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The Impact of Index Futures on Market Efficiency and Volatility of Spot Index: An Empirical Evidence from Emerging Economies (BRICS)

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Abstract

The concern of the impact of introduction of futures markets on the spot market has gained attention of researchers in both developing and developed countries. In this vein, this study investigates the impact of introduction of index futures on the stability aspect of underlying spot markets in BRICS economies. Specifically, this study checks the impact of introduction of index futures on the spot markets' volatility and market efficiency by using the daily return data of spot index of emerging economies. The equal pre- and post-futures data is used for analysis. An AR (1) augmented GJR-GARCH approach with underling error distribution of GED is used to estimate the level of market efficiency and volatility in the underlying spot market. The findings of the study suggest presence of volatility in the spot market post introduction of index futures. On the other hand, the study presents the significant increment in market efficiency of indexes of BRICS except Nifty index of India. These results suggest that the relationship does exists between market efficiency and volatility (according to the seminal work of Ross 1980 and others), which may imply that markets will have to bear cost (in terms of increase in volatility) for potential gains (increase in the level of market efficiency) if they introduce parallel futures markets.

Keywords: Index futures, GJR-GARCH, GED, BRICS

Introduction

Stakeholders of the financial markets continue to debate on the introduction of futures markets and their role in influencing the stability patterns of the overall markets. Despite the continued efforts, no clear consensus has reached so far. From earlier studies, Cox (1976) points out that futures markets reflect the improvement of market efficiency after their introduction. He attributes this event to the lower transaction cost, which attracts more investors to the market. This results in spot prices to react

to new information sets, and provide accurate information signals to the investors. The increase in market efficiency is considered to have stabilizing impact on the market. On the other hand, Ross (1980) derives a direct relationship between market efficiency and volatility. He interprets that more information channels can result in volatile spot prices. When the spot prices become volatile, they generally tend to move away from their fundamental values. According to Shiller et al. (1984), noise trading can drive the prices away from their fundamental values. Black (1986) expresses that noise traders are the investors, who blindly focus on any information that they think would affect the value of the assets. Further to the concept of noise trading, De long et al. (1990) adds that new information release encourages noise traders to make their investment decisions, which might be based on noise/ rumors. Such investment decision causes the market fluctuation that takes price away from fundamental state in short time. This context suggests the critics of futures markets construct the argument that introduction and parallel functioning to futures markets destabilize the market. Their luring features attract the noise traders to the market, who destabilize the market. In the absence of arbitrageurs or market makers, this situation could worsen and cause inevitable destruction in the market.

The literature on presence of parallel index futures presents contradictory results. The academic debate provides contrary empirical evidences, which needs further investigation. Most of the studies are conducted in mature markets, while the literature on emerging markets is in its infancy stage. From recent literature on futures markets, Lean, McAleer and Wong (2015) conclude that risk takers prefer trading in futures markets over spot markets, while risk averse traders are indifferent among these two markets. There could be several reasons for increase in underlying spot market. One of which could be activities of noise traders. The increase in volatility post futures cannot necessarily be attributed to destabilization in the underlying market. As mentioned earlier, this study is another effort to check the influence of parallel index futures on spot markets of emerging economies (i.e., BRICS). The study of emerging markets is important due to following reasons. First off, there are few studies that check the impact of index futures in emerging markets (e.g., Bohl and Siklos etc.). Unlike the study of Bohl and Siklos (2008), this study makes use of data on BRICS[1] economies. The study of emerging markets would not only allow us to compare the results with developed economies but the individual based economies in different regions (Africa, Asia, Latin America and Europe). Second, due to the globalization of financial markets and worldwide economic reforms, emerging markets have grown to the level that they are attracting the attentions of investors from all over the world. Another reason could be potentially low correlation with developed markets as well. Low correlation is synonymous to low portfolio risk (Harvey, 1995), which attracts portfolio managers. Third, the BRICS represent biggest group of emerging economies globally. Wilson and Purushothaman (2006) predict that economic scale of BRICS will be larger than that of G6. Furthermore, in recent times, it is observed that inward FDI is 34%, while outward is 33% of overall stocks in BRICS' FDI stocks (World Investment Report, 2015).

