i.e. Nov 09-Oct 10, Nov 12-Oct 13 and July 15-June16.
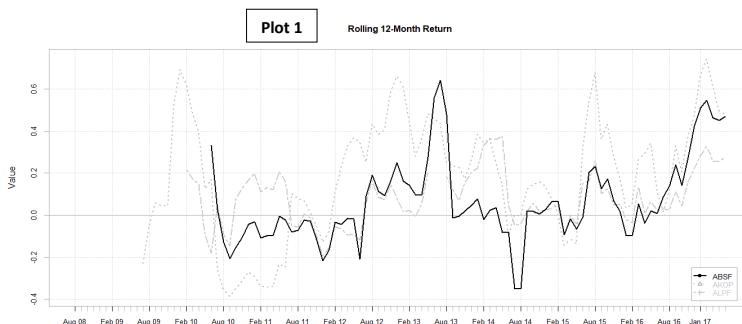


If we compare rolling returns with other measures of returns, it will portray more logical performance than to other measures. For example, annualized returns of funds AKOP, ABSF and ALSF are 15.3%, 13.2% and 9.7% respectively provided investor hold them from 2009 to 2017. Same is with cumulative returns and calendar years returns, former bespeak itself and latter is percentage change form start of year to end of year and in between what happened nothing can be traced.

## 4.2   Cumulative Returns

Table 2 and diagram presented cumulative return since inception of fund to date.

Table 4.2: Simple Annualized Returns

| ABSF | AKOP | ALPF | ALSF | ASKF | ATSM | FCMF | FHSF | HBEF | |
|------|------|------|------|------|------|------|------|------|------|
| 0.132 | 0.153 | 0.133 | 0.097 | 0.075 | 0.109 | 0.062 | 0.056 | 0.089 | |

| HBEQ | HBSF | JSFE | JSGF | JSLF | LAKS | MPSM | NIUF | NAFA | USAF |
|------|------|------|------|------|------|------|------|------|------|
| 0.105 | 0.087 | 0.078 | 0.061 | 0.087 | 0.084 | 0.100 | 0.132 | 0.094 | 0.054 |

Graphical representation of by applying the logic that how much Rupee one grown over this period is shown as under, for example AKOP yield annualized return =

$(1+ 2.5 / 1)^{1/9} -1 = 15\%$ where 250% in decimal format is 2.5
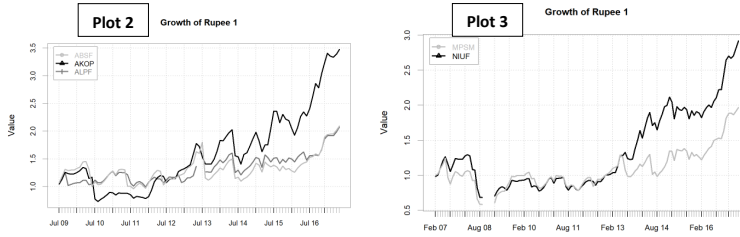
## 4.3   Test of Normality

Razali et al. (2011) suggested that Even though the graphical methods (Histograms, boxplot, Q-Q plot) and numerical methods (skewness and kurtosis indices) can serve as a useful tool in checking normality for sample of n independent observations, they are still not sufficient to provide conclusive evidence that the normal assumption holds. Therefore, in this study, we applied Shapiro-Wilk (SW) test along with Q-Q plot and numerical methods. For example, in the following graph it is evident that data set do not come from chosen distribution as points are not aligned along a line, (other are placed in appendix)
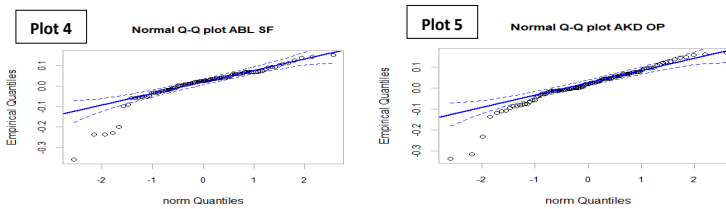


The simplest and in many ways, the best test of normality is QQ-plot which shows the empirical quantiles on y-axis and theoretical on x-axis. Large deviation from reference line indicates that data come from a population with a different distribution (Boudt et al., 2012). For example, Zakamouline and Koekebakker (2009) described that The Sharpe ratio can only be valid for either normally distributed returns or quadratic preferences. One commonly known and widely used method QQ plot is applied on data and their results depict that distribution is non-normal.

The skewness for a normal distribution is zero, and any symmetric data should have a skewness near zero. Negative values for the skewness as shown in the following table indicate that data are skewed left and left tail is longer than the right tail. The kurtosis for a standard normal distribution is three.

## 4.4   Shapiro-Wilks Normality Test

Shapiro-Wilks normality test is known as a powerful normality test and it rejects the hypothesis of normality when the p-value is less than or equal to 0.05. If P-value is less than the alpha then we conclude that normality test failed and we say with 95% confidence that the data does not fit the normal distribution. The p-value exhibited in table 4 tells the chances are there that the sample comes from a non-normal distribution.

Table 4.3: Skewness and Kurtosis

|          | INDX  | ABSF  | AKOP  | ALPF  | ALSF  | ASKF  | ATSM  | FCMF  | FHSF  | HBEF  |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Skewness | -1.71 | -1.92 | -1.35 | -0.74 | -1.25 | -0.87 | -0.73 | -1.48 | -0.80 | -0.98 |
| Kurtosis | 7.73  | 5.61  | 3.94  | 1.74  | 3.75  | 2.13  | 2.30  | 7.06  | 1.07  | 6.43  |
| **Table 2** | **HBEQ** | **HBSF** | **JSFE** | **JSGF** | **JSLF** | **LAKS** | **MPSM** | **NIUF** | **NAFA** | **USAF** |
| Skewness | -1.92 | -1.09 | -1.31 | -1.23 | -1.48 | -1.97 | -1.20 | -0.98 | -1.02 | -2.75 |
| Kurtosis | 5.70  | 4.15  | 2.88  | 4.06  | 5.14  | 7.09  | 3.09  | 1.75  | 5.26  | 13.91 |

Table 4.4: Shapiro-Wilks

| Fund | P-Value    | W       | Fund | P-Value   | W       |
|------|------------|---------|------|-----------|---------|
| ABSF | 1.539e-11  | 0.80809 | HBSF | 6.167e-13 | 0.76461 |
| AKOP | 8.832e-05  | 0.94705 | JSFE | 0.0008821 | 0.95988 |
| ALPF | 4.437e-13  | 0.75981 | JSGF | 0.004962  | 0.96857 |
| ALSF | 2.624e-13  | 0.75201 | JSLF | 0.01853   | 0.97477 |
| ASKF | 3.463e-14  | 0.72027 | LAKS | 4.634e-13 | 0.76045 |
| ATSM | 1.425e-08  | 0.88200 | MPSM | 8.64e-06  | 0.93245 |
| FCMF | 3.185e-07  | 0.90848 | NIUF | 2.435e-05 | 0.93918 |
| FHSF | 2.682e-14  | 0.71607 | NAFA | 0.00343   | 0.96677 |
| HBEF | 1.219e-08  | 0.88056 | USAF | 5.596e-05 | 0.94432 |
| HBEQ | 1.309e-13  | 0.76461 | INDX | 5.057e-08 | 0.89328 |

# 5   Performance Analysis

## 5.1   Empirical Cumulative Distribution Function (ECDF)

Graphically, we can view the proportion higher or equal to MAR or lower to MAR by constructing an empirical cumulative distribution function (ECDF). Here we can see that the Omega divides the entire universe into two parts, one above threshold and other below the threshold. Best suited returns at this level of threshold are above the horizontal line (Bacmann and Scholz, 2003). In the following diagram, we assumed that investors threshold is 0.75% per month (which is equal to average T-Bills rate in Pakistan), we can use it to partition ECDF into two areas, say G and L (G=Gain and L=Loss), therefore, we can now compute  (Omega) = G / L.

## 5.2   Sharpe-Omega

In this study, we show that Omega is ratio of call and put price and intuitively explains what it is and what its limitation are. Secondly, one can trace its roots from call and put option.
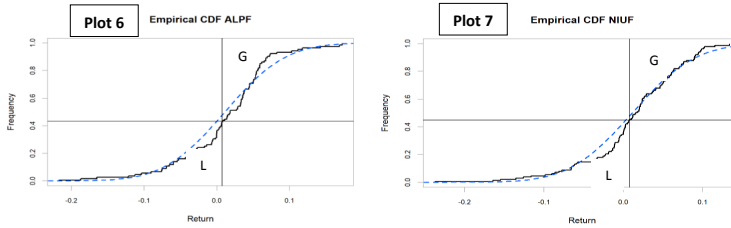
Additionally, vast literature in option pricing can help to estimate precise Omega and better understanding of its properties. This paper present new version of Omega, named as Sharpe-Omega, which provides same information as of Omega but in formulation familiar to Sharpe ratio. We portray side by side two graphs, one normal histogram with actual returns and other created by generating random variables to construct lognormal histogram. It shows that it fulfils the condition of lognormally distributed returns of investment and meet Sharpe-Omega formula by using Black-Scholes options as suggested by Gupta and Kazemi (2008).
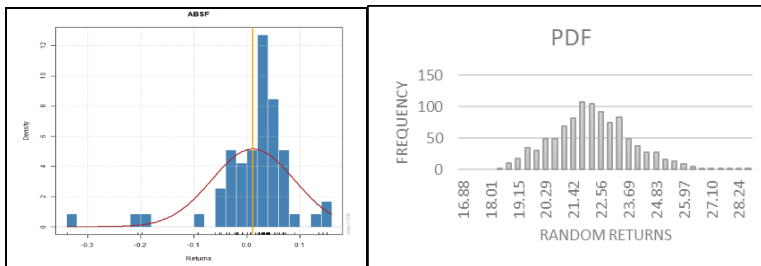


### 5.2.1   Comparison

In table 6, three rank measuring tools are used namely the Omega ratio, the Sharpe ratios and the Omega-Sharpe ratio to compare where Sharpe ratio deviate from the other two. These ratios are computed by setting risk-free and threshold at zero to compare ranking difference among these ratios. Gupta and Kazemi (2008) put forward Sharpe-Omega ratio and described it a better Omega, as it preserves all features of Omega and Sharpe. Hence, they formulized it as, Sharpe-Omega = Expected return-Threshold / Put option price. Since Sharpe-Omega proportional to   1, there, it provides the same information and rank as of Omega. We sum the squares and divide by the total number of returns. We have added Omega-Sharpe ratio along with original treatment proposed by Keating and Shadwick (2002) for such comparison. In this table, Omega and Omega-Sharpe show the same ranking, while the Sharpe ratio has nine-point disagreement that is indication of high moment (zeros are disagreement and one are agreement as far as Omega and Sharpe measures comparison is concerned)

## 5.3   Finding Risk

Comparatively riskier fund can be found by drawing diagram on logarithmic scale and points where omegas cross are indifference points for choices between particular portfolio pair-

Table 5.1: Ranking Comparison

| Omega |  | Omega-Sharpe |  | Sharpe |  | Mapping |
|---|---|---|---|---|---|---|
| 1.60 | NIUF | 0.6002 | NIUF | 0.610 | NIUF | 1 |
| 1.56 | ALPF | 0.5638 | ALPF | 0.582 | ALPF | 1 |
| 1.53 | AKOP | 0.5300 | AKOP | 0.527 | AKOP | 1 |
| 1.50 | ABSF | 0.4958 | ABSF | 0.498 | ABSF | 1 |
| 1.41 | HBEQ | 0.4104 | HBEQ | 0.428 | HBSF | 0 |
| 1.40 | ATSM | 0.3988 | ATSM | 0.417 | ATSM | 1 |
| 1.40 | HBSF | 0.3979 | HBSF | 0.408 | HBEQ | 0 |
| 1.38 | MPSM | 0.3826 | MPSM | 0.407 | MPSM | 1 |
| 1.38 | ALSF | 0.3795 | ALSF | 0.394 | LAKS | 0 |
| 1.38 | HBEF | 0.3779 | HBEF | 0.393 | ALSF | 0 |
| 1.37 | LAKS | 0.3733 | LAKS | 0.387 | ASKF | 0 |
| 1.36 | ASKF | 0.3625 | ASKF | 0.367 | NAFA | 0 |
| 1.35 | NAFA | 0.3544 | NAFA | 0.359 | HBEF | 0 |
| 1.32 | JSFE | 0.3188 | JSFE | 0.352 | JSFE | 1 |
| 1.27 | JSLF | 0.2734 | JSLF | 0.315 | FHSF | 0 |
| 1.27 | FHSF | 0.2672 | FHSF | 0.294 | JSLF | 0 |
| 1.25 | FCMF | 0.2509 | FCMF | 0.265 | FCMF | 1 |
| 1.21 | JSGF | 0.2125 | JSGF | 0.239 | JSGF | 1 |
| 1.17 | USAF | 0.1701 | USAF | 0.172 | USAF | 1 |

ings. The steepness of the omega function is a measure of its risk. Greater the steepness, less the risk (Keating and Shadwick, 2002)

Due to having nice three properties omega is well-suited for asset management. Firstly, as it includes all moments of the distribution, therefore, appropriate when returns are not normally distributed. Secondly, it allows investors preference of minimum acceptable return (MAR) as a result portfolio ranking will be different and rational than Sharpe ratio. Empirical results confirm that there is significant difference of ranking between Omega ranked portfolio and Sharpe ranked portfolio, for example table I shows that ranks of funds keep on changing with threshold, whereas, Sharpe ratio remains the same due to having no sensitivity to threshold. The minimum requirement for using Sharpe ratio is that returns distribution should be symmetric so that a unit of volatility means the same thing above and below the average (Cascon et al., 2006). In the previous section of normality tests we have already established that our data is non-normal and skewed in nature. Omega ratio exceeding 1, indicates upside gains and Omega ratio less than 1, indicates losses. If Omega ratio is equal to 1, it is a condition when threshold is exactly equal to mean (Chen, 2016).
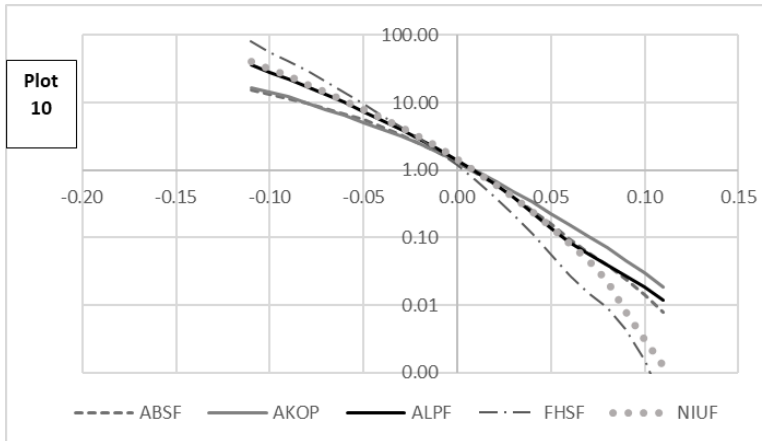
## 5.4   Omega Function

Omega ratio curve exhibits downward slopping curve which increases or decreases by varying threshold levels (MAR) i.e. at lowest MAR it yields highest Omega ratio and at highest MAR lowest Omega ratio. Therefore, in Omega function omega ratio is in continuous form (Van Dyk et al., 2014). In the following diagram on x-axis threshold values are chosen from the tabulation of the omega ratio at varying threshold. It holds three distinct properties, it is a decreasing function of threshold, value of omega ratio will always be 1 when threshold equals to mean and its shape makes risk profile clear (Cascon et al., 2006).
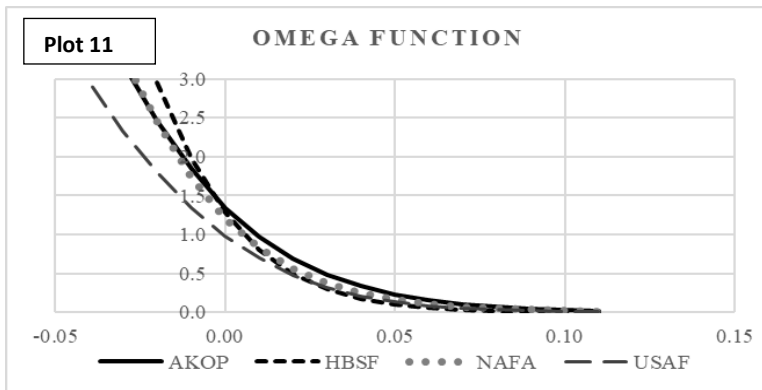


*"When MAR is lower than the mean of distribution μ, the Omega is higher than one (Ω > 1 when MAR < μ). The lower the MAR, the higher the probability to achieve it and thus the higher the Omega."* (Steinki & Mohammad, 2015)

Keating and Shadwick (2002) describes the Omega function as a probability adjusted ratio of gains to losses and say that, for a given threshold, the simple rule of preferring more to less implies that an asset with a high value of Omega is a better investment than one with a lower value.

# 6   Conclusion

In Pakistan on directives of Securities and Exchange Commission of Pakistan (SECP), every AMC is required to report monthly Fund Managers Report and make it available on their website in a standardized format prescribed by Mutual Funds Association of Pakistan (MUFAP). Though, reporting risk measures such as Treynor Ratio and Sortino Ratio are voluntary for AMC as per MUFAP, however, all AMCs report their performances in Sharpe ratio. The current study proposed that,

1. Firstly, rolling returns should also be presented along with conventional annualized / cumulative or calendar years returns.

2. Secondly, Omega or Sharpe-Omega should also be included along with Sharpe ratio for better judgement of ranking if returns are not normally distributed as it is has been proved in this study.

This study provided room for academician and researcher to search what other performance measures can be taken up to calculate appropriate ranks of these AMCs when you encounter with non-normal return distribution.
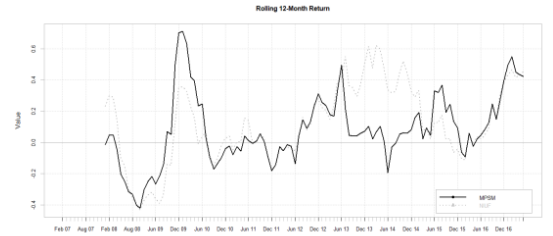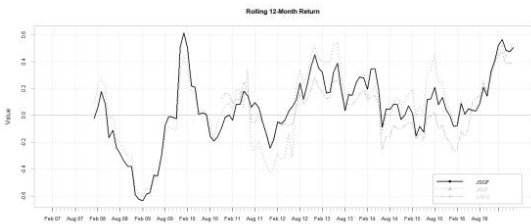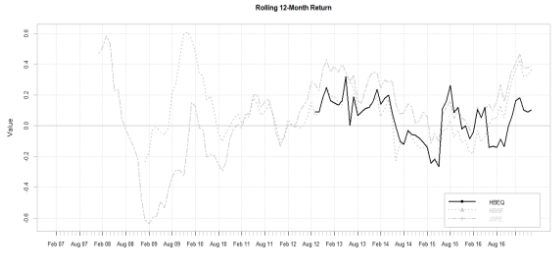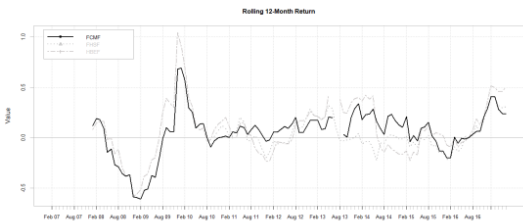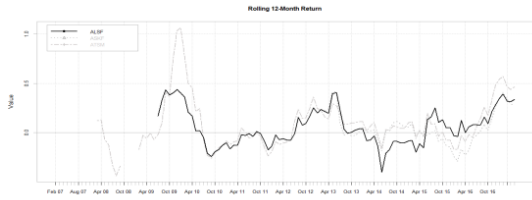
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# Appendix 1 (Symbols used in this study)

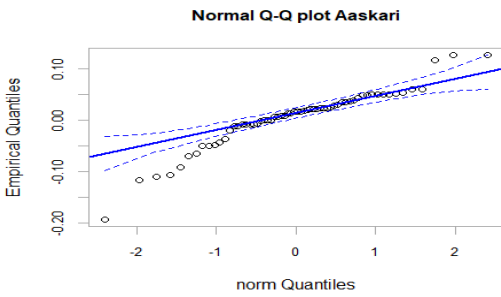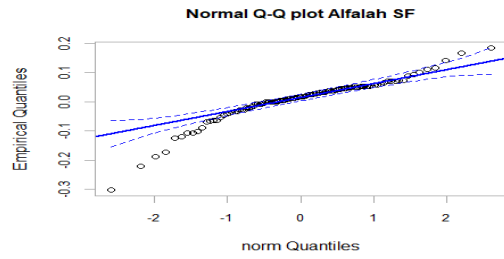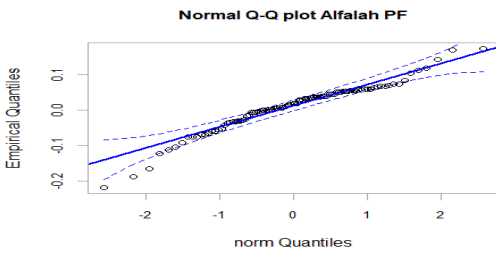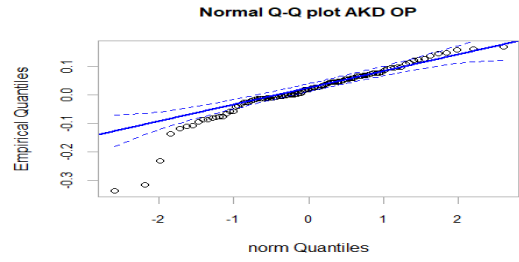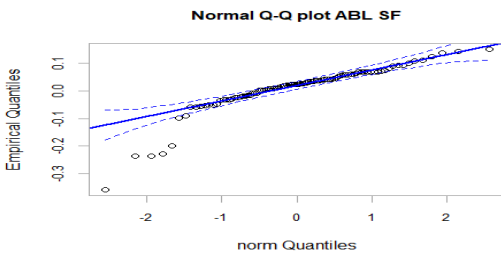| Symbol | Fund Name | Inception Date |
| --- | --- | --- |
| INDX | KSE-100 Index | 1-Nov-91 |
| ABSF | ABL Stock Fund | 28-Jun-09 |
| AKOP | AKD Opportunity Fund | 31-Mar-06 |
| ALPF | Alfalah GHP Alpha Fund | 9-Sep-08 |
| ALSF | Alfalah GHP Stock Fund | 15-Jul-08 |
| ASKF | Askari Equity Fund | 30-Mar-12 |
| ATSM | Atlas Stock Market Fund | 24-Aug-04 |
| FCMF | First Capital Mutual Fund | 24-May-95 |
| FHSF | First Habib Stock Fund | 8-Oct-09 |
| HBEF | HBL Energy Fund (Formerly: PICIC Energy Fund) | 20-Jan-06 |
| HBEQ | HBL Equity Fund (Formerly: PICIC Stock Fund) | 20-Jan-06 |
| HBSF | HBL Stock Fund | 23-Aug-07 |
| JSFE | JS Value Fund | 14-Jan-96 |
| JSGF | JS Growth Fund | 6-Jun-06 |
| JSLF | JS Large Cap Fund | 15-May-04 |
| LAKS | Lakson Equity Fund | 13-Nov-09 |
| MPSM | MCB Pakistan Stock Market Fund | 11-Mar-02 |
| NIUF | National Investment Unit Trust | 12-Nov-62 |
| NAFA | NAFA Stock Fund | 22-Jan-07 |
| USAF | UBL Stock Advantage Fund | 4-Aug-06 |

# Appendix 2 (Rolling Returns)



Rolling 12-Month Return



Rolling 12-Month Return



Rolling 12-Month Return



Rolling 12-Month Return



Rolling 12-Month Return



Rolling 12-Month Return



Rolling 12-Month Return
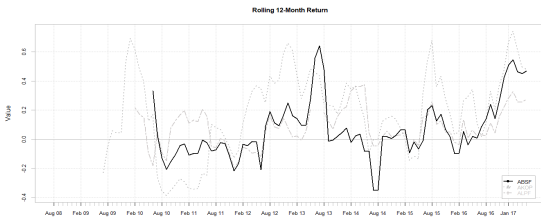
# Appendix 3 (Descriptive Statistics)

| | INDX | ABSF | AKOP | ALPF | ALSF | ASKF | ATSM | FCMF | FHSF | HBEF |
|---|---|---|---|---|---|---|---|---|---|---|
| nobs | 124 | 124 | 124 | 124 | 124 | 124 | 124 | 124 | 124 | 124 |
| NAs | 0 | 29 | 18 | 27 | 18 | 62 | 6 | 2 | 33 | 2 |
| Minimum | -0.3616 | -0.3380 | -0.3366 | -0.2171 | -0.3014 | -0.1938 | -0.2556 | -0.3579 | -0.1673 | -0.3505 |
| Maximum | 0.1978 | 0.1503 | 0.1674 | 0.1724 | 0.1851 | 0.1273 | 0.2541 | 0.2275 | 0.1197 | 0.2741 |
| 1. Quartile | -0.0079 | -0.0189 | -0.0149 | -0.0170 | -0.0177 | -0.0083 | -0.0143 | -0.0176 | -0.0194 | -0.0136 |
| 3. Quartile | 0.0539 | 0.0560 | 0.0637 | 0.0530 | 0.0473 | 0.0364 | 0.0503 | 0.0426 | 0.0404 | 0.0387 |
| Mean | 0.0146 | 0.0110 | 0.0127 | 0.0111 | 0.0081 | 0.0062 | 0.0091 | 0.0052 | 0.0047 | 0.0075 |
| Median | 0.0207 | 0.0243 | 0.0179 | 0.0184 | 0.0177 | 0.0166 | 0.0173 | 0.0120 | 0.0111 | 0.0130 |
| Sum | 1.8117 | 1.0452 | 1.3471 | 1.0724 | 0.8596 | 0.3872 | 1.0686 | 0.6286 | 0.4267 | 0.9095 |
| SE Mean | 0.0060 | 0.0079 | 0.0081 | 0.0067 | 0.0069 | 0.0071 | 0.0069 | 0.0061 | 0.0054 | 0.0065 |
| LCL Mean | 0.0027 | -0.0046 | -0.0034 | -0.0022 | -0.0056 | -0.0080 | -0.0046 | -0.0069 | -0.0061 | -0.0054 |
| UCL Mean | 0.0265 | 0.0266 | 0.0288 | 0.0243 | 0.0219 | 0.0204 | 0.0228 | 0.0172 | 0.0154 | 0.0203 |
| Variance | 0.0045 | 0.0059 | 0.0070 | 0.0043 | 0.0051 | 0.0031 | 0.0056 | 0.0045 | 0.0027 | 0.0052 |
| Stdev | 0.0670 | 0.0765 | 0.0836 | 0.0658 | 0.0714 | 0.0559 | 0.0751 | 0.0674 | 0.0516 | 0.0719 |
| Skewness | -1.6895 | -1.6876 | -1.3273 | -0.7276 | -1.2315 | -0.8513 | -0.7240 | -1.4624 | -0.7894 | -0.9646 |
| Kurtosis | 7.5553 | 4.7846 | 3.8072 | 1.6387 | 3.6203 | 1.9632 | 2.2077 | 6.8931 | 0.9757 | 6.2713 |
| | HBEQ | HBSF | JSFE | JSGF | JSLF | LAKS | MPSM | NIUF | NAFA | USAF |
| nobs | 124 | 124 | 124 | 124 | 124 | 124 | 124 | 124 | 124 | 124 |
| NAs | 56 | 11 | 0 | 0 | 0 | 34 | 4 | 4 | 0 | 2 |
| Minimum | -0.3097 | -0.2795 | -0.2438 | -0.3517 | -0.4068 | -0.3110 | -0.2867 | -0.2375 | -0.3688 | -0.5627 |
| Maximum | 0.1454 | 0.1560 | 0.1295 | 0.1886 | 0.2484 | 0.1139 | 0.1866 | 0.1337 | 0.2568 | 0.2353 |
| 1. Quartile | -0.0157 | -0.0236 | -0.0237 | -0.0213 | -0.0224 | -0.0188 | -0.0126 | -0.0124 | -0.0195 | -0.0201 |
| 3. Quartile | 0.0516 | 0.0464 | 0.0475 | 0.0476 | 0.0585 | 0.0432 | 0.0529 | 0.0535 | 0.0506 | 0.0525 |
| Mean | 0.0087 | 0.0073 | 0.0065 | 0.0051 | 0.0072 | 0.0070 | 0.0083 | 0.0110 | 0.0078 | 0.0045 |
| Median | 0.0161 | 0.0117 | 0.0162 | 0.0120 | 0.0145 | 0.0165 | 0.0190 | 0.0150 | 0.0091 | 0.0170 |
| Sum | 0.5945 | 0.8208 | 0.8053 | 0.6317 | 0.8966 | 0.6293 | 0.9956 | 1.3152 | 0.9730 | 0.5489 |
| SE Mean | 0.0090 | 0.0055 | 0.0057 | 0.0066 | 0.0077 | 0.0065 | 0.0064 | 0.0057 | 0.0067 | 0.0082 |
| LCL Mean | -0.0092 | -0.0037 | -0.0049 | -0.0080 | -0.0079 | -0.0059 | -0.0045 | -0.0003 | -0.0053 | -0.0117 |
| UCL Mean | 0.0267 | 0.0182 | 0.0178 | 0.0182 | 0.0224 | 0.0199 | 0.0211 | 0.0222 | 0.0210 | 0.0207 |
| Variance | 0.0055 | 0.0035 | 0.0041 | 0.0055 | 0.0073 | 0.0038 | 0.0050 | 0.0039 | 0.0055 | 0.0082 |
| Stdev | 0.0743 | 0.0589 | 0.0639 | 0.0739 | 0.0854 | 0.0615 | 0.0706 | 0.0623 | 0.0742 | 0.0906 |
| Skewness | -1.8747 | -1.0767 | -1.2931 | -1.2119 | -1.4582 | -1.9421 | -1.1812 | -0.9651 | -1.0071 | -2.7124 |
| Kurtosis | 5.4473 | 4.0269 | 2.7869 | 3.9516 | 5.0117 | 6.8689 | 2.9920 | 1.6754 | 5.1321 | 13.6292 |

# Appendix 4 (Q-Q Plot of all Mutual Funds)

**Normal Q-Q plot HBL EF**

Empirical Quantiles

norm Quantiles

**Normal Q-Q plot HBL EQ**

Empirical Quantiles

norm Quantiles

**Normal Q-Q plot HBL SF**

Empirical Quantiles

norm Quantiles

**Normal Q-Q plot JS FE**

Empirical Quantiles

norm Quantiles

**Normal Q-Q plot JS GF**

Empirical Quantiles

norm Quantiles

**Normal Q-Q plot JS LF**

Empirical Quantiles

norm Quantiles

**Normal Q-Q plot Lakson**

Empirical Quantiles

norm Quantiles

**Normal Q-Q plot MCB PSM**

Empirical Quantiles

norm Quantiles

**Normal Q-Q plot NIT Unit**

Empirical Quantiles

norm Quantiles

**Normal Q-Q plot NBP NAFA**

Empirical Quantiles

norm Quantiles

## Normal Q-Q plot UBL  SAF

# Analyzing the Impact of Nurses Emotional Intelligence on Patients Quality-of-Care with the Mediating Role of Job Involvement

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[3,4]*Universiti Sultan Zainal Abidin (UniSZA) Gong Badak Campus, Malaysia*

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**Abstract.** The aim of the current study was to analyze the impact of Nurses Emotional Intelligence on Patients Quality-of-Care with the mediating role of Job Involvement. Deductive approach was used to study the constructs, derived from theory. Research hypotheses are formulated from existing theory and knowledge relating to emotional intelligence and patients-centered care. The sample was calculated through an online calculator "Raosoft". The recommended final simple size was 292 with a population size of 1200 at 95% confidence level, 5% error of margin and 50% response distribution. Correlations and regression analysis were performed to measure the mediation analysis. The statistical outcomes confirmed nurses emotional intelligence positively affects patients quality of care. Furthermore, the association between emotional intelligence and job involvement and job involvement and patients quality of care are also positive. Job involvement has a partial mediation impact in the said association. The study concludes by discussing future research directions.

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## 1 Introduction

In today's economic age, many businesses gain too much success and others do not. The business success or failure is personal ability of employees and executives. The most significant factor is emotions. Emotions play an important role in human success and affect all aspects of life. Every emotion has different kind of characteristics that can reflect in their work (Ahangar, 2012). The phenomenon of Emotional intelligence (EI) in the field of nursing is new to some extent. This concept was covered in 2002 in an English peer-reviewed journal (Kooker et al., 2007). After that researcher's started to develop interest in emotional intelligence (EI) as a mean to develop the various aspects of nursing including leadership, education and practice. The term emotional intelligence is used interchangeably as Emotional Quotient (EQ). Emotional Intelligence is a critical aspect that can predict human psychological well-being and life stability (Obaidi et al., 2018).

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The main determinant of patient's care quality is patient-centered care (PCC). According to Institute of Medicine, patient-centered care has six important aspects; safety, effectiveness, time, efficient, quality and equitable care. The quality of patient's care is revolving around the behavior and emotions of nurses. Dandona et al. (2002) stated that better awareness of healthcare among public increases the demand for quality of care and more health regulations of malpractices in public healthcare. The quality of healthcare practices is not possible without the help of nurses

It is evident that only technical competence and high intelligence are not sufficient for patient's quality of care. The role of emotional intelligence is very important in patient's care. Celik (2017) analyzed the association between emotional intelligence and patient's satisfaction. This study proposes that emotional intelligence is the significant quality indicator to improve the quality of healthcare services. In another study, Ezzatabadi et al. (2012) determined the role of nurse's emotional intelligence on hospital services quality. The outcome indicated that emotional intelligence has direct impact on service quality. Berghout et al. (2015) affirmed that emotional support dimension has been provided a transitional importance for patient-centered care.

Job involvement means the degree to which an employee gives importance to their job during their life, i.e. central life interest (Griffin et al., 2012). The concept of job involvement is explained through a well-known phrase "I live, eat and breathe my job" (DeCarufel and Schaan, 1990). As per literature, (Lin, 2013) stated the constructs that directly affect job involvement include training and professional competency. The presence of job negativism rises with experience and age of the respondents. In a number of studies, job involvement act as a mediator variable; Kalhor et al. (2018) studied the effect of work values on nurse's organizational commitment with mediating role of job involvement. The nurses with high job involvement were more committed to their organization than nurse having low job involvement. Biswas (2009) stated job involvement as attitudinal variables and their mediator impact on the association of psychological climate and turnover intention. The statistical analysis illustrated that job involvement acts as a quasi-mediator in the above stated relationship.

## 1.1   Problem Statement

The significance of emotional intelligence in healthcare setting seems obvious; when healthcare professional has a high level of emotional intelligence, they are more compassionate, strong and empathic, consequently showing more care for themselves and their patients. Indeed, different research studies indicated that nurses respond emotionally to their patient's (Nightingale et al., 2018; Raghubir, 2018). Healthcare sector is ever changing; at global level the nursing turnover is high as compared to other healthcare professions. The shortage of nurses not only has an impact on patient's quality of life but also has long term effect on economic and social ramifications (Ferrara et al., 2010). Nurse's emotional intelligence has been linked with patient's satisfaction and has been recognized as the quality indicator to enhance the quality of healthcare services (Gülay Ogelman et al., 2017). The nurse's communication skills and job satisfaction have a middle role in emotional intelligence and service quality (Ezzatabadi et al., 2012).

Nowadays, emotional intelligence has gained importance in nursing profession due to their high turnover rate that directly affects the quality of patient care. In previous research studies the association between nurse's emotional intelligence and patient's care were discussed mostly in developed countries. Most of the research papers discussed emotional intelligence in healthcare setting in boarder spectrum, like (Khan et al., 2017) analyzed the emotional intelligence role in

healthcare administration. Empirical studies that link nurse's emotional intelligence and patient -centered care are scarce in Pakistan healthcare sector. Another factor that gained importance is job involvement that significantly enhances the behavioral association. In spite of theoretical support, very limited literature was found on job involvement among healthcare personnel.

# 2 Literature Review

## 2.1 Emotional Intelligence in Nursing Profession

Nurses have a close and regular association with patients and their attendants and therefore they are exceptionally sensitive to needs, preferences and emotions of the patient's. Ferrara et al. (2010) affirmed that emotional intelligence in nursing profession affect their wellbeing and performance and is considered as one of the most influential factors in personal and organizational performance. In the review study of Birks and Watt (2007), they affirmed that nurses emotional intelligence efficiently improve the healthcare outcomes and patient-centered care. Furthermore, Miao et al. (2016) investigated the moderating role of emotional intelligence in the relationship of nurses' occupational burnout and patient-rated quality of care. The statistical results indicated that emotional intelligence as a moderator among nurses was not significantly correlated with occupational burnout and quality of care. The moderator role of emotional intelligence has also been investigated by Yao et al. (2018) among nurses. The results depicted that the effect of emotional intelligence among job demands, job resources and burnout were partially moderated. Shahnavazi et al. (2018) examined the effect of nurse's emotional intelligence on patient's quality of care during nursing education. The results indicated that in nursing education, emotional intelligence must be studied as a subject and incorporated as pre-qualifying nursing degree as well as professional development programs. Moreover, experienced nurses need to lead young nurses for applying emotional intelligence in routine patient's care practices.

Nightingale et al. (2018) studied the additional factors of emotional intelligence that affect the caring behavior of nurses and other healthcare staff. The results depicted that there were three main participants of emotional intelligence; physicians, nurses head and nurses. The emotional intelligence notation is less relevant to physicians and nurses head but more relevant to nurse's physical and emotional caring. Furthermore, age, experience, job satisfaction and burnout are the relevant factors of emotional intelligence and caring behavior. Another study by Raghubir (2018) clarified the attributes related to emotional intelligence in advance nursing practices. The common attribute of emotional intelligence are self-awareness, self-management, social awareness and social management in advance nursing practices. Emotional intelligence has an impact on job satisfaction, burnout, facilitates positive environment and helps manage stress level. Moreover, emotional intelligence has an explicit effect on patient's quality of care, critical thinking, decision making and overall well-being in advance nursing practice (Raghubir, 2018).

The extensive research work confirmed that nurses with high emotional intelligence may demonstrated more significant role and socially more engaged in patient's quality of care. Hence, nurses with high level of emotional intelligence had low level of stress and high level of perceived competency.

## 2.2   Patient Quality of Care

In the service sector, the meaning of quality is different from good markets and generally considered an abstract term. The measurement of service quality has become more difficult than quality of goods. In healthcare sector the quality term is measured through patient-centered care (PCC) (Berghout et al., 2015). The outcome of PCC improves patient survival, well-being and greater patient satisfaction. The role of healthcare professional is vital in delivering the patient's quality of care. Ezzatabadi et al. (2012) examined the role of nurse's emotional intelligence on the hospital quality of services. The consequences confirmed that emotional intelligence of nurses has a direct impact on hospital service quality. The outcome also confirmed that nurse's communication skills and job satisfaction act an intermediate between emotional intelligence and service quality association. Celik (2017) inspected the association between nurse's emotional intelligence and patient's satisfaction. The outcome confirmed that the association was significantly positive and recognized as the quality indicator to enhance quality of healthcare services.

Patient-centered care has generally been recognized as primary approach to measure the healthcare quality indicators. This approach highlights the relationship among healthcare personnel's, patients and their family. It provides benefits to healthcare professionals and patient's (Delaney, 2018). Kreindler et al. (2012) in their study examined the politics of patient-centered care. The systematic results indicated that PCC can be served as a weapon on an intergroup battlefield. Ismail et al. (2017) conducted a patient-pathway analysis to analyze the patient's-centered care at the basic healthcare levels in Pakistan. The results described that only few patients were satisfied with quality of services at primary healthcare levels. Hudson et al. (2004) emphasized that role of nurse in patient-centered care is that of a navigator. Outcome of this thematic analysis depicted that nurses were the central contact person among patients, physicians and attendants. Nurses as a navigator help patients in their own health-related decision making and advisory services.

A consumer-driven healthcare approach in patient-centered care for older patients was applied in Jayadevappa (2017) research work. The results acknowledge that patients-centered care effectively integrates value-based care that improves the community well-being and overall quality of care. Bertakis et al. (2000) analyzed that patients-centered care is associated with financial aspects of healthcare through an interactional analysis approach. The outcomes illustrated that patients-centered care efficiently lowers the annual medical care charges and decrease utilization of healthcare services. Mwachofi et al. (2011) analyzed the organizational and socioeconomic factors that affect patient's quality and safety. The findings depicted that factors like communication, fewer visible errors, support of information technology and confidential error reporting system improve the patient's quality of care and safety. The most influential work on patients-centered care was conducted by Picker institute in (1987) and established eight principles for patient-centered care; preferences, emotional support physical comfort, information & education, continuity & transition, coordination of care, access to care and family and friends.

## 2.3   Job Involvement as Mediator

The contribution of job involvement in work has gained considerable attention to many psychologists and researchers. In this research study, job involvement signifies the nurse's attitude toward their work and generally defines that the degree to which an individual identified psychologically at their workplace. Job involvement relates to current job and current employment. The mediating role of job involvement was identified by Ćulibrk et al. (2018) in transition

economies. This empirical research work identified the association between work characteristics, job satisfaction, job involvement and organizational obligation. The results indicated that job involvement partially mediates the association among variables. Kreindler et al. (2012) investigated the impact of work values on organizational commitment with mediating role of job involvement in nursing profession. The results indicated that job involvement has positive association with work values and organizational commitment. Furthermore, job involvement was an important element in mediation analysis. The individual with high job involvement had shown more commitment at their workplace. Another study by Biswas (2009) examined the association between psychological climate and turnover intention among managers/executives with two attitudinal variables job satisfaction and job involvement acting as mediator. The statistical outcome confirmed that job involvement can act as a mediator between manager's psychological climate and turnover. Job involvement has positive association with psychological climate and negative association with turnover intention.

Metcalfe (2017) examined the sale person perception toward their immediate leader's emotional intelligence that impacts their creativity with two attitudinal variables as mediator; job involvement and self-efficacy. The results depicted that job involvement has positive association with emotional intelligence and creativity. Moreover, job involvement mediates the association between emotional intelligence and creativity relationship. Mahmoud (2017) examined the mediating role of job involvement between job crafting and head nurses organizational citizenship behavior. The results depicted that job involvement has positive and significant association with job crafting and organizational citizenship behavior. Furthermore, job involvement has mediated the stated association.

In the dimensional analysis of Singh and Sarkar (2012) examined the association between psychological empowerment and innovative behavior with job involvement as mediator. The statistical results indicated that job involvement has partially mediated the innovative behavior and meaning as psychological empowerment dimension. Whereas, job involvement mediated the innovative behavior and non-work domain control (psychological empowerment dimension). No mediation was found between competence, impact, self-determination at job & organization level and innovative behavior. Ting (2014) examined the association between school internal marketing and organizational commitment of teachers with mediating role of job involvement and job satisfaction. The job involvement constructs sub-divided into quality upgrading, sacrifice of time and full devotion. The results indicated that job involvement partially mediates the association of internal marketing and teacher's commitment towards their organizations. Kappagoda et al. (2014) investigated the mediating role of job involvement between the relationship of organizational commitment and job performance. The results indicated that job involvement partially mediate the stated relationship.

## 2.4 Research Model

### 2.4.1 Research Hypotheses

$H_1$: The association between emotional intelligence and patient quality-of-care is positive and significant.

$H_2$: The association between emotional intelligence and job involvement is positive and significant.

$H_3$: The association between job involvement and patient quality-of-care is positive and significant.

$H_4$: Job involvement plays a mediating role between the association of emotional intelligence and patient's quality-of-care.

# 3    Research Methodology

## 3.1    Research Design

Deductive approach was used to study the constructs derived from theory. Research hypotheses are formulated from existing theory and knowledge relating to emotional intelligence and patient-centered care. Hence, the survey research strategy is used to study the association among constructs. Data are gathered through questionnaire in numeric form to understand the respondent's perspective. So, quantitative research choice is applied.

## 3.2    Population and Sample Size

In the current research target population is the nurses and patients, whereas nurses performing their job in Pakistan government hospitals, specifically in Punjab province are the accessible population.

The sample is calculated through an online website "Raosoft". The recommended final simple size is 292 with a population size of 1200 at 95% confidence level, 5% error of margin and 50% response distribution.

## 3.3    Sampling Technique

In the current research work, probability or representative sampling technique was used. This sampling technique divided into simple-random, systematic, stratified random, cluster and multi stage sampling.

## 3.4    Measurement Scale and Instruments

### 3.4.1    Emotional Intelligence (EI)

The measurement scale of emotional intelligence was adapted by the research of Cooper and Petrides (2010). There are six items in emotional intelligence; all concerned items are measured through five point likert scale from 01 to 05. Where 01 indicates strongly disagree, 03 represents neutral and 05 indicates strongly agree.

### 3.4.2    Job Involvement (JI)

The measurement scale of job involvement was adapted by Jans (1985) and Paterson and O'Driscoll (1990). There are six items in job involvement all items are measured through five point Likert scale from 01 to 05. Where 01 indicates strongly disagree, 03 represents neutral and 05 indicates strongly agree.

### 3.4.3 Patient Quality of Care

The measurement scale of quality of care was adapted of Salomon et al. (1999). There are seven items in patient's quality of care all items are measured through five point likert scale from 01 to 05. Where 01 indicates strongly disagree, 03 represents neutral and 05 indicates strongly agree.

# 4 Data Analysis and Result

Table 4.1: Reliability or Internal Consistency

| Emotional Intelligence (EI) | | Job Involvement (JI) | | Quality-of-Care (QoC) | |
|---|---|---|---|---|---|
| Reliability Statistics | | Reliability Statistics | | Reliability Statistics | |
| Cronbach's Alpha | N of Items | Cronbach's Alpha | N of Items | Cronbach's Alpha | N of Items |
| 0.796 | 6 | 0.803 | 6 | 0.866 | 7 |

The most frequent method to calculate the reliability or internal consistency of the constructs is Cronbach's Alpha. This technique required that scale items must be at a regular interval (Sreejesh et al., 2014). The value of alpha varies between 1 (perfect) and 0 (no reliability). As the rule of thumb, the Cronbach's Alpha value 0.80 is considered as the acceptable level of internal reliability but many researchers emphasized that 0.60 is the minimum value of internal reliability (Bryman and Becker, 2012).

In the above table, the alpha value of EI is 0.796 of 06 items, JI has alpha value 0.803 of 6 items and QoC alpha value is 0.866 of 7 items. These values indicated that all constructs have high internal consistency.

## 4.1 Correlation

Table 4.2: Correlation

| | | EI | JI | QoC |
|---|---|---|---|---|
| **EI** | Pearson Correlation | 1 | .661** | .637** |
| | Sig. (2-tailed) | | 0 | 0 |
| **JI** | Pearson Correlation | .661** | 1 | .703** |
| | Sig. (2-tailed) | 0 | | 0 |
| **QoC** | Pearson Correlation | .637** | .703** | 1 |
| | Sig. (2-tailed) | 0 | 0 | |

*\*\*. Correlation is significant at the 0.01 level (2-tailed).*
*b. Listwise N=235*

Correlation measurement is a precise estimate to measure the degree of relationship among all study constructs. Generally, correlation is measured through Pearson correlation (r) between interval variables. The value close to zero or zero means weak or no correlation; whereas value close to 1 means strong correlation. The direction of correlation is either positive or negative (Bryman and Becker, 2012).

In the above table the association between EI and QoC is 63% that means strong correlation in positive direction and the association between JI and QoC is 70% is also strong and positive (Wang et al., 1999).

## 4.2 Mediation Analysis using SPSS Process Tool

Preacher and Hayes (2008) presented the concept of conditional indirect effect of moderation mediation in five different models through formulas, SE and bootstrap approach. In this research study, research analysis the mediation process through "process" SPSS tools introduced by Hayes.

### 4.2.1 Assumption

To run the Hayes and Preacher (2010) process tools for mediation, there are two assumption; the association between X and Y are liner to minimize the error and normality of estimation error. The linearity and homoscedasticity assumption were checked through multiple regression residual values and standardized predicted.

As seen in the above scree plot, the regression appears linear since the loess curve centers close to zero along the entire x-axis. The researcher observes the above scree plot to examine the homoscedasticity, on Y-axis the data is equally spread. Hence data appears liner with no heteroscedasticity.

Now, the mediation process was run to measure the direct and indirect affect.

Table 4.3: Mediated Regression Analysis

| Predictors | Coefficient | T | P | LLCI | ULCI |
|---|---|---|---|---|---|
| EI JI | .7410 | 3.4527 | .000 | | |
| EI PQC | .3447 | 5.1856 | .000 | | |
| JI PQC | .5040 | 8.4981 | .000 | | |
| Direct Effect | .3447 | 5.1856 | .000 | .2137 | .4756 |
| Indirect Effect | .3735 | | | .2725 | .4807 |

Regression examination was applied to examine the theory that job involvement mediates the association of emotional intelligence and patient's quality of care. The results specified that emotional intelligence was an important predictor of job involvement, B=0.74, SE=0.055, p<0.05, and job involvement was a significant predictor of quality of care, B=0.504, SE=0.0593 p<0.05. These outcomes supported researcher meditational hypothesis. The impact of emotional intelligence on patient's quality of care was still significant in the presence of job involvement as mediator, B=0.345, SE=0.067 p<0.05. Hence, there was a partial mediation present in the proposed model. Approximately 55% of the variance in patient's quality of care was accounted by the predictors with $R^2 = 0.546$.
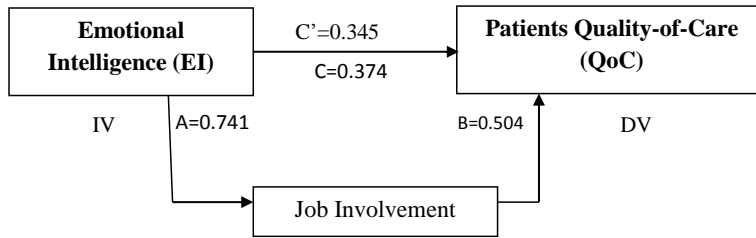
The direct effect of emotional intelligence on patient's quality of care B=0.34, SE=0.06 p<0.05. The passive effect was tested using bootstrap samples for percentile method with 5000 samples through Process macro version-3 (Hayes et al., 2017). The results depicted that indirect coefficient was significant, B=0.374, SE=0.052, 95% CI=0.27, 0.48. Hence the Emotional Intelligence was related with approximately 0.37 facts higher quality of care scores as facilitated by job involvement. It is observed by the results that job involvement as mediating variable has positive relationship between emotional intelligence and patient quality of care.

# 5  Discussion

The purpose of this research work was to bring light to the influence of nurse's emotional intelligence on patient's quality-of-care and via job involvement. There was number of studies that examined the role emotional intelligence in nursing profession however, there is a lack of evidence for research in Pakistan prospective. With the understanding of nurse's emotions through emotional intelligence various questions relating to patient's quality of care might be answered.

The statistical outcomes confirmed nurses' emotional intelligence positively affects patient's quality of care. Furthermore, the association between emotional intelligence and job involvement and patient's quality of care are also positive. Job involvement has a partial mediation impact in the said association. As for this current research study different research methods used for checking the validity and reliability of variables. For checking the reliability Cronbach's Alpha was used the result was significant. For observing the relationship among variables Pearson correlation method used and it shows that there is strong correlation relationship between all variables. For examining the mediation analysis among variables mediation analysis through regression used which shows that due to the involvement of mediating variable there is strong association between emotional intelligence and job involvement and also strong association between job involvement and patient quality of care where as the association between emotional intelligence and patient quality of care partial.

## 5.1  Future Recommendations

The future research work should be conducted in longitudinal study with large sample size of nurse. Also, a comparative research study will be organized to observe the nurse's emotional intelligence of public and private hospitals. In the current study the demographic factors did not reflect. The future researcher should use demographic factors as a predictor variable in healthcare sector.

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# Lease Financing as a Performance Driver: Evidence from Oil and Gas Sector of Pakistan

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**Abstract.** The sole aim of the study is to analyze the effect of the lease as a potential driver of firm's financial performance in oil and gas industry of Pakistan. The population for the current research study comprises of 18 listed companies of oil and gas sector of Pakistan but the final sample includes only nine companies which were using lease financing. The data were collected from the annual reports of companies from the year 2013 to 2017. Lease financing is used as an independent variable while firm performance as dependent variable defined by ROA. ordinary least square method was used. The study concludes that financing through the lease is not a significant driver of financial performance in oil and gas companies of Pakistan and also negatively affecting it rather these companies heavily rely on debt financing which decreases their performance. Only the firm size has a positive and significant effect on a firm's performance in this sector. The policy makers and management should consider lease financing as a potential factor of decreasing the firm performance in oil and gas industry of Pakistan for future consideration. The research study has considerable importance for the oil and gas sector of Pakistan as the first in this domain for the future research, especially for the lease financing.

**Key words**: Lease Financing, Firm Performance, Oil, and Gas Sector of Pakistan

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# 1 Introduction

## 1.1 Background of the Study

There is an alternative method of financing business assets (Salam, 2013). There are two parties involved in which one party is lessor and another party is a lessee. A lessee has the right to use the assets of the other party in the exchange of specific payment; its assets will also be available for purchase. In the Council of Islamic Ideals, the concept of taking formal rituals was presented to look at the history of leasing on 1980: In particular, in 1985, Islamic financial services were introduced from falling under the financial system. For this purpose, Government issued two notifications effective January 1, 1985 (Hameed et al., 2014) namely "banking and financial services ordinance, 1984" and "Banking companies Tribunal Ordinance, 1984" under

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which financial institutions will provide financial services. As mentioned earlier, usage of lease was initiated in 1985 in Pakistan's Islamic financial system economy. The financing of the Islamic financing lease model has also become a popular alternative source of funding. As a result of tax concessions, effective approval process, cash flow benefits and other characteristics, leasing financing has become the main source of financing. The leasing industry is rapidly growing into expensive assets, such as industrial machinery, automobiles, computer hardware, etc. The leasing industry comprises of thirty-three leasing companies and eight leasing Modaraba companies, with a business of 36 billion. According to (Ahmed et al., 2013) in the leasing sector in total other than public, immovable Assets outflows were estimated only 8 % in Pakistan which is so little if we look at the other countries which use 40% of lease sector. Lease financing plays a vital role in meeting the financial requirements of firms as well as economic growth and progress of the financial system of a country. There are various methods to measure the performance of a firm like according to Tobin-Q we can measure performance through Return on Asset (ROA) and Return on equity (Al-Matari et al., 2014); providing performance measures by profit margin, earning per share and dividend yield, etc. An element which affects firm performance the most is corporate governance. If proper corporate governance functions are established, it will attract investors as well as maximize company funds and the final result will increase firm performance. Effective corporate governance will protect from financial challenges and will help in achieving remarkable growth so corporate governance ca be considered a key element for firm performance.

## 1.2   Why lease financing is important for a firm?

There are many reasons for which lease financing have been considered important for firms are given below:

- Leased assets are easy to get and use as compared to arranging debt and then purchase an asset.

- Periodic payments of a lease are operating expense and it is a tax detectable expense.

- If you sign a contract directly with the owner, you can display the leased asset in a footnote to the balance sheet.

- It is a more flexible way of financing you can adjust with your financing needs (Kumar and Lease, 2011).

## 1.3   Purpose of the Study

The sole purpose of the study is empirically determining the effect of financing through the lease on the performance of firms in oil and gas industry of Pakistan for the period of study 2013 to 2017.

## 1.4   Significance of the Study

The current study is important for the policy makers, management, potential investors of oil and gas companies in Pakistan, as well as lease financers in order make an important decision for the enhancement of their companies' financial performance. They would be able to

analyze whether the financing of the lease has an important role in enhancing their firm's performance, if yes then at what direction they should expect? It will enhance the understanding of financial lease impact on their company's performance as well as will open the doors for future researchers in this domain.

## 2    Literature Review

Bello et al. (2016) studied the use of lease funding on the financial performance during (2005-2014) which is measured by R.O.A of Nigerian oil and gas sector. "Through Robust OLS analysis identify the effect of lease funding on return on assets". They used financial performance as the dependent variable and lease financing as an independent variable. Their findings show the substantial influence of financing through the lease on ROA of O&G companies in Nigeria. Munene (2014) considered the financing of lease impact on monetary performance for listed firms in the stock exchange of Nairobi. The author's research is made up of 60 listed companies, but only 30 companies and secondary data collected from 2009 to 2013. The researchers used financial leasing, liquidity, enterprise size and leverage as independent variables, while using financial performance as a relevant variable. The author used regression analysis to find that financial leasing and finance performance have a negative effect on company performance, but the short term (ability to repay short-term creditors) and long-term debt paying abilities have a positive influence on the financial performance of enterprises. Akinbola and Otoki (2012) studied the impact of lease financing options on the ability to earn a profit of SMEs firms in Nigeria. Questionnaire Survey method was used, based on multi-stage random sampling. 300 of the respondents were small and medium-sized business managers in Lagos, Nigeria. They used frequency, simple percentages to analyze data. The variance and correlation are analyzed. They found that leasing options had a positive influence on the profitability of SMEs. Salam (2013) concluded the financial performances of SMEs is substantially impacted by lease financing. Financial performance was measured in terms of net asset/return on small and medium enterprises. The authors used a multi-stage random sampling questionnaire consisting of 53 small and medium-sized enterprises. The researcher used independent and dependent variables, i.e. use of lease and financial performance, respectively. Studies have found that leasing financing and corporate performance positively affect each other. By using the regression analysis and correlation analyses, it is found that monetary performance of Bangladeshi SMEs is immensely affected by the decision of leasing financing. Hassan et al. (2012) studied the "economic movements of Pakistani leasing companies over the past period". The authors used data for research during 2001-2010. They found Pakistan's financial trends by measuring sales, pre-tax profits, capital payments, equity and total assets. The variance analysis method was used to compare and the multivariate linear regression method was adopted. The researchers used financial trends as dependent variables and leasing finance as independent variables. Their fines were at their highest point in 2008, showing a positive attitude towards the leasing industry, with the average number of assets exceeding the rupee, 6 billion in the year 2008. Few years later, sales and total assets gradually declined, political and economic uncertainty was the reasons for lack of investment by an investor in Pakistan.

Alam et al. (2011) studied the leasing industry in Pakistan during the period of 2006-2009. They found that companies which used lease classified differently on the basis of financial leasing than the ones based on R.O.E and R.O.A. They used the right of abode, net assets, net worth and total asset in the financing lease. They used the lease ratio as independent variables and

financial performance as related variables. They compared the financial ratios of the leasing company. Chimaleni et al. (2015) studied the relationship between the financing sources and the financial performance of SMEs in Lurambi countries. The population included 450 SMEs, out of which 88 small and medium-sized enterprises were taken as samples. The study found that corporate performance was a major impact of funding. They used correlation and multivariate regression to test their proposed hypotheses.

## 2.1   Hypotheses

The following three hypotheses have been developed after reviewing the relevant literature:
**Hypothesis 1**
$H_0$: There is a significant relationship between lease financing and firm performance.
$H_1$: There is an insignificant relationship between lease financing and firm performance
**Hypothesis 2**
$H_0$: Size of the firm has an insignificant effect on firm performance.
$H_1$: Size of the firm has a significant effect on firm performance.
**Hypothesis 3**
$H_0$: Capital structure has insignificance effect on firm performance.
$H_1$: Capital structure has significance effect on firm performance.

### 2.1.1   Model

$$ROA = \beta0 + \beta1(LF) + \beta2(FS) + \beta3(CS) + \varepsilon$$

Whereas;
LF = Lease Financing
FS = Firm Size
CS = Capital Structure

# 3   Research Methodology

## 3.1   Data and Sample

The sample consists of nine oil and gas companies. The data were collected from the financial statement of relevant companies, which measured firm performance during the period 2013 – 2017.

## 3.2   Variables

## 3.3   Independent Variable

Independent variable for this study is leased financing. Lease financing has been operationalized by lease financed asset to total asset ratio.

*Lease Financing = Leased assets/total assets*

### 3.3.1  Dependent Variable

Firm performance was taken as a dependent variable for this study. Firm performance was measured by R.O.A and R.O.A defined by the ratio of profit after tax to assets.

$$\textbf{\textit{Return on assets}} = \textit{Net profit/total assets}$$

### 3.3.2  Control Variable

For this research, firm size and debt to asset ratio has been used as control variables. Firm size is defined by a log of sales and debt to asset ratio has been defined by a ratio of debt to assets.

$$\textbf{\textit{Firm Size}} = \textit{log (sales)}$$

$$\textbf{\textit{Debt to Asset Ratio}} = \textit{Total debt/total assets}$$

# 4  Results & Discussion

This section contains results of the study. For the purpose of data analysis, descriptive statistics, correlation matrix, and regression analysis were applied in different sections.

## 4.1  Descriptive Statistics

For the proper summarization of the variables of the study, the descriptive statistics were applied to find out the different measures like mean, standard deviation, median, standard error of the mean, sample variance, Kurtosis, skewness, range, minimum, maximum, sum, and count. For this purpose, the following table was generated to analyze the current study:

Table 1 indicates the descriptive statistics for the current study. It shows that the average contribution of ROA in the current study is 8.06, lease financing as 1.38, firm size as 10.95 and finally debt ratio as 62.85 which indicates that on average debt ratio is contributing more in the current study. The median value is also high in case of debt ratio as 61.16 while the median values for other variables are; ROA = 5.52, lease financing = 0.42 and firm size = 11.18 in the current study.

## 4.2  Correlation Matrix

For the purpose of analyzing the association and direction of the relationship between the variables of the study, the Pearson correlation was computed and the output is given below in Table 2:

Table 2 indicates the association between the variables of the study like ROA, lease financing, firm size and Debt ratio. The table 2 indicates that there is a moderate negative association between lease financing and ROA having a value of the coefficient of Pearson correlation as -0.40 between the variables. The results also indicate a weak positive association between firm size and ROA. The value of the coefficient between the variable is 0.05 according to Pearson correlation. The table also indicates a strong and negative association between debt ratio and ROA. The value of the coefficient is -0.83 between the variables. There is a weak positive association between Firm size and Lease financing with the coefficient's value as 0.11 between

Table 4.1: Descriptive Statistics for the Variables

|  | ROA | Lease Financing | Firm Size | Debt Ratio |
|---|---|---|---|---|
| **Mean** | 8.06 | 1.38 | 10.95 | 62.85 |
| **SE** | 1.30 | 0.29 | 0.12 | 3.21 |
| **Median** | 5.52 | 0.42 | 11.18 | 61.16 |
| **SD** | 8.20 | 1.86 | 0.79 | 20.30 |
| **SV** | 67.19 | 3.47 | 0.62 | 412.28 |
| **Kurtosis** | 0.42 | 3.21 | 0.22 | -0.43 |
| **Skewness** | 1.05 | 1.91 | -0.97 | -0.61 |
| **Range** | 33.28 | 7.79 | 3.20 | 69.85 |
| **Min** | -4.64 | 0.04 | 8.88 | 20.26 |
| **Max** | 28.64 | 7.84 | 12.07 | 90.12 |
| **Sum** | 322.40 | 55.38 | 437.88 | 2514.13 |
| **Count** | 40.00 | 40.00 | 40.00 | 40.00 |

Table 4.2: Correlation Matrix for the Variables

|  | ROA | Lease Fin | Firm Size | Debt Ratio |
|---|---|---|---|---|
| **ROA** | 1 |  |  |  |
| **Lease Fin** | -0.40 | 1 |  |  |
| **Firm Size** | 0.05 | 0.11 | 1 |  |
| **Debt Ratio** | -0.83 | 0.44 | 0.23 | 1 |

the variables. There is a moderate positive association between debt ratio and lease financing having the value of coefficient as 0.44 between the variables. Finally, table 2 also indicates a weak positive association between debt ratio and firm size with the value of coefficient as 0.23 between the variables.

## 4.3  Regression Analysis

For the purpose of analyzing the linearity and strength of the relationship between dependent and independent variables, the regression analysis was being conducted and shown the output in the form of Model summary in Table 3, ANOVA in Table 4 and results of the coefficient in Table 5 as follow:

Table 3 indicates the summarized results of the model applied with an overall statistical significance of the model. The table shows R = .869 which indicates the overall correlation between the variables of the study. R-square = .755 indicates that approximately 76% variation in the dependent variables which is ROA (firm performance) is explained by the variation of indepen-

Table 4.3: Model Summary

| Model | R | R Sq | Adj R Sq | SE est |
|-------|-----|------|----------|--------|
| 1 | .869[a] | .755 | .734 | 4.2598 |

*a. Predictors: (Constant), LF, Firm Size, Debt Ratio*
*b. Dependent Variable: ROA*

dent variables like Lease financing, Firm size, and debt ratio. The remaining 24% variation in the firm performance is due to the unobserved factors which were not included in the model. The adjusted R-square = .734 indicates that with the more independent variables in the model, the variation in the firm performance of the Oil and Gas sector can adjust to 73% approximately. The value for the standard error of estimate = 4.26 approximately indicates the accuracy of estimates according to Table 3.

Table 4.4: ANOVA[a]

| Model | | SS | DF | MS | F | Sig. |
|-------|------|--------|----|--------|-------|--------|
| 1 | Reg | 2007.78 | 3 | 669.24 | 36.88 | .000[b] |
| | Resid | 653.26 | 36 | 18.15 | | |
| | Total | 2660.98 | 39 | | | |

*a. Dependent Variable: ROA*
*b. Predictors: (Constant), Lease Financing, Firm Size, Debt Ratio*

Table 4 indicates the results of ANOVA which is analysis of variation of the study. It shows that variation between the variables due to the regression model is 2007.78 and due to residual, the variation is 653.26, the total sum of square indicates the total variation in the study, which is 2660.8 as Sum of squares total. The Statistical fitness of the model is indicated by $F(3, 36.881)$ = 0.000 which indicates that there is a linear relationship between dependent and independent variables of the study.

Table 4.5: Coefficients

| Model | | Unstand Coeff | | Stand Coeff | t | Sig. |
|-------|------------|------|-------|------|--------|--------|
| | | Beta | Std. E | Beta | | |
| 1 | (Cons) | -5.87 | 10.50 | | -.560 | .579 |
| | Firm Size | 3.44 | 1.019 | .297 | 3.382 | .002 |
| | Debt Ratio | -.370 | .040 | -.906 | -9.278 | .000 |
| | Lease Fin | -.078 | .411 | -.018 | -.190 | .850 |

Table 5 indicates the coefficient results of the study. It shows that Firm size has highly significant and positive relationship with firm performance in the Oil and Gas industry of Pakistan

while the debt ratio has the negative and significant relationship with firm performance and the lease financing has the negative but insignificant relationship with firm performance. The coefficient value for firm size is .297 and the p-value is .002 showing that 1 unit increase in firm size will increase the firm performance by .297 which rejects the null hypothesis and accepts the alternative. The value of coefficient between debt ratio and firm size is -.906 with p-value as .000 as the highest significance value of the study shows that 1 unit increase in debt ratio will decrease the firm performance by .906 negatively. This rejects the null hypothesis and accepted the alternative. The value of the coefficient for the relationship between lease financing and firm performance is -.018 with the p-value as .850 showing a one-unit increase in lease financing, which may decrease the firm performance in Oil and Gas sector of Pakistan by .018. This result rejects the null hypothesis which shows a significant relationship between both variables and accepts the alternative hypothesis.

# 5    Conclusion

## 5.1    Summarized Findings

The results indicate that financial performance of firm is being negatively influenced by lease financing but question is why? Normally we see that lease financing has a positive impact on firm performance but the current study shows negative influence which means its effect changes from industry to industry. It does not mean that lease financing has a positive impact on every kind of industry like here in oil and gas industry of Pakistan. The reason might be that oil and gas industry's machinery requires a huge amount of capital and its impact will also be on lessor requirement for lease payment so they will demand more annual lease payment. So, in this firm expense will rise and its result will decrease its profitability. Munene (2014) also studied "the lease financing effect on a firm's financial performance listed in the stock exchange of Nairobi and their result shows that lease and firm size both have a negative impact on financial performance of the firm. It has also been concluded that firm financial performance is positively influenced by firm size, same as various authors already concluded that "firm performance is positively influenced by firm size". A study by Olawale et al. (2017) posited that there is a positive relationship between firm size and firm performance. Finally, the firm performance is positively and significantly influenced by capital structure of firm as concluded by Iavorskyi (2013), i.e. Financial leverage has a positive and significant impact on firm performance by disciplining managers, tax shield and signaling effect.

## 5.2    Practical Implications

The policy makers and management in the oil and gas sector of Pakistan should consider the possible effect of lease financing being negative, as well as debt ratio, , being significant as well as negative, while the effect of firm's size is positive and significant which will enhance the firm's performance in this industry.

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# Impact of Globalization on Budget Deficit, Inflation and Economic Growth: The Case of Pakistan

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**Abstract.** Globalization is a multi-dimensional phenomena with profound impact on different aspects of the modern world including economic, social, political, cultural, environmental, and geographical. This study is an attempt to analyze the subject that how various components of globalization i.e. trade openness, financial liberalization and labor mobility impact the economic dynamics of a developing country by affecting the performance of selected macroeconomic variables including budget deficit, inflation and economic growth. In this particular research we used the terms trade openness and liberalization along with financial openness, financial liberalization and financial development interchangeably. The purpose is to capture the overall impact irrespective of the nature as considering nature would lead to contradictory results. The increasing importance of labor flow is also given due attention in this study as human capital is an inevitable avenue for the effective and sustainable growth of any country. Various global factors effect budget deficits, inflation and economic growth with varying intensities depending upon the size and dynamics of the economy. The empirical analysis involves the time series data for years 1973-2014 for the case of Pakistan. The Autoregressive distributed lag (ARDL) methodology is used to derive the results and conclusion further seconded by the policy suggestions made in the light of this study.

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# 1 Introduction

Globalization is a multidimensional phenomenon that has now become a necessity of time. It has cultural, political, economic, environmental and many other aspects. The quick and rapid exchange of products, knowledge and information are the most blissful aspects of globalization, transforming the world in to a global village (Afzal, 2006). Most obvious and vital features of globalization grew in last decades of 19th century with the swift integration of the world economies and cultures. In 2000, International Monetary Fund (IMF), indicated the distinguished economic aspect of globalization as trade and transaction, capital and investment movements, labor flows together with environmental challenges such as global warming, water and air pollution, over fishing etc. Globalization is not new but its changing magnitude has profound implications that vary with economies depending upon their dynamics, structure and

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extent of openness (Taylor, 2006). More open economies have greater ability to capture new ideas (Obstfeld, 2004).

Economic part of the globalization has now become a process which enables the gradual integration of national economies. It has greatly facilitated the dismantling of barriers and diminishing of boundaries in order to make economic activities more convenient than ever. It has considerably raised the propensity to import and propensity to invest abroad, making a commendable contribution towards raising global trade volumes and investments globally. The exchange of fungible, exchangeable and/or switchable jobs, (Friedman, 2005), is the start of a new era towards global economic integration via outsourcing, in sourcing, home sourcing offshoring etc. The financial sector has also turned out to be more independent and more impactful due to various recent developments for which the credit to globalization is a must.

The study aims to investigate how various components of globalization (i.e. financial liberalization, trade openness and labor mobility) are impacting macroeconomic performances of various variables namely budget deficit, inflation and economic growth of a developing country. How various aspects of globalization are contributing to budget deficit of a country? What role globalization is playing in inflation dynamics for developing economies? How impact of globalization is incorporated in overall economic growth of developing countries like Pakistan? The current study shall try to find the answers of these research questions. The study could prove to be a great help for policy makers enhancing their understanding about the ways through which various components of globalization affect the dynamics of economy by means of macroeconomic indicators namely budget deficit, inflation and economic growth. It further provides a meaningful insight to students about the need to understand globalization and its implications for economies.

## 2   Literature Review

### 2.1   Globalization and Government Budget Deficits

Normally all governments are thought to live within their means, as going beyond means is onerous for the economy. The government budget deficit is thought as abnormal and undesirable that further paves way for various serious economic ills. Globalization has laid significant impact on the government budget deficits through trade openness, financial/capital liberalization and labor mobility. Trade openness and liberalization directly affects budget balances via terms of trade. The indirect channels like corruption, income inequalities, prejudices, etc. can also have profound implications for the budget balances. According to Dutch Disease Hypothesis various external economic shocks make governments behave in a certain way that contributes to budgetary imbalances (Collier and Gunning, 1999). However, the Political Pressure Argument suggests that cost which pertains to errors of foresight in case of global disturbances in trade patterns could worsen budget deficit problems (Alesina and Perotti, 1995).

It is important here to remember that there are some key distinctions that vary with natural openness and policy induced openness. The two might lead to conflicting results as far as their influence on budget balances is analyzed. The natural openness relies on structural determinants like country size and geographical characteristics. The policy induces openness is largely dependent upon decision makers (Combes and Saadi-Sedik, 2006). Current study has analyzed the effect of trade imbalances on improving/deteriorating the budget deficit irrespective of the nature of openness. The terms of trade instability is facilitated primarily by various

global economic factors. It is a fundamental determinant of outlook of any economy by gauging its macroeconomic performance.

Beggar your neighbor strategy is another way in which remedy by a country to cure economic ill tends to worsen the economic problem of the trading partner. It can work via trade impediments as restricting imports through quota or tariffs. Currency devaluation is another way that makes import more expensive and exports cheaper. In this way a country strategy can have profound impact on not mere domestic trade patterns but also on terms of trade of other trading partners. Economic internationalization, particularly, financial- side is known to exert downward pressure on budget deficit. Market participants are discouraged by the situation thinking large sustained budget deficit as a question to government's performance and proceeding inflation risks.

Financial internationalization offers greater access to opportunities of borrowing but also makes economies vulnerable towards greater market punishments. Singh (2000) defined capital account liberalization as the method through which nations tend to promote capital account liberalization. It is done by possible elimination of quantitative restrictions, like controls, taxes, subsidies that impede capital transactions, making them more favorable and convenient. It also essentially involved easing of various barriers on international financial transactions. Besides, it also facilitated the sale and purchase of real or financial assets across boundaries. Capital account is interchangeably used with capital and financial account throughout this study. The capital flows are advocated by both neo-classical and Keynesians differently; neo-classical advocated full capital account liberalization through Adam Smith's invisible hand assuming the automatic functioning of the price mechanism, while Keynesian on the contrary, proposed for government intervention keeping in view the very fact that the weak economic and institutional fundamentals cannot deal with short term capital flows effectively. This situation is more possible due to their speculative nature in developing countries which tended to deteriorate budget deficits of governments.

Globalization has an admirable role to contribute towards human capital development, promoting the skilled labor participation than the unskilled labor. Many services are now tradable, enhancing the opportunities of employment across the countries. IMF (2006) indicated that economic globalization over time depends greatly on human innovation and technological progress. Human capital proved to be another significant and vital avenue contributing for strong economies. Various analysis provide evidence that taxes paid by immigrants would not only offset any new spending, but also play an active role to reduce the deficits of the recipient and host economies. These immigrants also facilitate the economic activity within an economy by boosting demands and consumption aspects along with sharing the tax burden of the native citizens. It also has paved way for job creation, promoting innovation and utilizing the most talented workforce around the world. The skill of labor is very important tool to enable the transfer of technology from one part of the world to another.

Kim and Singal (2000) examined how insecurity from the international capital market led a government to tighten its budget deficit in case of free capital mobility and vice versa. Even the most conservative measure showed that government budget deficits reduced considerably if capital account liberalization were exogenously imposed. The countries with fixed exchange rate regime provided strong evidence of this disciplinary effect. It also proved valid for countries with weak central bank independence. On the contrary, the countries with flexible exchange rate regime negated the fact. Stiglitz (2000) examined financial aspects of globalization and maintained that the influx of hot money into and out of the country that so frequently followed after capital market liberalization aroused various insecurities. He further mentioned small devel-

oping countries were too feeble to keep pace with financial liberalization. Rapid capital market liberalization could not harness desired gain in these countries on account of their structural, functional and institutional weaknesses.

Combes and Saadi-Sedik (2006) revealed that the empirical influence of trade openness on budget balances is relatively strong despite ambiguous net effect. Trade openness made many economies more vulnerable to external shocks irrespective of the nature. Governments, including in developing countries, often fear the fact that their budget condition is already problematic and dropping tariffs lead to bigger budget shortfalls. For that reason, they resist liberalizing their trade regimes. Likewise, Aghion et al. (2007) analyzed the case of OECD countries for recurring dynamics of budget policies. They maintained that the financial development and openness level has positive relation with the cyclical budget policy. The recurring budget deficit has positive influence on budget policy in case of low financial development.

Ratha et al. (2005) investigated the twin-deficits theory for the case study of Indian economy and found that the budget deficit increases the expansion of imports within the economy. This situation tends to worsen the trade deficit as proposed by Keynesian. It also causes the domestic currency to appreciate due to surge in the domestic interest rates, which further contributed to trade deficits. Similarly, BAYRAK and Ömer (2012) analyzed the Twin deficits and the development process associated with it. They examined both the Keynesian Approach and Ricardian Equivalence Approach for the study. The empirical findings of the study revealed that there is a significant correlation between both short run and long run budget deficits and current account deficits.

A seminal contribution is made by Meyer and Shera (2015), describing that the remittances are one of the key paybacks of international migration. Workers' remittances provide a reliable channel and an important financial flow that greatly contributes towards progress of many developing countries. The free movement of labour helps the developing economies to gain important foreign currency revenue. In particular, migrants' transfer of funds, provided a suitable source of inflows of foreign currencies that can also be used to repay foreign debts and/or financing the budget deficits.

In order to shed an optimistic light on the complex linkages between globalization and budget deficit, Malit Jr and Naufal (2016) studied that for decline in world oil and gas prices, the workers remittances became a possibly feasible solution to address government budget deficits in the Gulf Cooperation Council (GCC) countries. The study also examined the reactions of several GCC regimes for long-term possible inferences on nationwide labor marketplaces and immigrants along with their families both in the destination and origin countries.

## 2.2 Globalization and Inflation

Inflation is an economic ill that can make economic activities harder for every sector of the economy. The poor who get no hedge against it are most vulnerable to horrible implications of inflation. Therefore it further distorts the resource allocation process due to increasing uncertainty involved in price mechanism. Monetary expansion, unexpected shocks in real and financial sector, increase in import prices and global inflationary patterns are main contributors of inflation. Inflation created uncertainty in economy retards economic growth. Friedman (2005) popular adage supports the fact "inflation is always and everywhere a monetary phenomenon" which is now finding new connotations. Globalization has shown wonders to promote deflation by providing better access to cheap labor force from labor abundant countries through sales of low cost goods. In Pakistan, it is often argued that there are many factors that contribute to-

wards the high rate of inflation . The few striking and notable reasons for increasing inflation are seinorage, fiscal imbalances, deficit financing via external internal borrowing, economic growth and exchange rate depreciation (Agha et al., 2006). Beggar thy neighbor strategy suggests that large economies can have considerable effect on inflation dynamics of many other economies. Inflation cycles are vulnerable to various global shocks through commodity, trade and financial channels.

Openness tends to reduce inflationary pressures usually through access to cheap imports and raw materials along with promoting domestic market competitions within an economy (Afzal, 2006). The positive impact of trade openness on inflation could result as an outcome of measures by policy makers, to capture the gains from international markets due to money growth. Thus they strive for monopolistic power in the international markets in this way. Also, financial openness in some studies provided negative relationship with the average inflation.

Ju and Wei (2010) analyzed that the financial openness shows negative linkages with the average inflation rates. They also revealed that there is no significant measurable effect of financial openness found on Government budget deficit. Sentance (2007) revealed that the response of domestic inflation to domestic capacity pressures is quite dampened by the increase in trade and specialization thereby, making it more sensitive to global shocks. The increasing competition dealing with diversified products from abroad can restrict the price setting capacity of companies to raise prices due to increasing domestic demand. Similarly the increased recognition of off shoring for production and access to cheaper worker from abroad also plays a significant role in domestic price regulation mechanism.

Borio and Filardo (2007) argued that the existing models of inflation are too "country-centric". It is observed that they are not taking into account the role of global factors that significantly influence the inflation. The increasing need of a more "globe-centric" approach depicting the swift integration of the world economies commonly referred to as "globalisation". They also studied various indicators of foreign influences on indigenous inflation e.g altering imports and change in oil prices. Furthermore, over the course of time, the influence of such global factors has been expanding, thereby becoming more dominant and significant, especially in the recent era.

Likewise, Guerrieri et al. (2010) estimated an open economy responses to change in competitive pressure from abroad and found that there is significant role of foreign competition on domestic inflation. By making a comparison between the unrestricted and restricted specifications, evidence supported the fact that foreign competition has significant influence on the behaviour of inflation in the traded goods sector. The results suggest that the domestic goods inflation is lowered by foreign competition by about 1 percentage point during 2000-2006. The results also provide supporting evidence against demand curves with a constant elasticity in the case of monopolistic competition.

Correspondingly, Badinger (2009) postulated that the globalization has a significant contribution towards reducing the worldwide inflation rate. One way to make reduction in inflation is possible by urging the policy makers to formulate strategies which are useful in achieving the stable inflation. He further analyzed the impact of variables for example real GDP growth, trade openness, short-term interest rate, actual Inflation and financial openness for various countries in his analysis. The study determined that the negative association between financial openness and trade openness in context of the inflationary pressures has for many countries. The result could not be found effective for the OECD markets.

As far as developing economies are concerend, Zakaria (2010) investigated the association between trade openness and inflation in case of Pakistan via employing Generalised Method of Moments (GMM) technique. The positive results pertained to the fact that openness and

inflation are greatly influenced by both country and time specific effect. Inflation is chiefly influenced by control variables such as fiscal deficit, exchange rate depreciation, money supply, terms of trade, foreign inflation, foreign debt and democracy. Other factors that contributed towards a country's inflation rate include better development and a shift from pegged to floating exchange rate regime..

Lotfalipour et al. (2013) studied the framework of trade openness and inflation rate. They provided evidence from different countries, comprising both negative and positive effects which openness exert on inflation rate. In contrast to Romer (1993), who demonstrated that a negative correlation existed between them, his study revealed the very fact that those countries are more exposed to higher rate of inflation which are engaged in international trade to a greater extent which further triggered the restrictions to achieve economic growth. He also came up with the conclusion that monetary authorities' policies, on account of possessing monopolistic power in the international market, can also positively impact inflation via trade openness so that benefits of monetary growth can be reaped.

## 2.3   Globalization and Economic Growth

Economic Growth is one of the most significant macroeconomic indicators to provide an insight in to the economic performance of a country. It clearly depicts the standing of a country in terms of economic performance in the world. Globalization is expected to enhance economic growth of a country by efficient and effective resource allocation, their utilization and harnessing maximum gains associated with growth. Globalization has the tendency to stabilize output by allowing producers to serve a more variegated global market rather than catering to a local market only. It is also observed that improvement and innovation in financial development levels over recent times have played a commendable role in decreasing transaction cost and increasing remittances for various economies stimulating growth in these countries. Kose et al. (2006) maintained that the openness as a result of distinction between de jure and de facto is a matter of great importance. The capital inflows of a country are considerably determined by the extent of capital control measures and sound disciplining. In this particular study, we overlook the nature specific outcome of defacto/dejure measure for empirical analysis. The purpose is to capture the impact of capital flows on the whole irrespective of the nature.

Another strand of literature links globalization to economic growth via global financial crisis. A prominent study in this regard is conducted by Asghar and Hussain (2014) revealed that the growth rate declines due to the sub-prime mortgage financial crisis 2007-08. They maintained that a considerable decline in economic growth was observed in most national economies around the world after the financial crisis of 2007-08. Financial sector across the globe is playing an important role to stabilize itself that further contributes to more output stability. However, it also makes financial institutions more vulnerable towards risks, transmitting financial shocks more swiftly across borders (Mishkin, 2006). Globalization is encouraging competition, innovation, diversification, structural and institutional reforms that enable markets to switch to better performances, thus promoting growth. Previous literature postulates that openness plays a crucial role in the efficient and effective resource allocation along with utilization of resources through comparative advantage which further leads to better Economic Growth (IMF, 2006).

Giuliano and Ruiz-Arranz (2009) maintained a vague relationship corresponding to economic growth exhibited by overseas remittances and financial innovations. By using cross-country data series for developing countries, they revealed the interaction between remittances and financial development and its impact on growth. The empirical analysis supports the fact

that remittances play a commendable role to promote growth in countries with less financial development levels. Besides, Shaikh and Shah (2008) concluded globalization as the rapidly growing integration of economies and societies around the world. Makhlouf and Mughal (2011) claimed that signs of the Dutch diseases exhibited by Pakistan's economy as a consequence of remittance inflows. Javid et al. (2012) examined not only the imperative role that remittances play but also its implications on economic growth and poverty alleviation in Pakistan using ARDL.

# 3    Research Methodology

## 3.1    Theoretical Framework

The impact of globalization on our selected macroeconomic variables i.e. budget deficit, inflation and economic growth is given in figure 3.1. It highlights various components of economic globalization that have profound impact on the performance of selected macroeconomic variables. The global economic disturbances like exchange rate fluctuations, demand/supply shocks etc. are now making inflation more sensitive to external disturbances like financial market crisis, oil price shocks etc. Various global economic shocks have considerably influenced the dynamics of inflationary process by impacting the incentives of central banks to anchor inflation (Mishkin, 2006). Large Budget deficit can have significant impact on inflation through money supply or formation of price expectation.

The flow of new technology from advanced countries requires skilled labor. The labor mobility and portion of skilled labor in the economy is a vital part of a growing economy. The improving levels of incomes as result of outsourcing, insourcing, home sourcing, offshoring etc. is also significantly contributing towards better economic performance. It is also found that increasing remittances inflow may have temporary shock on incomes and may contribute a significant role to amplify the growth process in the long-run (Arezki and Brückner, 2012). Also, shocks to remittances and lacking financial development levels are found to inversely impact the economic situation.

Globalization through increasing economic internationalization is offering more diversification, structural and institutional reforms, competition and challenges are offering economies wider opportunities to thrive. But at the same time it makes economies more vulnerable to global economic disturbances and crisis. It has now become an inevitable phenomenon, as a country cannot thrive in isolation anymore in this global age and more efforts are duly to be made on part of every country to benefit from globalization. Following the footsteps of Afzal (2006); Zakaria (2010), we developed the following empirical models for budget deficit, inflation and economic growth, we developed:

**Model 1**

$$\ln BD_t = \alpha_1 + \alpha_2 \, lnTOT_t + \alpha_3 \, lnFDI_t + \alpha_4 \, lnREM_t + \alpha_5 \, lnRGDP_t + \varepsilon_{1t} \qquad (1)$$

This is uniformly recognized that the trade openness tends to improve budget deficits by improving the current account deficits. The financial internationalization is also thought to improve deficits as it paves way for transfer of technology, generates employment and tax revenues, facilitates investments, improves and initiates human capital development in case of
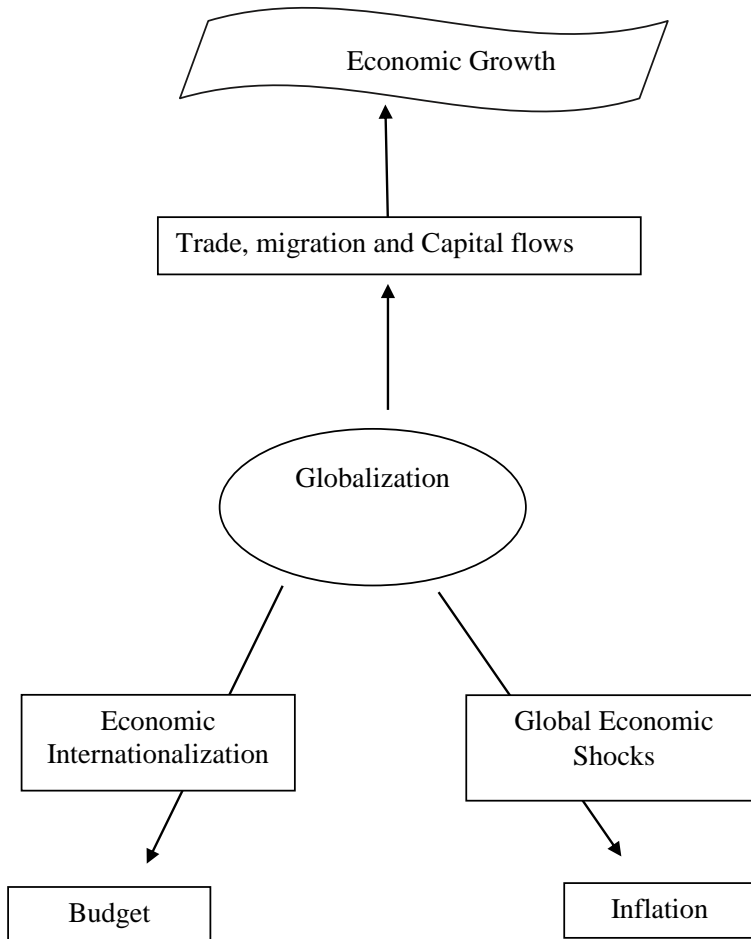
Figure 1: Economic globalization impacts on Budget Deficit, Inflation and Economic Growth

sound disciplining. Likewise, remittances are anticipated to improve budget deficit for sound framework as it facilitates the consumption and investment within an economy thereby improving the current account balances. The migrant funds transfer in foreign currency could also be used to repay the foreign debt. The budget deficit shows that government expenses exceed government revenues and investors perceive it as governments failing performance along with inflationary risks that result in negative relationship between budget deficit and real economic growth.

**Model 2**

$$\ln INF_t = \beta_1 + \beta_2 \, lnTOT_t + \beta_3 \, lnFDI_t + \beta_4 \, lnREM_t + \beta_5 \, lnRGDP_t + \varepsilon_{2t} \qquad (2)$$

Inflation causes uncertainty in the economy and also affects the costs of business in the economy, troubling every sector of economy. It also discourages foreign investors who lose confidence to invest in highly inflated economies. Trade openness is found to have inverse relation with the inflationary pressures by enhancing competitions and providing cheap alternatives from the other parts of the globe, which tends to control price hikes. It is also known to increase output productivity in the economy, which results in reducing inflationary pressures. The outcomes of trade openness are more time specific and country specific (Zakaria, 2010) depending upon dynamics of an economy. Financial internationalization is also found to have varying relationship with inflation depending upon the nature of an economy like level of financial development, policies, institutions etc. Guerrieri et al. (2010) found FDI to reduce inflationary pressures in traded good sector by offering more diversity and competition. Remittances tend to reduce inflationary pressures if they are utilized in a productive way. On the contrary, remittances can also contribute to surge demand pull inflation if they are not channelized to productive avenues.

## Model 3

$$lnRGDP_t = \varphi_1 + \varphi_2\, lnREM_t + \varphi_3\, lnFDI_t + \varphi_4\, lnTOT_t + DUM + \varepsilon_{3t} \tag{3}$$

The real GDP is an in inflation-corrected GDP that reflects the true picture of performance of each sector of an economy within a certain time period. Remittances are found to positively contribute to an economy growth by facilitating consumption, investment related activities in the economy along with increasing financial development in the economy. They improve the current account balances and thereby accelerate growth. In case they are not put to productive utilization, like their increased utilization in non-tradable goods sector (real estate housing), it triggers inflationary pressures, making exports less competitive and import more attractive which stampedes growth. Trade openness is anticipated to enhance growth by stimulating productivity, initiating competitions and easy access to cheap raw material and alternatives. The financial internationalization is also known to accelerate growth by transfer of new technologies, increased production and investment, generating employment opportunities and tax revenue.

## 3.2   Economic Methodology

It is important that we must check the stationary of data series under study before proceeding for empirical analysis. In case of empirical analysis of non stationary data results turn out to be spurious which is not desirable. In this context there is variety of tests available to check the stationarity of data and if found non stationary change them to stationary. These tests include Augmented Dickey Fuller test (ADF), Dickey Fuller test, Phillip –Perron test, KPSS test, ADF_GLS test etc. depending upon the need of data. The commonly use and valid for large data set test namely ADF test is used in this study to check the stationarity of our data series. If all variables are integrated of order one I(1) Johansen Multivariate Co-integration Methodology will be used. However, if variables are a mix I(0) and I(1) ,then Autoregressive Distributed Lag (ARDL) methodology will be applied.

## 3.3   Autoregressive Distributive Lag (ARDL) Approach To Cointegration

The empirical economic analysis in many studies makes use of various cointegration techniques. These techniques provide variety of choices like Johansen ,Johansen-Juselius and Pe-

saran and Pesaran ARDL approach that are utilized depending upon the requirement of the empirical analysis. These empirical analyses are used to determine the relationships between the dependent and independent variables. The ARDL model has some considerable and striking advantages over traditional cointegration approaches which make it more robust approach for cointegration. Firstly, as compared to other techniques this technique has appeared to be more robust in small or finite samples that comprise of 30 to 80 observations, giving it an edge. Secondly, whether regressors are of I(0) or I(1) or mutually integrated it can be utilized irrespectively, providing an additional advantage of using this technique. However, the ARDL procedure will turn out to be inefficient in the existence of I(2) or higher order series which needs to be sorted clearly. Thirdly, the ARDL Model provides the most parsimonious way of modeling which efficiently applies on general-to-specific framework, taking sufficient number of lags to capture the data generating process. It leads to the most parsimonious method that tends to qualify all the diagnostics, keeping the reduced form of model with significant variables and reducing the insignificant explanatory variables from the model. The ARDL in terms of unrestricted error correction model (UECM) can be represented as given in equation 3.4, equation 3.5 and equation 3.6 which are used to determine long run and short run relationships between variables.

$$\Delta lnBD_t = \alpha_0 + \sum \gamma_i \Delta lnBD_{t-i} + \sum \gamma_{2i} \Delta lnTOT_{t-i} + \sum Y_{3i} \Delta lnFDI_{t-i} + \sum \gamma_{4i} \Delta REM_{t-i} \quad (4)$$
$$+ \sum \gamma_{5i} \Delta lnRGDP_{t-i} + \theta_1 lnBD_{t-1} + \theta_2 lnTOT_{t-1} + \theta_3 lnFDI_{t-1} + \theta_4 lnREM_{t-1}$$
$$+ \theta_5 lnRGDP_{t-1} + \varepsilon_{1t}$$

$$\Delta lNF_t = \alpha_0 + \sum \lambda_i \Delta lNF_{t-i} + \sum \lambda_{2i} \Delta lnTOT_{t-i} + \sum \lambda_{3i} \Delta lnFDI_{t-i} + \sum \lambda_{4i} \Delta REM_{t-i} \quad (5)$$
$$+ \sum \lambda_{5i} \Delta RGDP_{t-i} + \theta_1 lNF_{t-1} + \theta_2 lnTOT_{t-1} + \theta_3 lnFDI_{t-1} + \theta_4 lnREM_{t-1}$$
$$+ \theta_5 lnRGDP_{t-1} \, \varepsilon_{1t}$$

$$\Delta lnRGDP_t = \alpha_0 + \sum Y_i \Delta lnRGDP_{t-i} + \sum Y_{2i} \Delta lnTOT_{t-i} + \sum Y_{3i} \Delta lnFDI_{t-i} \quad (6)$$
$$+ \sum Y_{4i} \Delta REM_{t-i} + \sum Y_{4i} \Delta DUM_{t-i} + \theta_1 lnRGDP_{t-1} + \theta_2 lnTOT_{t-1} + \theta_3 lnFDI_{t-1}$$
$$+ \theta_4 lnREM_{t-1} + \theta_5 lnDUM_{t-1} + \varepsilon_{1t}$$

The models provide the choice of different criteria like SBC, AIC, RBC and HQC. The model are selected on the basis of these criteria provided. The ARDL method can appropriately distinguish between dependent and explanatory variables and effectively tackles the issues arising from autocorrelation and endogeneity. Which provides it an edge over traditional cointegration method that often encounters the problem of endogeneity. ARDL cointegration estimates successfully compute both short run and long run relationships simultaneously , providing unbiased and efficient estimates for the selected models. It also works appropriately for single equations. The ARDL model takes into account the appropriate lags length as per requirement of the model and directs the data generating process in a general to specific modeling framework. In case there exists cointegration among variables in our models long run equations for model 1, model 2 and model 3 are given as:

$$lnBD_t = a_1 + \theta_1 ln(BD_i)_t + \theta_2 ln(TOT)_t + \theta_3 ln(FDI)_t \qquad (7)$$
$$+\theta_4 ln(REM)_t + \theta_5 ln(RGDP)_t + £BD_t$$

$$INF_t = a_1 + \theta_1(INF_i)_t + \theta_2 ln(FDI)_t + \theta_3 ln(TOT)_t \qquad (8)$$
$$+\theta_4 ln(REM)_t + \theta_5 ln(RGDP)_t + £_{INFt}$$

$$lnRGDP_t = a_1 + \theta_1 ln(RGDP_i)_t + \theta_2 ln(FDI)_t + \theta_3 ln(TOT)_t \qquad (9)$$
$$+\theta_4 ln(REM)_t + \theta_4 ln(DUM)_{t+} £_{GDPt}$$

where $\theta$ shows the long run relationships among the variables of models.

Once the lag order of the model is identified , ARDL model also allows the cointegration relationship to be estimated by OLS. ARDL approach also leads to construction of Error Correction Model (ECM). The ECM establishes short run dynamics adjustment with long run equilibrium without losing long run information. In other words it shows the speed of adjustment towards long run equilibrium. The above advantages of the ARDL technique clearly advocate the application of ARDL approach in the this study to analyze the relationship among the dependent and independent variables in three selected models. The hypothesis analysis leads to test the null hypothesis of no cointegration against the alternative hypothesis that there exists cointegration between all variables. For this purpose F-statistic has been used. This test is sensitive to the number of lags. The Error Correction Model (ECM) is constructed to examine and establish Short run and long run linkages. The restricted ECM description of the ARDL model is used to determine the short run dynamics , also given as under:

$$\Delta BD_t = \alpha_0 + \sum \alpha_i \Delta BD_{t-i} + \sum \beta_i \Delta TOT_{t-i} + \sum \beta_i \Delta FDI_{t-i} + \sum \beta_i \Delta REM_{t-i} \qquad (10)$$
$$+ \sum \beta_i \Delta RGDP_{t-i} + \mu ECM_{t-i} + v_t$$

$$\Delta INF_t = \alpha_0 + \sum \alpha_i \Delta INF_{t-i} + \sum \beta_i \Delta TOT_{t-i} + \sum \beta_i \Delta FDI_{t-i} + \sum \beta_i \Delta REM_{t-i} \qquad (11)$$
$$+\mu ECM_{t-i} + v_t$$

$$\Delta RGDP_t = \alpha_0 + \sum \alpha_i \Delta RGDP_{t-i} + \sum \beta_i \Delta TOT_{t-i} + \sum \beta_i \Delta FDI_{t-i} + \sum \beta_i \Delta REM_{t-i} \qquad (12)$$
$$+\mu ECM_{t-i} + v_t$$

The null hypothesis depicting no cointegration for the variables of budget deficit, inflation and economic growth against alternative research are given as:

**Model 1**

$H_0$: $\theta_1 = \theta_2 = \theta_3 = \theta_4 = 0$ *Globalization has no significant impact on Budget Deficit (No cointegration exists)*

$H_1$: $\theta_1 = \theta_2 = \theta_3 = \theta_4 \neq 0$ *Globalization has significant impact on Budget Deficit (Cointegration exists)*

**Model 2**

*$H_0$: $\lambda_1 = \lambda_2 = \lambda_3 = 0$ Globalization has no significant impact on inflation (No cointegration exists)*
*$H_1$: $\lambda_1 = \lambda_2 = \lambda_3 \neq 0$ Globalization has significant impact on inflation (Cointegration exists)*

**Model 3**

*$H_0$: $Y_1 = Y_2 = Y_3 = 0$ Globalization has no significant impact on Economic growth (No cointegration exists)*
*$H_{c1}$: $Y_1 = Y_2 = Y_3 \neq 0$ Globalization has significant impact on Economic growth (Cointegration exists)*

# 4 Empirical Analysis

## 4.1 Data Sources

The annual time series data, which was used in this study, were taken from 1972 to 2014. The data were obtained from international financial statistics CD-ROM (2014), Economic survey of Pakistan, Handbook of Statistics on Pakistan Economy 2010 and Annual reports of State Bank of Pakistan.

## 4.2 Unit Root Test

Table 4.1: ADF test Statistics

| Variables | ADF Test Statistics | | Order Of Integration |
|---|---|---|---|
| | ADF -LEVEL | ADF- $1^{st}$ DIFF | |
| LFDI | -3.98 | -3.98* | I (1) |
| lREM | -1.34 | -5.62* | I (1) |
| LTOT | -1.35 | -6.77 * | I (1) |
| LBD | -5.83 | -17.79* | I (1) |
| INF | -4.78** | -11.76 | I (0) |
| LRGDP | -3.61** | -4.18 | I (0) |

*indicates stationarity at 1%, **indicates stationarity at 5%*

## 4.3 Bounds Test

Since mixed stationarity results were obtained via ADF test, therefore, ARDL (Autoregressive distributed lag) method of cointegration is applied keeping in view the sample size and their respective stationarity levels. Further ARDL method was used to test for cointegration and check the F-stat results whether they fall between upper bound and lower bound or exceed the upper bound value. In case f-stat exceeds upper bound value, it was found that cointegration exists between dependent and independent variable of that respective model.

Table 4.2:  ARDL selected based on Schwartz (SC) Information Criterion

| MODEL (Equation) | F-STAT | DECISION |
|---|---|---|
| **1.LBD=f(LTOT,LREM,LFDI,LRGD)** | 5.08 | Cointegration |
| **2.INF=f(LFDI,LREM,LTOT,LRGDP)** | 6.11 | Cointegration |
| **3.LRGDP=f(LFDI,LTOT,LREM,DUM)** | 3.99 | Cointegration |

Model 1, table 4-2 show a long run relationship between dependent variable and independent variables. The F stat value is 5.08 which falls above upper bound of the critical value. This means that null hypothesis was rejected, i.e. relationship between dependent and independent variables in the long run relationship. Model 2 results F stat value is 6.11 which falls above upper bound of the critical value which lead to rejection of null hypothesis which is that no relationship exists between dependent and independent variables in the long run. Similarly, model 3 F stat value is 3.99 which falls above upper bound of the critical value.

## 4.4   Long Run Estimates

Table 4.3: Model 1

| Variable | Coefficient | Std. Error | T-Statistic | Prob. |
|---|---|---|---|---|
| **LTOT** | -0.629589 | 0.267407 | -2.354428 | 0.0267 |
| **LREM** | 0.406016 | 0.130285 | 3.116356 | 0.0046 |
| **LFDI** | 0.043243 | 0.107821 | 0.401064 | 0.6918 |
| **LRGDP** | -0.806834 | 0.225650 | -3.575594 | 0.0015 |
| **C** | 2.747794 | 7.470075 | 3.848394 | 0.0007 |

The results presented in table 4-3 for long run coefficients show that term of trade (TOT) is negatively and significantly related to budget deficit in the long run. The one percent increase in TOT decreases fiscal deficit by 0.6 percent. Combes and Saadi-Sedik (2006) also discussed the term of trade role in improving the budget deficit situation in developing countries. The increasing trade openness causes structural and institutional reforms which tend to improve trade policies and trade volumes that ultimately have positive role in decreasing budget deficit. Remittances coefficient in table 4-3 shows positive and significant relationship with budget deficit in long run. One percent increase in remittances raises deficit by 0.4 percent. This could be the result of remittances utilization for non-productive sectors of the economy along with non-tradable goods like real estate and property related investments by expats. The negative effect can be produced when remittances generate demand greater than the economy's capacity to produce. It can make an economy rely heavily on imports. The results also provide evidence that these remittances have induced consumption expenditures rather than private savings. This may further lead to balance of payments pressure, a slower growth of employment opportuni-

ties, and consequently to a further increase in the incentive to emigrate. These views are also supported by Meyer and Shera (2015).

Foreign direct investment table 4-3 is found to be positively and insignificantly linked to budget deficit in the long run for Pakistan. One percent increase in FDI is found to change deficit by 0.04 percent but has no significant impact in the long run. Agrawal and Khan (2011) maintained in his study that FDI in Pakistan is more directed to services and telecom sector and less directed to tradable sector,reducing the export oriented FDI, which has negligible impact on budget deficit. Ju and Wei (2010) found no significant measurable relationship between financial openness and budget deficit as it also greatly depends on institutions, policies, sound disciplining and better management etc. Additionally, the real GDP in table 4-3 is found to be negatively and significantly related to budget deficit for Pakistan in the long run. One percent increase in real GDP tends to reduce budget deficit significantly by 0.8 percent in the long run. The prolonged deficits show shortage of revenues and savings by national government and exceeding expenses which tend to reduce the real economic growth in the long run concluding an inverse relationship between the two.

Table 4.4: Model 2

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|----------|-------------|------------|-------------|-------|
| LTOT | 0.307236 | 0.152577 | 2.013643 | 0.0534 |
| LFDI | 0.095918 | 0.038622 | 2.483502 | 0.0190 |
| LREM | 0.055892 | 0.027017 | 2.068754 | 0.0476 |
| LRGDP | -0.177473 | 0.092123 | -1.926479 | 0.0639 |
| C | 0.931608 | 1.071740 | 0.869248 | 0.3918 |

Table 4.5: Model 3

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|----------|-------------|------------|-------------|-------|
| LTOT | 0.875187 | 0.504404 | 1.735091 | 0.0975 |
| LFDI | 0.579231 | 0.244420 | 2.369816 | 0.0275 |
| LREM | 0.238319 | 0.079500 | 2.997714 | 0.0069 |
| LRGDP | 0.291975 | 0.200587 | 1.455599 | 0.1603 |
| C | 1.191342 | 2.249674 | 0.529562 | 0.6020 |

## 4.5 Short Run Analysis

After long run analysis we are in need to develop Error Correction Models (ECM) for model 1, model 2 and model 3. An ECM essentially consists of two important aspects. The first aspect

deals with the estimation of short run coefficients. The second aspect deals with error correction term (ECT) depicting how ECT provides the feed back or the speed of adjustment. It gives an insight how short run dynamics converge towards the long run equilibrium in the model.

## Model 1: Short run Analysis of Budget Deficit

Table 4.6: Error Correction Representation for ARDL Model 1

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| D(LTOT) | 0.230932 | 0.195083 | 1.183761 | 0.2458 |
| D(LREM) | -0.493095 | 0.117425 | -4.199248 | 0.0002 |
| D(LREM(-1)) | -0.291801 | 0.122621 | -2.379700 | 0.0239 |
| D(LREM(-2)) | -0.394604 | 0.111777 | -3.530283 | 0.0014 |
| D(LFDI) | 0.159574 | 0.051968 | 3.070652 | 0.0045 |
| D(LFDI(-1)) | 0.044220 | 0.046913 | 0.942601 | 0.3534 |
| D(LRGDP) | -2.057254 | 1.367484 | -4.429488 | 0.0001 |
| D(LRGDP(-1)) | -1.545041 | 1.724489 | -3.215469 | 0.0031 |
| DUM08 | 0.399027 | 0.155991 | 2.558010 | 0.0158 |
| ECM_BD(-1) | 0.535414 | 0.091869 | 5.828050 | 0.0000 |
| R-squared | 0.666810 | Mean dependent var | -0.008699 | |
| Adjusted R-squared | 0.566853 | S.D. dependent var | 0.224940 | |
| S.E. of regression | 0.148042 | AIC | -0.770328 | |
| Sumsquared resid | 0.657490 | SIC | -0.348108 | |
| Log likelihood | 25.40655 | HIC | -0.617666 | |
| Durbin-Watson stat | 2.157349 | | | |

Table 4.7: Results of Diagnostic Tests of Model 1

| Diagnostic Test | F-Statistics | P-value |
|---|---|---|
| Serial Correlation (LM Test) | 0.32 | 0.72 |
| Heteroskedasticity (ARCH Test) | 1.37 | 0.24 |
| Normality Test (Jarque-Bera) | 3.37 | 0.19 |
| Model Specification (RAMSEY RESET) | 1.4 | 0.15 |

The estimated error correction model is stable as indicated by the CUSUM test. The CUSUM test is shown in figure 4.1. The recursive estimate shows that the actual path of error correction model lies within the five percent critical band ,appropriately qualifying CUSUM test. Various
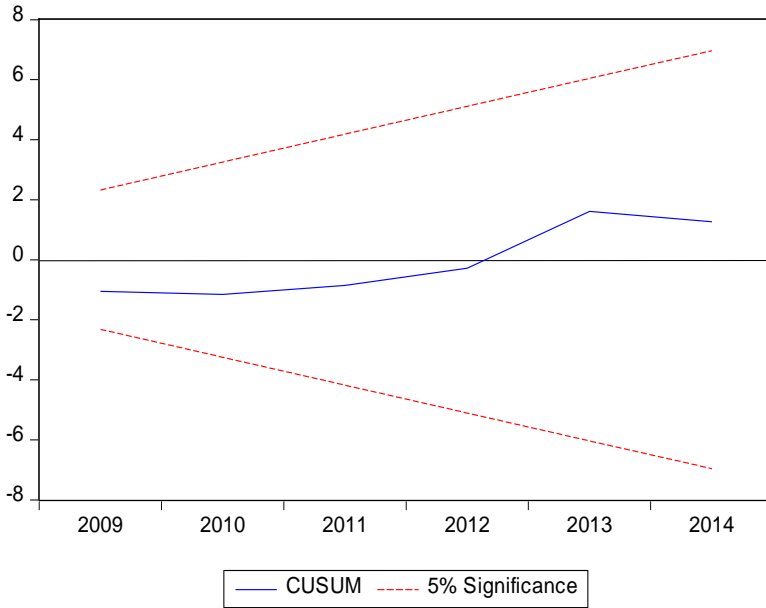
Figure 2:

disturbances in last few years have caused disturbances in the path but now the model 1 seems to catch up with the stability path smoothly as depicted in figure 4.1.

**Model 2: Short run Analysis of Inflation**

**Model 3: Short run Analysis of Gross Domestic Product**

# 5   Conclusion and Policy Recommendations

This study is primarily aimed to explore the empirical evidences regarding the impact of various components of globalization on the economy of Pakistan through the performance of its selected macro variables (Budget Deficit, Inflation and Economic Growth). The proxy used for trade openness was shown by term of trade. Foreign Direct Investment was used as proxy for financial liberalization as percentage of GDP , taken as percentage of GDP. Remittances as percentage of GDP was used as proxy to capture the impact of labor mobility. The ARDL Methodology was used to analyze short run and long run dynamics among variables of three models.

For model 1,The long run estimates show that term of trade appeared to be negatively significant with budget deficit. Increasing trade openness provides more reforms that not only facilitates trade volumes but also enhances domestic competitions, which reduces budgetary imbalances. Remittances show positively significant long run relationship with budget deficit that gives insight into unproductive utilization of the remittances mostly for non-tradable goods or real estate sector along with increasing reliance on imports that tends to increase budget deficits. FDI seems to be positively and insignificantly related to budget deficit. FDI also need to have sound structural and industrial base to harness maximum gains from them. Real GDP is found to have negatively significant relationship with budget deficit. Increasing budget deficits are

Table 4.8: Error Correction Representation for ARDL Model 2

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| D(LTOT) | 0.149800 | 0.047389 | 3.161056 | 0.0033 |
| D(LFDI) | 0.018444 | 0.007099 | 2.598202 | 0.0138 |
| D(LFDI(-1)) | -0.027455 | 0.006984 | -3.931330 | 0.0004 |
| D(LREM) | 0.017252 | 0.015956 | 0.454511 | 0.6523 |
| D(LRGDP) | -2.576809 | 2.112987 | 0.035382 | 0.9720 |
| DUM08 | 0.086474 | 0.023207 | 3.726145 | 0.0007 |
| ECM_INF(-1) | -0.178729 | 0.042244 | -4.230884 | 0.0002 |
| R-squared | 0.659004 | Mean dependent var | -0.003369 | |
| Adjusted R-squared | 0.598828 | S.D. dependent var | 0.035234 | |
| S.E. of regression | 0.022317 | AIC | -4.612711 | |
| Sum squared resid | 0.016933 | SIC | -4.320150 | |
| Log likelihood | 101.5606 | HIC | -4.506177 | |
| Durbin-Watson stat | 2.226986 | | | |

Table 4.9: Results for Diagnostic Tests for Model 2

| Diagnostic Test | F-Statistics | P-Value |
|---|---|---|
| Serial Correlation (LM Test) | 2.58 | 0.12 |
| Heteroskedasticity (ARCH Test) | 0.21 | 0.64 |
| Normality Test (Jarque-Bera) | 2.26 | 0.29 |
| Model Specification (RAMSEY RESET) | 0.97 | 0.34 |

associated with increasing default risks of governments along with inflationary risks that are detrimental to investment climate.

The short run trend results of model 1 showed positively insignificant relationship with budget deficit in the short run. Remittances are found to be negative and significant in the short run time period as they tend to increase consumption and investment prospects in economy thereby improving budget deficit. FDI has positively significant relationship with budget deficit in the short run as it generates more revenues for governments. The real GDP show negatively significant impact on budget deficit in the short run. The DUM08 used for financial crisis has positive and significant short run impact on budget deficit.

The long run estimates of model 2 for inflation concludes that term of trade significantly and positively contributes to inflationary pressures. The various economic ills like climate change, terrorism, energy crisis, political challenges have increased the costs of production that have sig-
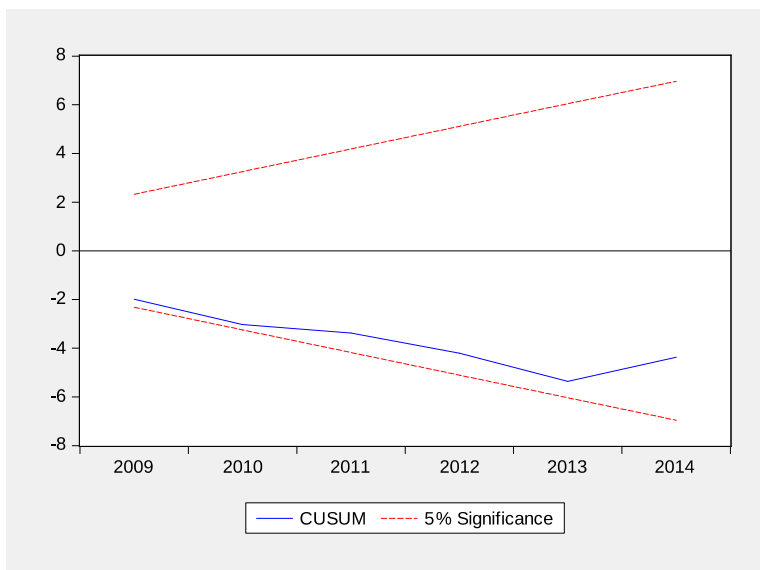
Figure 3:

Table 4.10: Error Correction Representation for ARDL Model 3

| Variables | Coefficients | Std. Error | t- Statistic | Prob. |
|---|---|---|---|---|
| D(LTOT) | 1.124067 | 0.032280 | 1.854583 | 0.0021 |
| D(LREM) | 0.776242 | 0.027981 | 2.936844 | 0.0553 |
| D(LFDI(-1)) | 0.462530 | 0.058301 | 0.953470 | 0.0588 |
| DUM08 | -0.027433 | 0.076531 | 0.976369 | 0.9560 |
| ECM_LRGDP(-1) | 1.051306 | 0.087676 | 1.110300 | 0.0000 |
| R-squared | 0.852907 | Mean dependent var | 0.099950 | |
| Adjusted R-squared | 0.387594 | S.D. dependent var | 0.018584 | |
| S.E. of regression | 0.064376 | AIC | 0.577668 | |
| Sum squared resid | 0.754327 | SIC | 0.319818 | |
| Log likelihood | 6.182876 | HIC | 0.078870 | |
| Durbin-Watson stat | 1.9878732 | | | |

nificantly contributed to inflation. The FDI also appears to have positively significant relationship with inflation in the long run. Remittances also turn out to be significantly and positively linked to inflation in the long run for Dutch disease effect. The increasing imports, unproductive use of remittances in non-tradable sector etc. fail to generate much economic gains from

Table 4.11: Results for Diagnostic Tests for Model 3

| Diagnostic Test | F-Statistics | P-Value |
|---|---|---|
| Serial Correlation (LM Test) | 1.34 | 0.27 |
| Heteroskedasticity (ARCH Test) | 3.99 | 0.52 |
| Normality Test (Jarque-Bera) | 1.58 | 0.45 |
| Model Specification (RAMSEY RESET) | 0.62 | 0.53 |
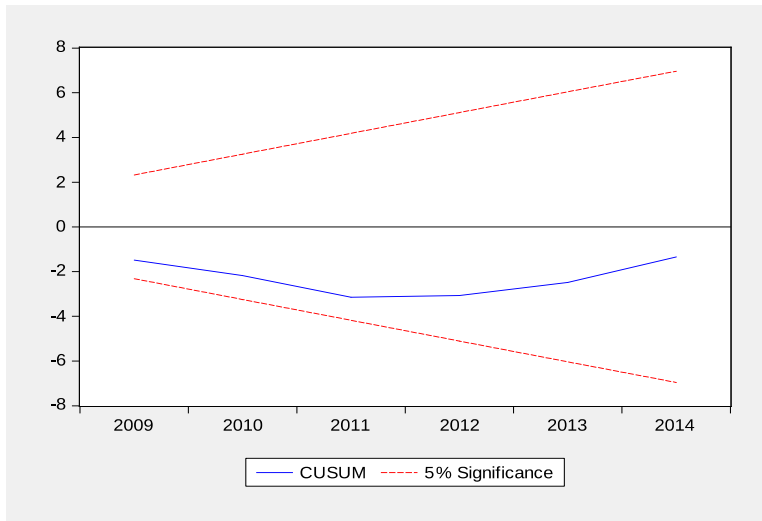


Figure 4: Research Framework

remittances. Remittances can pave way for demand pull inflation, increasing cost of business, reducing saving and investments hampering growth. Real growth shows negatively significant long run relationship with inflation which discourages investors to invest for increasing uncertainties related to economy that adversely affect all sections of society.

The short run analysis for model 2 shows positive and significant relationship between TOT and short run inflation trend. The increasing trade openness also makes economies more vulnerable to economic shocks and can expose such economies to increasing inflationary rates. FDI shows positively significant relationship with current inflation in empirical analysis. The first lag of FDI has negatively considerably significant impact on inflation in the short run. The FDI increases domestic competition facilitates revenue, employment, technology transfers that tend to reduce inflation. Remittances show positively insignificant short run relationship with inflation due to unproductive utilization of remittances. Real growth is negatively linked to inflation with insignificant impact in the short run. Dummy variable representing financial crisis 2008 implications show positively significant link with inflation in the short run.

The long run estimates of model 3 for real gross domestic product shows positively significant long run relationship between TOT and GDP. The trade openness paves way for compe-

tition, access to cheap raw material that increases output and growth in the long run. Remittances are significant and positively related to real growth. They accelerate economic activity by increasing investment, consumption, generating more employment etc. that enhance growth. FDI is positively and significantly related to real growth by generating revenue, employment, human capital development, technology transfers etc. The dummy variable used for post 9/11 aid coming to Pakistan shows positively insignificant relationship with real growth.

The short run results for model 3 show that term of trade is positively and significantly linked to short run real GDP. Increasing trade openness provides access to cheap raw resources and diversified global markets that improve real growth in economies. Remittances also show significant and positive short run relationship with growth. Remittances promote financial development along with increasing economic activities that improve real growth. FDI in lag 1 is found to be significantly related to real growth in short run with positive impact. FDI through revenue generation, employment creation and technology transfers accelerate real growth. The dummy for financial crisis appear to be negatively insignificant with real growth in the short run.

## 5.1   Policy Recommendations

In the light of our empirical findings government needs to take various steps to initiate various structural and institutional reforms to harness maximum gains from FDI and attract more FDI. Budget deficits are not a problem as long resources are utilized for productive use. The governments need to cut down their lavish and unnecessary expenditures diverting them to productive expenditures like development expenditures. It will facilitate economic activity and improve the macroeconomic performance levels also. Government should also try to improve trade policies, giving special attention to export sector that is need of the hour to meet the global needs. It can improve export to import ratio thereby improving the performance of trade sector and reducing the economic burden of budget deficit. It is essentially required to improve our exports making them meet the global requirements to improve our current account that can also improve deficits .The deficits can also be greatly reduced by effective accountability of deficit utilization by the governments and making the productive use of the revenues. The meaningful and effective reforms in financial sector can also improve our deficit position. The government must pay special attention to control the illegal means like corruption, swindle, and nepotism to encourage and attract global investors towards healthy investment environment. Special privileges should be given to industrial sectors dealing in tradable goods to improve their production and make export sector more competitive. In addition special arrangements should be made to utilize remittances to more productive uses that can generate fruitful gains for economy. It is now essential to realize that world is more interconnected at present and we must be ready to face the global challenges along with enthusiasm to harness maximum possible gains of globalization.

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# The Structure of Human Capital Management Practices in the Higher Education System of Pakistan

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**Abstract.** This study attempts to explore the structure of human capital management (HCM) practices in the higher education system of Pakistan. The study does not consider the respondents to be conceptually aware of the concept of HCM, yet the prevailing practice within the HRM system might reflect a transition towards HCM. We collected our data using a self-administered online questionnaire from 299 employees in the University of Pakistan. The data thus collected were analyzed using an exploratory factor analysis first and then a confirmatory factor analysis to further validate the structure highlighted in the data in the exploratory factor analysis. We found that there does exist a structure that can be related to HCM in the universities of Pakistan. Five components, as such, were highlighted in our analysis though we had initially added seven to the original survey. The component of talent was merged into knowledge and the component of retention was merged into supporting activities. This suggested the relevant correlations between these pairs. Thus, the structure suggests that Pakistani Higher Institutes (HIs) look for talent within education and knowledge rather than any separable aspect of human capital. Moreover, we found the retention is embedded into supporting activities. The study implicitly finds and claims that the mindset towards the implication of HCM is developing and performance evaluation and reward system are being considered as important trends in HIs of Pakistan. The study mainly focused on all the universities of Pakistan. It might be possible that the situation is different in the private and public sector HIs.

**Key words**: Human Capital Management; Higher Education Institutions of Pakistan

## 1 Introduction

Human capital management (HCM) is relatively a different way to view human resource management that considers the workforce of an organization as important as the strategic assets in which long-term and large investment is not only desirable but also profitable (Schultz, 1961). The investment takes place in enhancing the knowledge base, skill level, and other capabilities and competencies of the employees and thus is a source of strategic value and competitive

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advantage (Soukiazis and Antunes, 2012). Though, the overall concept of human capital management is not fully conceptualized, it is often used to refer to attraction, development and retention of workforce capabilities through consistent investment which yields monetary returns (Afiouni, 2013) that embeds education, skills and innovation of human resource (Kogut and Zander, 1992). Human capital management also makes use of the entrepreneurship, knowledge of science and technology in addition to the attitudes, values and beliefs of employees (Wright et al., 2001, 1994).

Investment in higher education sector in any country has a key role to play in the development of human capital which then is reflected in the overall development of a country realized in terms of a holistic betterment in economic, political, social and technological enhancement (Altbach, 1991; Fagerlind and Saha, 1989; Haji Ahmad, 2011; Ismail and Abdullah, 2011; Saha, 1991). It goes without saying that a country depends heavily on its seats of higher learning to develop a nation with knowledge, skills, dexterity, professionalism and above all creativity through academic excellence in research (Altbach, 1991; Bazir and Ahmad, 2014; Ismail and Abdullah, 2011; Murat, 2013).

The economists view universities as a long-term investment which is very profitable especially in supplying trained manpower in various fields (Bazir and Ahmad, 2014; Ismail, 2009). But at the same time these seats of learning enjoy the privilege of having the best talent of the country who are the most educated and the learned class of a country. So, it becomes equally important to learn how the concepts of human capital management are applied in such elite houses of learning. This is why the government of Pakistan has been seriously working on the improvement of higher education since 2000 through its organ of Higher Education Commission (HEC).

By virtue of this, we propose this study to look into the structure of human capital management in universities of Pakistan. Though in this study, we do not consider the respondent to be aware of the concept of HCM, universities in Pakistan pursue a certain human resource management practices which can shed some light towards exploring HCM as well; in turn, this particular structure supports the process of producing and developing the human capital-workforce capabilities. On top of that, public as well as private universities, regardless of their respective cluster follow guidelines from HEC for the purpose of developing human capitals for various areas of expertise. Nonetheless, there might be some individualistic aspects in every university that may not be inspired by HEC policies. Therefore, this research aims to investigate the general structure of human capital management practices in the public sector universities of Pakistan.

A similar study has been carried out in Malaysia by AL KINDI (2017), who in his research examining the roles of universities in nation development revealed that government officers, university administrators and lecturers agreed that HCM-related activities conducted in Malaysian public universities can have immense impact on the overall economy. Thus, an understanding of the structure of human capital management is important in any economy (Boadway and Keen, 2003). In Pakistan, however, there is no study that reveals the structure of human capital development in the universities. There is sufficient literature that makes us bear in mind that this study carries importance since universities are the hubs of economic development (Ismail, 2009; Kirby-Harris, 2003) and thus embark on this research so that the efforts of universities in development excellence is measured and important conclusions drawn. This will not only be instrumental for self-assessment of universities but also for HEC in developing future universities guidelines. Though the study itself will not offer any insight into the economic side of the HCM, it brings out the foundational element.

# 2   Literature Review

The importance of Human Capital Management was first recognized by Schultz (1961). However so far, the management of HC is not well recognized (Krueger and Lindahl, 2001). Though Schultz (1961) emphasized on investment in human capital (HC), the definition has now included knowledge, skills, attributes besides competencies of HR (OECD 2001, g.18). HC is source of competitive advantage (Soukiazis and Antunes, 2012). The exact concept of HC has not yet been fully conceptualized (Unger et al., 2011). Therefore, some claim that the two terms HRM and HCM can be used interchangeably (Afiouni, 2013). Though there is a debate as to whether HRM and HCM are the same, there are some fundamental aspects in which the two differ. The first landmark in this differentiation is the mindset towards human ability as the important asset rather than just a borrowed effort.

## 2.1   Shift in the Mindset

A nation's progression and abundance are not measured by the quantity of natural resources but the quality of creative human resources that smooth the society development efforts in various areas of life (SHAH, 2016). This requires developing a holistic approach towards human resource (Lombardi and Laurano, 2013), policies supporting education, intellectual and human development needs (Ismail and Abdullah, 2011) and a strategic importance to workforce (Lombardi and Laurano, 2013). In fact, this requires a gradual yet great change in the mindset about the contribution to human resource as capital (Lawler, 2008) through proactive partnership with stakeholders (Lombardi and Laurano, 2013).

Today's organizations are facing greater uncertainty that requires them to make smarter decision especially in talent management (Lombardi and Laurano, 2013). The organic growth of organization results in pressures that make them go for planning simply beyond HRM as human become the central force for competitive advantage (Lombardi and Laurano, 2013). and values creation (Afiouni, 2013). Organizational strategy must be aligned with HCM objectives relating to talent, knowledge and other HCM priorities to boost performance (Lombardi and Laurano, 2013).

## 2.2   Knowledge Enhancement

Education is an important measure of human capital development (Judson, 2002; Soukiazis and Antunes, 2012; Wolff, 2000). Changes in work organization may lead to knowledge improvement (Collins and Smith, 2006). Wright et al. (2001) identify knowledge stocks (The human capital pool) and knowledge flows (Workers' behavior resulting from a firm's HRM system) as parts of an HR system. Østergaard et al. (2011) consider knowledge as important driver of HC development. Innovation and creativity improve HC and are themselves outcomes of effective HCM (De Winne and Sels, 2010; Hong et al., 2013).

The allocation of courses should follow a strategy (Lombardi and Laurano, 2013) and plan to develop human capital (Ismail and Abdullah, 2011) and their capabilities for better career (Lombardi and Laurano, 2013). Improvements in public speaking (Ismail and Abdullah, 2011) with emphasis on critical thinking in activities, encouraged study and facilitate education improvements (Ismail and Abdullah, 2011; Soukiazis and Antunes, 2012) in short creating a learning organization (Lombardi and Laurano, 2013). Following that employees need to apply their

newly gained education towards improving organization (Ismail and Abdullah, 2011). The resulting performance needs to be embedded in improved quality as well job-filling satisfactorily (Lombardi and Laurano, 2013).

## 2.3 Retention

One of the fundamental tenets of HCM is to retain its human capital if the organization wants to utilize its value to the maximum. The concept of retention differs from HRM as it focuses on the retention of talent and abilities rather than humans. There are several important suggestions that make this possible. The sources of retention are a shift in behavior (Isaac et al., 2009; Santos-Rodrigues et al., 2010) that may come from several unexpected sources. Some of them include provision of proper office space (some degree of privacy), ensuring technical ease, lifting administrative burden (Lombardi and Laurano, 2013). However, the most important and direct source of retention comes from motivation of employees (Santos-Rodrigues et al., 2010). This encourages employees to deploy their knowledge to attain organizational goals (Isaac et al., 2009; Santos-Rodrigues et al., 2010). However, this engagement should be viewed as a business initiative at the strategic level rather than merely a HR initiative (Lombardi and Laurano, 2013).

## 2.4 Compensation

HCM needs to be viewed as a financial activity with investment perspective in employees that return profits to organization. Thus, data should be compiled and analyzed in a cost-benefit sense. Lombardi and Laurano (2013) have reported that a divide between the HR data and financial data has created inaccuracies and inefficiencies. The performance of employees can then be aligned with their compensation plans. Again, the concept of compensation in HCM focuses on the reward for ability and talent rather than physical effort only.

## 2.5 Supporting System

When it comes to performance of employees associated facilities play important roles in organization's achievements. In case of universities it is important that employees are equipped with every possible supporting tools and equipment that match their capabilities. Some of these include library facilities, internet access, counselling services, online resources, transport facilities, Lecture halls, photocopying (Ismail and Abdullah, 2011). Supportive initiatives have important implications of HCM development (Lombardi and Laurano, 2013).

## 2.6 Performance Appraisal

HCM is all about value creation and development of competitive advantage through human capital. This value-creation ability needs to be induced through organizational ingenuities which are developed through improved coordination and idea sharing (Ukko et al., 2007; Wilson and Western, 2000), public speaking, performance in teams, research skills and creative thinking (Ismail and Abdullah, 2011). However, this Data development of human capital competencies should be data-oriented (Lombardi and Laurano, 2013). Further, organizations need to develop innovative control measures rather than standardized appraisal methods (Kearns, 2005; Lombardi and Laurano, 2013; Nalbantian et al., 2003).

# 3   Methodology

## 3.1   Participants

The study was exploratory in nature with an aim to find out the structure of HCM practices in higher education institutes of Pakistan, using factor analysis. The population consisted of all the employees of the universities of Pakistan. The data were quantitative and a 5-point Likert scale was used to collect the data. In order to collect the data, a questionnaire was developed using google forms (available: http://goo.gl/forms/DF2uip0CKS) and was sent through emails (available on university's websites) to over 1000 respondents. 299 university employees responded to the questionnaire.

## 3.2   Instrument

The questionnaire consisted of two sections: (1) the demographics and (2) the scaled questions. The demographic section contained: name, department, organization, cadre (faculty or admin), gender, nature of job whether permanent or contract and education. The second section was divided into several sections with at least 4 questions about different aspects including: the mindset for HCM, talent management, knowledge management, retention, performance appraisal, compensation and supporting practices- each highlighting HCM practices through questions of Likert scale. The section so developed was extracted from relevant literature review. The five-point scale consisted of the options: strongly disagree (1); somewhat disagree (2); neutral/ no idea (3); somewhat agree (4) strongly agree (5).

## 3.3   Procedure

The first step in the analysis of the data was to explore the overall structure as proposed in the literature review. Subsequently, in order to ascertain the reliability and internal consistency of the sample we ran Cronbach's Alpha using SPSS v25. So, at first, in order to highlight the structure of HCM in the higher education institutes of Pakistan we ran the exploratory factor analysis (EFA) in SPSS v25 for data reduction and structure exploration. Then to test the validity of the structure as explored in the EFA, confirmatory factor analysis was run in AMOS v24. The dimensions highlighted would help indicate the underlying structure of HCM. KMO and Brtlett's Test of Sphericity was used to find out the adequacy of sample for factor analysis.

# 4   Results and Discussion

## 4.1   Sample Adequacy

The KMO statistic measures how adequate the sample is in order to run factor analysis for each variable individually and also in total (Dziuban and Shirkey, 1974; Kaiser, 1970). The statistic varies between 0 and 1 getting adequate as it gets higher. It is acceptable over 0.6 to indicate that the sample is adequate; however, the significance level should be less than 0.05 so as to conduct factor analysis. The measure also provides guidelines for the determination of the value of the statistics. For any value greater than 0.90, the value is marvelous, in the 0.80's, it is meritorious, in the 0.70's it is middling, in the 0.60's it is mediocre, in the 0.50's it is miserable and below this it is unacceptable. In our case the KMO measure is 0.877 which is meritorious and

the significance is 0.00; thus, our sample is very adequate to run factor analysis. The summary of KMO is given in table 4.1 below:

Table 4.1: KMO and Bartlett's Test

| | |
|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | .877 |
| Bartlett's Test of Sphericity Approx. Chi-Square | 10059.879 |
| Df | 630 |
| Sig. | .000 |

## 4.2 Exploratory Factor Analysis

The first step in analyzing the structure in the overall dataset about the HCM practices in the Pakistani Higher education institutes was to run an exploratory factor analysis in SPSS v25. Our analysis returned 5 components using principal component analysis as the default data reduction technique in SPSS with varimax rotation. The five components included the mindset about HCM, compensation and performance appraisal. Besides, two components that reduced two of the proposed factors in each. These included knowledge and talent as well as supporting activities and retention. Table 2 gives the results of the exploratory factor analysis.

## 4.3 Reliability Statistics

The overall reliability of the data was tested using the Cronbach's alpha for each of the 5 dimensions retained in the exploratory factor analysis. The summary of all reliability and the variance is given in table 4.2. Thus, no issues with the reliability of the data were found.

## 4.4 CFA Results

The overall model fit indexes were very good (CMIN/DF=2.671; DFI=.902; TLI=,908; CFI=.922; RMSEA=.57; PCLOSE=0.54). Therefore, the overall model was a good fit.

# 5 Discussion

We came to some important discovery in our analysis of the data collected to highlight the structure of HCM practices in the HIs of Pakistan. Firstly, we discovered that there is some structure in which these practices are followed. As such, 5 factors were highlighted that could be distinguished from one another on the basis of their internal consistency and correlations. There is some evidence of a mindset change in the HIs about the way the higher education system in Pakistan about a transition towards HCM from HRM (Afiouni, 2013; Tanzharikova, 2012). We generalize this since the tone of our questions directed us towards this conclusion.

Secondly, there is an important merger in the perception about knowledge and talent as the two constructs fall within one component in the CFA. Thus, we can argue that the distinction between knowledge and talent as two separable aspects of human capital is vanishing (Collins and Smith, 2006; De Winne and Sels, 2010; Ismail and Abdullah, 2011). This is since in the EFA- which

Table 4.2: Results of the Exploratory Factor Analysis

| | Component | | | | | Communalities |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 5 | 6 | |
| Know_4 | 0.943 | | | | | 0.786 |
| Know_5 | 0.943 | | | | | 0.828 |
| Know_2 | 0.942 | | | | | 0.783 |
| Know_1 | 0.929 | | | | | 0.774 |
| Know_3 | 0.920 | | | | | 0.488 |
| Know_6 | 0.913 | | | | | 0.537 |
| Tal_3 | 0.932 | | | | | 0.864 |
| Tal_4 | 0.932 | | | | | 0.817 |
| Tal_5 | 0.845 | | | | | 0.812 |
| Tal_6 | 0.826 | | | | | 0.724 |
| Tal_2 | 0.694 | | | | | 0.866 |
| Tal_1 | 0.658 | | | | | 0.839 |
| Ret_2 | | 0.905 | | | | 0.913 |
| Ret_4 | | 0.892 | | | | 0.868 |
| Ret_3 | | 0.865 | | | | 0.799 |
| Ret_5 | | 0.834 | | | | 0.915 |
| Ret_1 | | 0.831 | | | | 0.874 |
| Sup_4 | | 0.866 | | | | 0.917 |
| Sup_2 | | 0.847 | | | | 0.805 |
| Sup_5 | | 0.839 | | | | 0.897 |
| Sup_3 | | 0.786 | | | | 0.920 |
| Per_2 | | | 0.939 | | | 0.889 |
| Per_3 | | | 0.924 | | | 0.889 |
| Per_1 | | | 0.923 | | | 0.879 |
| Per_4 | | | 0.912 | | | 0.895 |
| Per_6 | | | 0.824 | | | 0.852 |
| Per_5 | | | 0.809 | | | 0.896 |
| Com_2 | | | | 0.917 | | 0.892 |
| Com_3 | | | | 0.914 | | 0.869 |
| Com_4 | | | | 0.877 | | 0.720 |
| Com_1 | | | | 0.776 | | 0.729 |
| Mnd2 | | | | | 0.900 | 0.677 |
| Mnd_1 | | | | | 0.875 | 0.887 |
| Mnd3 | | | | | 0.874 | 0.899 |
| Mnd4 | | | | | 0.865 | 0.841 |

*Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.*
*a. Rotation converged in 6 iterations.*

is a correlation-based analysis- the two constructs must be highly correlated to be included in one component. Thus, it is quite possible that the higher education system in Pakistan views talent only as a part of an employee's knowledge rather than as a dissociative feature of one's abilities. Similar conclusions have also been drawn in other researches (Lombardi and Laurano, 2013). This situation may also arise out of the policy guidelines floated by HEC to HIs that look for degrees and a set number of publications to make faculty appointment. Similar results have

Table 4.3: Summary of Data Reliability

| Dimension | Cronbach's Alpha | Variance Accounted For | |
| --- | --- | --- | --- |
| | | Total (Eigenvalue) | % of Variance |
| 1 | .975 | 19.161 | 33.224 |
| 2 | .756 | 11.773 | 19.481 |
| 3 | .787 | 08.297 | 15.322 |
| 4 | .879 | 04.367 | 09.331 |
| 5 | .791 | 01.86 | 03.524 |
| Total | .849 | | 80.882% |
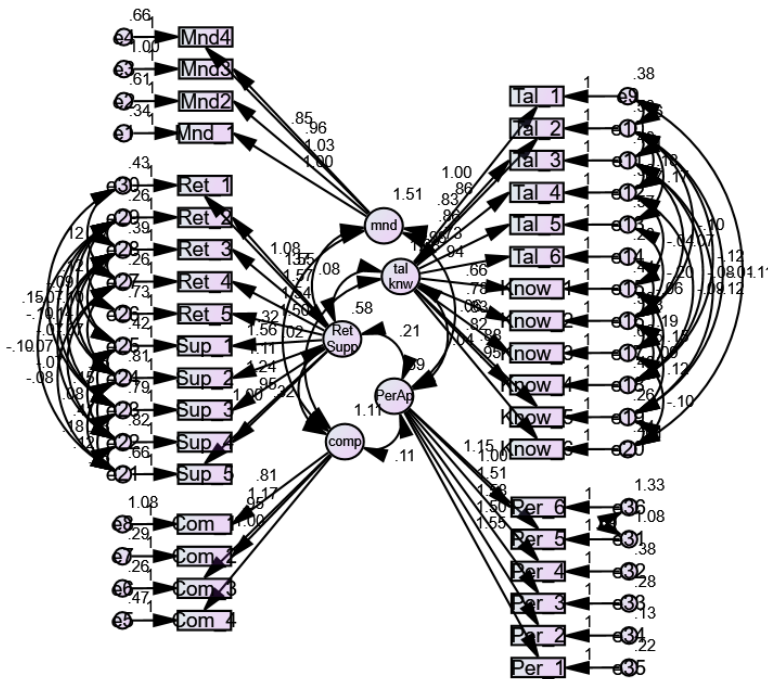


Figure 1: Results of the Confirmatory Factor Analysis

also been reported in other studies (Santos-Rodrigues et al., 2010; Unger et al., 2011).

Thirdly, interestingly the two components as proposed of supporting system and retention in the literature, we find that the two are also merged in the EFA as well as the CFA as inseparable factor. Thus, we can conclude that in HIs in Pakistan, employees tend to retain in institutes more that offer greater supporting activities (Fagerlind and Saha, 1989). Thus, the two go side by side. This might also be true the other way around, the greater the retention rate in an institute, the better the supporting system in them. It can be suggested that in order to retain the

employees the HIs in Pakistan need to develop good supporting systems.

Finally, there are other stand-alone component in the overall HCM endeavors of the higher education system in Pakistan including the change in the mindset, performance appraisal and compensation. As far as the shift in mindset, we can make no decision if this is a deliberate and conscientious one. However, there is sufficient justification in the literature that suggests that this change is taking place (Altbach, 1991; Ismail and Abdullah, 2011). It might be the HEC's policies that result in such change of it is a planned strategical move towards improved human resource capabilities as far the philosophy of HCM is concerned (Afiouni, 2013). Our study also highlights that the roles of compensation and improved performance appraisal are also important elements in the better human capital management of employees in the HIs of Pakistan (Hong et al., 2013; Tanzharikova, 2012).

# 6 Conclusion, limitation and Recommendations

Human capital management is relatively a new concept in the field of business management that considers the workforce of an organization as important as strategic assets in which long-term and large investment is not only desirable but also profitable (Schultz, 1961). The investment takes place in enhancing the knowledge base, skill level, and other capabilities and competencies of the employees and thus is a source of strategic value and competitive advantage (Soukiazis and Antunes, 2012). Though the overall concepts of human capital management are not fully conceptualized, they are most often used to refer to attraction, development and retention of human resources through consistent investment which yields monetary returns (Afiouni, 2013).

The purpose of this study was to highlight what the inherent structure of HCM practices was in the higher education institutes of Pakistan. There is growing interest in the shift of managerial and top-level strategic efforts towards a change in the mindset in how the human resource in viewed and developed. This has given rise to a greater understanding and acceptance for what some call the human capital management as an enhanced view of human resource management (Tanzharikova, 2012). We attempted to find out the probable underlying structure of Human Capital Management through some aspects of HRM in the higher education system of Pakistan. Our results indicated that there does exist a structure that can tell us of the HCM practices in Pakistan.

There is a focus on knowledge and talent-based development of human capital in the HIs of Pakistan. The HIs are providing supporting activities to retain the employees and the tenants of better compensation and performance appraisal are being embraced. Overall mindset towards HCM is changing though we cannot infer through this study that this change is deliberate or otherwise. However, the change is evident and observable at least through overall structure highlighted in this study.

The study was conducted using different constructs from the practices of HCM that might resemble with HRM practices and thus may seem matching HRM rather than HCM. However, the focus in HCM is on investment rather than simple management and arrangements. Future research may be directed on how to make universities in Pakistan realize the importance of HCM and the development of a strong structure relating to it.

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# Impact of Humorous Advertising on Purchase Decision: In Context of Pakistans Telecom Industry

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**Abstract.** The purpose of the current study was to examine the impact of humorous advertisement on purchase decision. To the test the hypotheses, Ufone ads were analyzed and compared to other mobile network ads, which are being aired in Pakistans telecom industry. The data were collected from mobile users via survey method. The data were collected from January 2017 to January 2018. The sample size was 127. Data were analyzed using correlation and regression analysis. The findings suggested that humorous advertisement is one of the appeals which breaks the clutter. 90% of the respondents said that humorous advertisement greatly affects the purchase decision. Hence, Ufones ads are effective. Recommendation for future research would be to study humor in detail; that is dividing the humorous appeal in categories like dark humor, slice of life humor and studying their respective impact on customers purchase decision.

## 1   Introduction

The word advertising is derived from a Latin word advertere which means "to turn the mind towards" (Hoang et al., 2013). In today's era, the need of advertising has been emerging and is clearly understood by marketers which is why billions of rupees are spent on advertising annually in Pakistan and one of the major contributors of this is the telecom companies in Pakistan. One of the major reasons for this is the stiff competition among different telecom companies of Pakistan which includes Mobilink, Zong, Ufone, Warid and Telenor. All of these companies are providing very similar services but then they are fighting for the market share very desperately because of the increased competition. Almost 50% of the spots in electronic channels are being booked by telecom companies of Pakistan.

Different appeals are being used in TVCs but Ufone particularly focuses on humorous appeal in all their TVCs since long period of time. However, no other telecom company relies on humorous appeal for their advertisements. So, this research will be focusing on effectiveness of humorous appeal. The variable for measuring effectiveness will be purchase decision. Humor advertisement on television grabs the attention of viewers. Viewer's in turn enjoy television ads (Ashaduzzaman and Asif-Ur-Rahman, 2011). "The researcher also found that consumer purchase intention also influenced by the span of television commercial (Khuong and Nguyen, 2015).

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## 2 Literature Review

Humorous advertising is basically used for achieving higher sales. Advertiser only spends money if he foresees higher return for that advertisement. To break that clutter various appeals are being used by marketers and one of them which is successful in it is humorous appeal (Hoang et al., 2013). The researchers have found that recall of advertisement is higher if the information is organized in a good way. If there is only humor and information is haphazard, than the message delivery will not be clear and will result in lower recall of that ad. It is also found that message improves memory of products and spokesperson is meaningfully linked together (Krishnan and Chakravarti, 2003). There are various techniques being used by marketers nowadays to tap their target market, but they really need to invest on which type of appeal should be used because not every person is same out there in the market. So for that purpose they really need to assess what majority of the target market likes and dislikes (Hoang et al., 2013).

It is still unclear whether humor in advertising has positive or negative impact on brand recall and purchase decision but still almost 20% of advertising in America is being done with humorous appeal in it. The major reason for this is that advertisers believe that humor element in ads grabs attention of audience (Bara, 2010). It has been found through research that more attention directly leads to more extensive processing. So humorous ads are processed more in consumers' mind but it cannot be inferred that it leads to positive consumer judgments regarding that brand or product because more extensive processing could also lead to negative feelings in consumers mind. Therefore, it is premature to say that humorous ads lead to more brand recall and positive purchase decision; we also need to understand the evaluative directionality or implication of individuals' cognitive elaborations (Basu and Chattopadhyay, 1990).

Evidence suggests that element of humor in advertisements can also harm the memory for brand claims and products because humor definitely grabs consumers' attention; but on the other hand it also distracts consumer's focus from products and main message of an ad. This means that it is not necessary that humorous advertisement would lead to more sales of the product or service (Strick et al., 2013). Companies should be very careful while establishing brand image in consumers' mind via TVCs because TVCs have a very high impact on purchasing behavior. When it comes to telecom sector, marketers should first focus on delivering the information to users clearly because consumers only switch their mobile connection if the package or call tariffs will suit their needs. So, primary focus of marketers should be delivering the message clearly which could lead to purchase decision (Trivedi, 2013).

Various studies have observed the effectiveness of advertising since couple of decades. The most common measures of advertising effectiveness include brand awareness, attitude of consumer towards the advertisement, recall, click through rate, ad recognition and purchase consideration. The entertainment value is very vital which is analyzed by the level of pleasure and enjoyment which is experienced by audience.

There is no consistent definition for humor which is why there are various terminologies being used to describe humor. In past decade, numerous studies have been conducted to check the advertising effectiveness. Brand awareness, ad recognition, and ad recall, attitude towards the ad and purchase intentions were the common measures of measuring effectiveness. There are various tools through which marketers can communicate and convey their message to the target market. The most important from them for mass communication are sales promotion, advertising and public relations.

## 2.1 Hypotheses

$H_1$: *Celebrity endorsement has positive effect on purchase decision*
$H_2$: *Network Quality has positive effect on purchase decision*
$H_3$: *Humorous advertisements have positive effect on purchase decision*
$H_4$: *Attractive Tariff has positive effect on purchase decision*
$H_5$: *Brand Image has positive effect on purchase decision*

# 3 Methodology

Quantitative research was used for this study. This approach was used to investigate the relationship between variables and to develop hypotheses. Primary data were collected from the mobile users in Pakistan via distributing questionnaires randomly and through online Google forms. Secondary data were collected using different research journals which include JSTOR, Science Direct, etc. The sample size used for this research was 127 respondents and they are mainly mobile users in Pakistan, mostly Ufone mobile network users. Self-administered questionnaire was developed for this research. The questionnaire was designed in this way that it included seventeen closed ended questions. Likert scale and multiple choices are being used in formation of questions. The sampling technique used for this research was simple random sampling. The pretesting was also done by gathering data from 10 respondents in order to reduce the chances of error. So the biasness can be minimized. After pretesting some of the questions were eliminated and the sequences of the questions were changed. In the analysis and results, pretesting sample is not included. The software used for statistical analysis was SPSS. Different tests were performed using this software such as crosstabs, chi-square test etc.

# 4 Findings

The analysis of this study was carried out using statistical software. SPSS is used for reliability and regression analysis.

## 4.1 Reliability Analysis

Reliability can take on values of 0 to 1.0, inclusive. Cronbach's alpha is the measure of scale reliability. The Cronbach alpha's of all the variables/constructs is above the threshold level that is 0.70. So this indicates that all the variables can meet the criterion of reliability, indicating that all variables are acceptable as shown in Table 1.

## 4.2 Regression Analysis

The regression used for this study is the linear regression model. In this the means of all variables both dependent and independent are used. The adjusted R-squared compares the explanatory power of regression models that contain different numbers of predictors. The R- squared is 42.3% which indicates goodness of fit for linear regression for this model. But the threshold or cut off point of R-squared is above 50% to 60%. The p-value indicates the acceptance or rejection of the variables. The p-value is a number between 0 and 1. If p-value is less than or equal to 0.05, then null hypothesis is rejected, whereas if p-value is more than 0.05, the null hypothesis

Table 4.1: Cronbach's Alpha

| Variables | Cronbach's Alpha |
|-----------|------------------|
| Celebrity Endorsement | .866 |
| Network Quality | .856 |
| Humorous ad | .842 |
| Brand Image | .862 |
| Call tariff | .824 |
| Purchase Decision | .844 |

is accepted. So table 2 indicated that for this study the five hypotheses i.e. Celebrity Endorsement, Attractive Tariff, Humorous Advertisement, Network Quality and Brand Image will have significant relationship with purchase decision, and these null hypothesis will be accepted.

Table 4.2: P-Values

| Variables | Significance (P-Value) |
|-----------|------------------------|
| Celebrity Endorsement | 0.164 |
| Attractive Tariff | 0.679 |
| Network Quality | 0.297 |
| Humorous ad | 0.070 |
| Brand Image | 0.517 |

$H_1$: *Celebrity endorsement has a positive relationship on purchase decision*

Nowadays telecom companies are spending so much on celebrity endorsements to get hold on renowned brand ambassadors such as Humaira Anjum by Ufone, Shahid Afridi and Atif Aslam by Warid and Mobilink and Ali Zafar by Telenor. They think that it increases the trust and association with the brand in user's mind which drives their purchase behavior. So this hypothesis was tested in this study and on the basis of significance value of 0.164 which is greater than 0.05, null hypothesis is accepted.

$H_2$: *Network Quality has a positive relationship on purchase decision*

Network quality is one of the core things about any mobile network. This includes mobile coverage, signal strength and amount of congestion on any network. This hypothesis was to test whether mobile users prefer the specific network or not. On the basis of p- value of 0.297 which is >0.05, hence null hypothesis is accepted, as basic functionality of the mobile sim depends on network quality.

$H_3$: *Humorous advertisements have a positive relationship on purchase decision*

The data collected for this study suggests that humorous appeal is surely appreciated by 90% of the respondents. It quickly grabs attention of the consumer and also people tend to remember humorous ads more than any other. This is surely a success of Ufone as the company aim is not only to attract new customers but to maintain the base of their existing customers. So Ufone

has been successful in breaking the clutter in the minds of the consumer and positioned itself quite effectively in consumers mind. The results of this study also confirms the success of their advertisements as the p-value is 0.070, which is greater than 0.05 which is why null hypothesis is accepted ,which shows that there is a positive relationship of humorous advertisement with purchase decision.

$H_4$: *Brand Image has a positive relationship on purchase decision*

Brand image is basically the perception of brand in user's mind. After conducting this research, there is a certain perception about every mobile company which exists in user's mind. So brand image has a great impact on purchase decision. The p-value of 0.517 which is $>0.05$, Null hypothesis is accepted indicating positive relationship of brand image with purchase decision.

$H_5$: *Attractive offers/tariff rates has a positive relationship on purchase decision*

Telecom sector in Pakistan is very much price sensitive nowadays. There is fierce competition going on among 5 companies that they all are fighting with each other on basis of few paisas. Pricing department would be on its toes all the time because SEC C customers usually have multiple Sims because of their low prices and they immediately switch their network if they hear some exciting offers or tariff packages announcement. This hypothesis was tested in this study and results showed a positive relationship of attractive tariff offers and purchase decision and p-value came out to be 0.679 which is $>0.05$, hence null hypothesis is accepted.

During survey, respondents were asked to rate humorous ads on basis of their likeness and out of total 127 respondents, 99 said that they like humorous ads. This clearly shows that majority of the mobile phone users prefer watching humorous ads over other type of ads which include animated, informative, celebrity endorsed and emotional appeal ads. Over all appeals used in various ads, majority of the people voted high for humorous ads. This indicates that humor content in ads grabs viewer's attention which helps in better recall.

Table 4.3:

| Hypothesis (Ho) | Results |
| --- | --- |
| Purchase Decision Celebrity Endorsement | Accepted |
| Purchase Decision Network Quality | Accepted |
| Purchase Decision Humorous advertisement | Accepted |
| Purchase Decision Attractive offers/packages | Accepted |
| Purchase Decision Brand Image | Accepted |

# 5 Discussion

The findings clearly showed that humorous advertising has a positive relationship on purchase decision but along with advertisements, companies should also be focusing on various other elements such as network quality, coverage, signal strength, SMS packages, lower call tariffs, brand image etc. to compete in the market. The issue which telecom industry is currently facing is that there is not much difference in the services they are providing so they cannot much differentiate in that, so they have to spend a lot on advertisements in order to attract new customers and retain older ones.

In future, the similar research should be done on national level as this research was mainly focused on Lahore. Customer's attitude, consumer behavior, taste and preferences differ a lot among people of other provinces and rural areas.

# 6    Conclusion

All null hypotheses were accepted. It clearly shows that Ufone's marketing department is rightly spending billions of Rupees per annum on its humorous advertising as their ads recall rate is highest among other telecommunication ads; they have been successful in grabbing mind share of mobile users.

The balance which Ufone achieves between humor content and the message of the ad is just perfect. They key to success of Ufone ads is the way they blend humorous content in their ads, it never felt out of the context in viewers mind. Interflow agency is working hand in hand with Ufone's marketing team and they ensure the execution is perfect in each of their commercial. The humor content enhances the recall of the ad and breaks the clutter in consumer's mind.

Although, switching rate is relatively higher in telecom industry due to various factors which has been studied in this research, but whenever customer switch their network, they definitely consider Ufone as it is the first company which strikes in the mind of potential buyer due to its impressive humorous advertisement and attractive packages. On the other hand existing Ufone customers also enjoy Ufone's humorous advertisement and it strengthens their affiliation and sense of belongingness with Ufone which helps the company in retaining its existing customer base.

## 6.1    Limitations, Implications and Future Directions

During this research, few limitations were present due to which results might be not as much accurate as they could have been if these limitations were not present. Firstly, TVCs could not be incorporated of various telecom companies in questionnaire as Google forms don't have an option of playing videos within questionnaire and respondents feel awkward and time consuming to go to any other website via provided link for watching TVCs and then come back to answer related questions. Secondly, geographic boundaries were another limitation faced during this research. Majority of the respondents were from Lahore. Out of 127 respondents, only 5% were from outside Lahore, whereas other 95% resides in Lahore. This was mainly because of lack of resources. There is a chance that results would differ if this research was conducted on a national level. Other than that the humorous appeal could be broken down and interpreted separately.

In future, the similar research should be done on national level as this research was mainly focused on Lahore. Customer's attitude, consumer behavior, taste and preferences differs a lot among people of other provinces and rural areas.

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# Banks Intermediation and Stock Prices of Deposit Money Banks in Nigeria: VECM and Variance Decomposition Approach

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**Abstract.** This study adopts the Vector Error Correction Model (VECM) and the variance decomposition techniques in testing the financial acceleration theory in banks intermediation. The bank intermediation variable is categorized into variable deposit mobilization, loan administration, delegated monitoring and risk diversification. Using cointegration analysis and quarterly secondary data between 2009 and 2016, this study assessed the short and long run influence of the categorized bank activities on their stock prices. The results indicate that banks intermediation exact influence on both the short and long run stock prices of DMBs in Nigeria as the ECM (-0.1420) result showed a significant speed of adjustment towards equilibrium while the overall model fitness showed that there is a long run causality running from banks intermediation measures and stock prices. Similarly, the result of the variance decomposition of stock prices shocks indicate that over time a significantly increasing proportion of stock prices is explained by loans and capital (delegated monitoring).

# 1   Introduction

The 2008/2009 financial crisis in Nigeria stemmed from the ripple effect of the 2007/2008 global financial crisis which created a transmissible shock across various sectors of the world economies. The crisis arose from the financial sectors failure transmitted to the rest of the economy and created problems such as investment fluctuation and credit policy contraction that worsened transactions in trading for all economies and consequently created a chain of crisis that threatened the entire financial sector.

Consequently, stock markets activities dropped substantially due to accumulative bank lending exposure to various industries and natural bank hazard in the years preceding the crisis as various market collapses spread to the financial region. The downturns in the financial markets reduced investors' assurance and together with the contraction in bank loans, affected the manufacturing industries. By the middle of 2009, most economies suffered drastically resulting in decreased level of economic activities as the real value of wealth and assets of most market participants have been massively eroded.

The financial crisis resuscitated studies on several issues such as banks shock transmission, financial pollution, stock return estimation and market efficiency hypotheses. Though, some

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studies focused on these issues (Adrian and Shin, 2010; Karkowska, 2013; Tennant and Tracey, 2014); an aspect which has received less attention is study on the influence of financial intermediation on stock price of Deposit Money Banks (DMBs) in Nigeria. This aspect is important due to the need to have an informed understanding of the banking sector features, its reflection and transmission to stock prices as well as shocks dissemination process in the economy.

Also, the downward trend in the economy can influence DMBs intermediation functions in terms of decline in the size of deposit and loans which, in turn, can adversely affect DMBs' stock price and expose them to default risks. With the various attentions given to DMBs and stock markets all over the world after the financial crisis, the dynamic relations between banks financial intermediation and stock prices warrant further empirical investigation at the industry and firm level in Nigeria given its role as the centre piece of commerce in sub-Saharan Africa.

## 2    Literature Review

Several studies have analysed banks' intermediation due to its significant role in facilitating liquidity and project financing through the channelization and transmission of financial resources among competing units in the economies. While most literature examined their influence on economic growth, fewer studies considered the financial intermediation influence on stock prices of DMBs. Ibrahim (2006) examined the nature of interactions of bank loans and stock prices in order to explain the role played by bank loans vis--vis financial surges in the economy using quarterly data between 1978 and 1988 in Malaysia. The result revealed that KLCI, GDP and INT have positive and significant influence on bank loans but there is no counter reaction from bank loans. In relation to the foregoing is that, Tennant & Tracey (2014) had examined how banks core functions impact stock market fluctuation in Jamaica using an unconditional descriptive measure of realized volatility and Generalized Autoregressive Conditional Heteroskedasticity (GARCH) specification on quarterly data. Such data include deposit to asset, loan to asset, ratio of credit to private sector to loans, spread, liquid asset ratio in a simple autoregression with exogenous variables (ARX). All the explanatory variables and their lags are put through a loop of pairwise granger causality tests to determine which variables (and at what specific lags) significantly improve the forecast of stock market volatility. The results showed that factors which affect banks' profitability can increase stock market volatility.

Similarly, Francis et al. (2015) examined the influence of regulation and supervision on the returns to bank stock using specific fundamentals with stock price informativeness. Using selected countries, the study adopted two approaches and the result of the logistic OLS regression estimates showed that stock returns are not rapidly adjusted in countries with strict capital control, adequate supervision and low state investments in banks while Shabib-ul Hasan and Muhammad (2015) examined the most effective financial variable (debt-equity ratio, book to market value and firm size) in explaining stock prices using twenty six companies selected from pharmaceutical and chemical sector in Karachi Stock Exchange between 2000 and 2009. Regression results revealed that book to market value of equity is the most effective indicator.

Anwaar (2016) checked the influence of firm results on stock returns in London Stock Exchange between 2005 and 2014 using a panel regression specification. The analytical result showed that net profit margin and return on assets had positive and significant influence on stock returns while earnings per share had negative influence on stock returns. Kühl (2017) examined the advancement in bank capital based on the proportion of non-state-contingent assets in their statement of financial position and implications for general economic changes

using a new Keynesian dynamic general equilibrium model. The results showed that shocks' transmission to real GDP is created by banking sector frictions that reduced as the size of non-state-contingent assets increases. The study revealed that a mixture of assets in bank financial position is key to increasing shocks in financial contract as they are signed before the emergence of shocks and their repayment is assured with protection of the banks' balance sheets.

Blau et al. (2017) examined opacity and its nature within firms as well as its influence on stock prices efficiency, focusing analysis on banks due to their opaqueness than other firms. They explored how bank prices incorporate market-wide information and reflect firm efficiency using firm-specific information, multivariate time-series analysis and vector auto regressive (VAR) process. The study captured stock prices inefficiency and found evidence supporting that opacity is positively related to price delay.

## 3   Methodology

The study employed industrial level quarterly secondary data from all quoted DMBs in Nigeria for the period of 2009-2016. The data were obtained from Nigerian Stock Exchange (NSE). The study examined the dynamic relationships between banks intermediation and stock prices using DMBs variables such as banking stock index, deposit mobilization, loans administration, delegated monitoring and risk diversification. The mathematical equation for estimating the relationship between banks intermediation and stock prices of DMBs in Nigeria is derived from the financial accelerator general equilibrium model by Gilchrist and Zakrajšek (2011). According to the BGG (1999) model, there are set of financial intermediaries (DMBs) that attract savings ($S_t$) in form of deposit, with an initial capital ($C_t$) in order to generate new fund ($C_{t+1}$) part of which can be granted as loan and advances to investors based on the subsequent identical technology equation stated as:

$$C_{t+1} = \Phi\left(\frac{S_t}{C_t}\right)C_t + (1-\delta)C_t \tag{1}$$

where $\Phi(.)$ is an increasing and concave adjusted cost function that depends on the ratio of investment and capital while $\delta$ is the depreciation rate of capital. Once a loan is repaid, it is channeled through the DMBs. Thus, there are two important prices, the new capital $Q_t$ and previous capital $\overline{Q}_t$. Similarly, the DMBs attract used capital at a price $\overline{Q}_t S_t$, invests $S_t$ and sells new capital for a revenue of $Q_t C_{t+1}$.

Hence, the economic problem facing DMBs is how to maximize the excess or difference between the two prices given as:

$$max_{K_t I_t} Q_t C_{t+1} - S_t - \overline{Q}_t S_t \tag{2}$$

$$s.t. \ C_{t+1} = \Phi\left(\frac{S_t}{C_t}\right)C_t + (1-\delta)\,S_t \tag{3}$$

The optimality condition for equation (3) is calibrated into two equilibrium prices as follows:

$$Q_t = \left( \Phi' \left( \frac{S_t}{C_T} \right) \right)^{-1} \tag{4}$$

$$\bar{Q}_t = \left[ (1 - \delta) + \Phi \left( \frac{S_t}{C_t} \right) - \Phi' \left( \frac{S_t}{C_T} \right) \frac{S_t}{C_T} \right] Q_t \tag{5}$$

The BGG model is derived in equation (5) but the price of DMBs existing capital is different from that of the BGG and by introducing $\overline{Q}_t$ into the model, to serve as the BGG price on existing capital, the zero-profit condition is derived as:

$$Q_t \Phi \left( \frac{S_t}{C_t} \right) C_t + Q_t C_t - S_t - Q_t S_t = 0 \tag{6}$$

which can also be restated as:

$$\bar{Q}_t = Q_t \Phi \left( \frac{S_t}{C_t} \right) - \left( \frac{S_t}{C_t} \right) + Q_t \tag{7}$$

Similarly, the strength of a DMBs to withstand operational shocks and market competition is a function of its capital $(C_t)$ and asset $(A_t)$. However, due to the nature of new fund (deposit), the DMBs are compelled by law to withhold certain fraction $(R_t)$ against unanticipated withdrawal. This reduced the size of available fund for lending and yield loan size $L_t = (C_t - R_t)$.

Thus, attaining the maximization objective in equation (2) depends on other endogenous factors and by injecting them into the model, it will yield a normalized equation stated as:

$$P = (Q_t S_t, \ S_t, \ \bar{Q}_t C_t, \ L_t, \ A_t, \ C_t) \tag{8}$$

where
P = Profit
$Q_t S_t$ = Cost of used capital
$S_t$ = Savings or Deposits
$\overline{Q}_t C_t$ = Revenue from the sales of new capital
$L_t$ = Loans and advance
$A_t$, = Asset

Equally, DMBs activities usually affect the aggregate economic conditions due to their roles as a key financial intermediary and using $\pi_t$ to represent the difference between lending and deposit rate (spread). The equation (8) can be linearized as:

$$P = (S_t, \ L_t, \ A_t, \ C_t, \pi_t) \tag{9}$$

Where:
P = Stock prices
$S_t$ = Deposits

$L_t$ = Loans and advance
$A_t$ = Asset
$C_t$ = Capital
$\pi_t$ = Spread

Equation (9) form the base line equation for this study and other control variables that can influence stock prices are incorporated in line with evidence from literature.

## 3.1 Estimation Procedure

### 3.1.1 Unit Root Test

The quarterly data set were exposed to unit root tests using the Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) to show whether the variables are stationary or not.

### 3.1.2 Multivariate Approach Tests

The study embraces the Johansen's cointegration test (Johansen, 1991) specification which is embedded in the Vector Autoregression (VAR) of order p was used to test for cointegration

### 3.1.3 The Vector Error Correction (VEC) Model

The VEC model which is a restricted VAR model is designed for analysing non-stationary cointegrated series with an in built cointegration relations specification in order to monitor endogenous variables long run relation towards cointegration convergence while providing for short-run dynamics adjustment. The error correction term signifies the cointegration coefficient because long term equilibrium deviations are corrected gradually through series of partial short-run adjustments.

Thus, the VEC model for estimating the relationship between banks intermediation and stock prices of DMBs in Nigeria is stated as:

$$\Delta Index = \propto + \sum_{i=1}^{m} \beta i \Delta Index_{i-1} + \sum_{j=1}^{n} \gamma i \Delta Indep_{i-j} + \sum_{k=1}^{o} \delta \Delta Inloans_{i-j}$$
$$+ \sum_{l=1}^{p} \zeta \Delta Incapital + \sum_{m=1}^{q} \zeta \Delta Inasset +$$
$$+ \sum_{l=1}^{p} \zeta \Delta Inspread + \sum_{m=1}^{q} \zeta \Delta Inint + \sum_{n=1}^{r} \zeta \Delta Inleverage + \sum_{n=1}^{s} \pi \Delta InState + \theta Z_{t-1} + \varepsilon_t$$

$$(10)$$

where:
*Index* = Natural log of Banking Index
*Indep* = Natural log of Bank deposits
*Inloans* = Natural log of Bank loans
*Incapital* = Natural log of Bank capital
*Inasset* = Natural log of Bank asset
*Inspread* = Natural log of Bank spread
*Inint* = Natural log of interest rate
*Inleverage* = Natural log of Bank leverage
*InState* = State of economy
$Z_{t-1}$ = the error-correction term

# 4 Results and Discussions

The results from the Augmented Dickey-Fuller (ADF) and Philips-Perron (PP) Unit Root Test for the study are presented in tables 1 and 2 below:

Table 4.1: Augmented Dickey-Fuller (ADF) Unit Root Results

| Variables | Level | Prob. | Critical Values | First Difference | Prob. | Critical Values |
|---|---|---|---|---|---|---|
| BANKING_INDEX | -2.6603 | 0.0923 | -2.9604 | -7.7885 | 0.0000 | -2.9639 |
| DEPOSITS | -1.3454 | 0.5956 | -2.9604 | -5.3347 | 0.0001 | -2.9677 |
| LOANS | 0.2836 | 0.9735 | -2.9604 | -5.6777 | 0.0001 | -2.9639 |
| CAPITAL | -1.0750 | 0.7129 | -2.9604 | -4.9149 | 0.0006 | -2.9918 |
| ASSET | -0.3305 | 0.9090 | -2.9604 | -5.3006 | 0.0002 | -2.9718 |
| SPREAD | -0.9154 | 0.7697 | -2.9604 | -6.9956 | 0.0000 | -2.9639 |
| INTEREST_RATE | 0.6585 | 0.9891 | -2.9604 | -3.8482 | 0.0065 | -2.9639 |
| LEVERAGE | -0.8495 | 0.7905 | -2.9604 | -6.2233 | 0.0000 | -2.9639 |
| ECONOMY OF STATE | -5.1386 | 0.0523 | -2.9604 | -6.5724 | 0.0000 | -2.9718 |

*Source: Author's Computation*

Table 4.2: Philips-Perron (PP) Unit Root Results

| Variables | Level | Prob. | Critical values | First Difference | Prob. | Critical Values |
|---|---|---|---|---|---|---|
| BANKING_INDEX | -2.7372 | 0.0793 | -2.9604 | -8.3854 | 0.0000 | -2.9640 |
| DEPOSITS | -3.0395 | 0.0422 | -2.9604 | -5.6722 | 0.0001 | -2.9640 |
| LOANS | 0.2836 | 0.9735 | -2.9604 | -5.6770 | 0.0001 | -2.9640 |
| CAPITAL | -1.2807 | 0.6257 | -2.9604 | -4.2510 | 0.0024 | -2.9640 |
| ASSET | 0.0147 | 0.9530 | -2.9604 | -9.2530 | 0.0000 | -2.9640 |
| SPREAD | -0.8313 | 0.7960 | -2.9604 | -7.2670 | 0.0000 | -2.9640 |
| INTEREST_RATE | 0.4929 | 0.9837 | -2.9604 | -3.8373 | 0.0066 | -2.9640 |
| LEVERAGE | -1.4512 | 0.5444 | -2.9604 | -7.9165 | 0.0000 | -2.9640 |
| ECONOMY OF STATE | -5.1311 | 0.0502 | -2.9604 | -18.2222 | 0.0001 | -2.9640 |

*Source: Author's Computation*

Table 1 indicates that specified factors in the ADF statistic were stationary at first difference I(1). Table 2 also shows that all the specified variables PP statistic were stationary at first difference I(1). The next stage in the analysis is the cointegration test as a necessary condition for the VECM analysis. Thus, the trace test was used in establishing the number of cointegration relationship among the specified variables and the result are presented in Table 3.

Table 4.3: Cointegration Rank Trace Results

| Hypothesized No. of CE(s) | Trace Statistic | Critical Value (0.05) | Prob.** |
|---|---|---|---|
| None * | 264.0275 | 197.3709 | 0.0000 |
| At most 1 * | 196.0047 | 159.5297 | 0.0001 |
| At most 2 * | 139.0029 | 125.6154 | 0.0059 |
| At most 3 * | 102.2007 | 95.7536 | 0.0167 |
| At most 4 | 68.1282 | 69.8188 | 0.0677 |
| At most 5 | 38.6209 | 47.8561 | 0.2756 |
| At most 6 | 21.9329 | 29.7970 | 0.3022 |
| At most 7 | 7.2005 | 15.4947 | 0.5545 |
| At most 8 | 0.6730 | 3.8414 | 0.4120 |

*Trace test indicates 4 cointegrating eqn(s) at the 0.05 level*
*Source: Author's Computation*

The result from the trace test supports the null hypothesis rejection since the trace statistics (264.02) exceeds the critical value (197.37) at 95 percent confidence level. This implies that the null hypothesis of no co-integrating relationships is rejected as there are three possible cointegrating equations among the variables at 5% lag order selection (LOS).

Based on unit root and cointegration results, the study proceeds to the adoption of the VECM estimates through the lag order selection (LOS) criteria which facilitate the selection of the optimum lag. Table 4 presents the results of the VECM LOS.

Table 4.4: VECM Lag Order Selection Criteria Result

| Lag | Sequential Modified LR test statistic | Final Prediction Error (FPE) | Akaike Information Criterion (AIC) | Schwarz Information Criterion (SIC) | Hannan-Quinn Information Criterion (HQ) |
|---|---|---|---|---|---|
| 0 | 56.1204 | 2.27e-27 | -35.8093 | -35.3889 | -35.6748 |
| 1 | 240.5716* | 3.81e-30* | -42.4379 | -38.2343* | -41.0931 |
| 2 | 72.9072 | 6.79e-30 | -43.6658* | -35.6790 | -41.1108* |

*Note:* indicates lag order*
*Source: Author's Computation*

Table 4 reveals that three out of the five selection criteria favoured lag 1 as indicated by LR, FPE and SIC. Thus, this study adopts lag length 1 for the autoregressive process in the VECM for optimum outcome and completes all the prerequisite tests and requirement for a VECM and the result from the cointegrating equation is in table 5:

Table 5 shows the error correction term of -0.1421 is significant and implies that there is a long-run causality from bank intermediation measures and stock prices with the bank loans being the only variable that exact positive and significant influence on the banking index within the

Table 4.5: Vector Error Correction Model Result

|  | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| CointEq1 | -0.1421 | 0.0763 | -1.8625 | 0.0781 |
| BANKING_INDEX(-1) | -0.0189 | 0.1827 | -0.1034 | 0.9187 |
| DEPOSITS(-1) | -0.8622 | 0.8565 | -1.0067 | 0.3267 |
| LOANS(-1) | 0.9506 | 0.4354 | 2.1834 | 0.0417 |
| CAPITAL(-1) | -0.0948 | 0.8365 | -0.1134 | 0.9109 |
| ASSET(-1) | 1.9625 | 4.3554 | 0.4506 | 0.6574 |
| SPREAD(-1) | -1.3138 | 0.8682 | -1.5133 | 0.1467 |
| INTEREST_RATE(-1) | -0.2524 | 2.8007 | -0.0901 | 0.9291 |
| LEVERAGE(-1) | -2.9114 | 3.2458 | -0.8970 | 0.3809 |
| ECONOMY_STATE(-1) | -0.0044 | 0.0142 | -0.3139 | 0.7571 |
| CONSTANT | 0.0048 | 0.0164 | 0.2921 | 0.7734 |
| $R^2$ | 0.5783 | F-statistic | | 2.6062 |
| $^2$ | 0.3564 | Prob(F-statistic) | | 0.0347 |
| S.E. of regression | 0.0549 | Durbin-Watson stat | | 2.0439 |
| Sum squared resid | 0.0573 | Log likelihood | | 51.347 |

*Source: Author's Computation*

period under review. Similarly, the $R^2$ and the $^2$ values of 0.5783 and 0.3564 respectively indicate the extent of variations in banking stock index that is attributable to the specified independent variables while standard error of the regression value and the log-likelihood ratio support the assertion with the values of 0.054 and 51.3472 respectively.

The F-statistics value of 2.6062 and its probability value of 0.0347 is significant and lend credence to the overall fitness of the model in explaining the banking stock index while the Durbin-Watson statistics value of 2.0438 showed that there is no autocorrelation in the trend pattern of the specified variables.

A corresponding aspect of the VECM is the Wald short run causality test that checks for short-run relationship among the specified variables. The result of the Wald short-run test is presented in Table 6 below:

Table 6 reveals the Wald t-statistics and f-statistics values as well as their corresponding probabilities for all the specified variables and it shows that only loans had significant relationship with the banking index in the short-run within the period under investigation. Similarly, the residual test results for serial correlation and Heteroskedasticity are presented in the tables below:

Table 7 reveals the Breusch-Godfrey serial correlation f-statistic and observed $R^2$ values with their corresponding probabilities in testing the hypothesis that there is no serial correlation in the specified variables. Both results showed that there is no serial correlation as their probabilities values are greater than 0.05 LOS and thus corroborated the Durbin Watson statistics result

Table 4.6: Wald short run causality result

| Variables | t-statistic | Probability | f-statistic | Probability |
|---|---|---|---|---|
| DEPOSITS(-1) | -1.0067 | 0.3267 | 1.0134 | 0.3267 |
| LOANS(-1) | 2.1835 | 0.0417 | 4.7677 | 0.0417 |
| CAPITAL(-1) | -0.1133 | 0.9109 | 0.0129 | 0.9109 |
| ASSET(-1) | 0.4506 | 0.6574 | 0.2030 | 0.6574 |
| SPREAD(-1) | -1.5132 | 0.1467 | 2.2899 | 0.1467 |
| INTEREST_RATE(-1) | -0.0901 | 0.9291 | 0.0081 | 0.9291 |
| LEVERAGE(-1) | -0.8970 | 0.3809 | 0.8046 | 0.3809 |
| ECONOMY_STATE(-1) | -0.3139 | 0.7571 | 0.0985 | 0.7571 |
| CONSTANT | 0.2921 | 0.7734 | 0.0853 | 0.7734 |

*Source: Author's Computation*

Table 4.7: Breusch-Godfrey Serial Correlation LM Result

| | | | |
|---|---|---|---|
| F-statistic | 0.297554 | Prob. F(1,18) | 0.5921 |
| Obs*$R^2$ | 0.487858 | Prob. Chi-Square(1) | 0.4849 |

*Source: Author's Computation*

discussed earlier in Table 5.

Table 4.8: Heteroskedasticity Test: Breusch-Pagan-Godfrey Result

| | | | |
|---|---|---|---|
| F-statistic | 0.683939 | Prob. F(18,11) | 0.7710 |
| Obs*$R^2$ | 15.84354 | Prob. Chi-Square(18) | 0.6035 |
| Scaled explained SS | 4.504004 | Prob. Chi-Square(18) | 0.9994 |

*Source: Author's Computation*

Table 8 reveals the f-Statistic and corresponding probabilities for the Breusch-Pagan-Godfrey heteroskedasticity test with the hypothesis that there is no heteroskedasticity in the data series employed in the analysis. All the F-statistics value of 0.6939 showed that there is no heteroskedasticity in the variables distribution and this is confirmed by the probabilities value of 0.7710.

Table 9 reveals that in the short-run, the changes in the index are attributed to shocks in factors such as the state of the economy and spread. But in the long run, the influence of these factors reduced significantly while loans, capital and interest rate gather great momentum over time as they significantly influence banking index shock within the period under review.

Table 4.9: Variance Decomposition Result

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Variance Decomposition of Index: Index** | | | | | | | | | | |
| **Period** | **S.E.** | **Index** | **Deposits** | **Loans** | **Capital** | **Asset** | **Spread** | **Int. Rate** | **Leverage** | **State** |
| 1 | 0.0549 | 100.00 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 2 | 0.0791 | 79.335 | 1.0520 | 1.3912 | 1.2119 | 0.1320 | 4.1275 | 0.4153 | 3.8013 | 8.5336 |
| 3 | 0.0938 | 74.975 | 1.6298 | 3.3553 | 0.8625 | 0.1733 | 3.1601 | 6.8229 | 2.8115 | 6.2095 |
| 4 | 0.1019 | 73.165 | 3.0887 | 4.5755 | 1.1991 | 0.1472 | 2.685636 | 6.9867 | 2.7714 | 5.3812 |
| 5 | 0.1125 | 70.502 | 4.6876 | 5.8422 | 2.3967 | 0.5694 | 2.932266 | 6.0449 | 2.3947 | 4.6302 |
| 6 | 0.1218 | 70.201 | 4.2315 | 6.2656 | 3.0726 | 0.6000 | 3.020817 | 5.9384 | 2.2364 | 4.4335 |
| 7 | 0.1293 | 70.302 | 3.8632 | 6.7274 | 3.1336 | 0.5540 | 2.861475 | 6.1315 | 2.1808 | 4.2460 |
| 8 | 0.1365 | 70.190 | 3.8381 | 7.1869 | 3.2145 | 0.5430 | 2.753738 | 6.1440 | 2.1473 | 3.9826 |
| 9 | 0.1436 | 69.738 | 3.9797 | 7.5942 | 3.4369 | 0.5772 | 2.760716 | 6.0275 | 2.1040 | 3.7820 |
| 10 | 0.1505 | 69.498 | 3.9315 | 7.8861 | 3.6282 | 0.5946 | 2.759902 | 6.0042 | 2.0509 | 3.6463 |
| 11 | 0.1569 | 69.413 | 3.8484 | 8.1204 | 3.7358 | 0.5904 | 2.718679 | 6.0230 | 2.0137 | 3.5362 |
| 12 | 0.1630 | 69.326 | 3.8191 | 8.3340 | 3.8204 | 0.5901 | 2.684436 | 6.0119 | 1.9861 | 3.4281 |

*Source: Author's Computation*

# 5    Conclusion and Recommendations

The result indicates that deposits, capital, spread, interest rate, leverage and state of the economy exact negative influence on banking sector index, while loans and assets have exact positive influence on same. This implies that banks' intermediation have a long run influence on banking sector index in Nigeria.

There is a need for economic managers and policymakers to realize the nature of the banking sector in Nigeria and should therefore, consider the required lag in any programme design to control their activities vis--vis the sector index position since only loans and advances had statistical and significant influence on the bank stock prices in both the short and long run.

Similarly, there is a need for DMBs managers to understand the influence of their activities on stock prices and use it as a gauge to measure investors' confidence and preference. This is essential in order to monitor investors' attitude towards their firm and put in place strategies and tactics that will continuously strengthen their market prices based on their current performance and future possibilities.

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