It can be observed that derivative markets are more uncertain and volatile than cash markets and thus can be a source of volatility in underlying spot market. When the information affects the stock market then the market efficiency and volatility may increase simultaneously, which may destabilize the spot market. The introduction of index futures and its impact on underlying spot market in emerging

countries is going concern in academic but no conclusion could be made about their stabilizing or destabilizing impact on the spot market. The research questions stemming from the problem statement is as follows: what is the impact of trading in index futures on the market efficiency and volatility of spot market? Therefore, the objectives of this study are presented as follows. The study intends to investigate the change in volatility and market efficiency of underlying spot market post introduction of index futures.

This study is being conducted for emerging countries i.e., BRICS. The size and interval of data to support the finding has not been used before. However, the type of econometric methodology and way to implement the specific modified models that we are going to use in this study, has never been tested before.

The remainder of the paper is structured as follows: Section 2 presents the theoretical and empirical review of relevant literature. Section 3 presents the research design of this study. Section 4 extends results and discussion of the results, while section 5 concludes the study with policy implications.

Literature Review

Forecasting stock returns has remained an area of competing interest for the stakeholders of the field, yet it remained controversial for decades. Technical analysts attempt to predict stock returns through their lagged values. Previously, several researchers pointed out that stock returns are autocorrelated (e.g., Cutler et al. 1990, Koutmos 1997a). Different authors attribute differing reasons[2] for this behavior of stock returns. Few studies in the string of arguments point out that the stock returns are negatively auto-correlated. There could be several reasons for negative autocorrelation in stock returns. For instance, one of the reasons as pointed out by Roll (1984) is that bid ask spread causes first order negative autocorrelation in the stock returns. Some authors relate this correlation with volatility. For example, Jin (2017) supports the argument that stock returns are negatively correlated with volatility. Many studies presume that autocorrelation is constant, yet recent literature on this topic depict that stock returns follow time varying autocorrelation. Campbell, Grossman and Wang (1993) assert that daily stock returns are related to trading volume and that first order correlation is decreased by trading volume. Other studies[3] from developed and developing economies present macroeconomic fundamentals that are helpful in predicting the stock returns.

Contrary to the destabilization hypothesis, few studies are in favor of stabilizing effect of introduction of futures. For example, Antoniou, Koutmos and Pericli (2005) investigate presence of feedback trading strategies for pre- and post- index futures by using data from developed economies. They report that feedback traders exist in pre-futures period and index futures does not simulate in post-futures period. They further report that index futures attract rational investors more than noise traders. This helps in stabilizing the market.

One category of researchers believes that futures trading destabilize the financial market. This argument could be understood by following studies. Cox (1976) points out that low transaction costs and low leverage requirements attract noise traders to the futures trading, which increases the information channels to the market. Ross (1989) extends this argument by stating that new information

channels enhance the volatility in the market. He derives direct link between market efficiency and volatility. Later on, De long et al. (1990) assert that noise trading can move the market value of stocks away from their fundamental values. For short span of time, rational traders also follow the trend, which becomes reason for further departure of market prices from their fundamental values. This cause increase in volatility. This relationship was studied for its authenticity later by different researchers and contradicting results were obtained. For example, Antoniou and Holmes (1995), Antonio et al. (1998) and Bae, Kwon and Park (2004) confirm in his study that futures ultimately simultaneously increase the volatility and market efficiency of cash stocks. Contrarily, Debasish (2008) studied this relationship in SSFs in Indian Market. He reports that there was a simultaneous decrease in market efficiency and volatility. Hou and Li (2014) present similar results for Chinese index futures markets. Following these arguments, Malik and Khan (2012) and Malik and Shah (2017) employed different methodologies on different data sets on SSFs in the context of Pakistan. They report no change in market efficiency as well as volatility. Since these studies are conducted in index futures markets and SSFs, the difference in result can be attributed to the difference between the features of these two types of markets. Anotniou et al. (2005) assert that index futures enhance market efficiency and volatility simultaneous. However, this increase in volatility should not be considered as destabilizing because it makes the market more efficient. This helps the market in price adjustments in timely fashion. There are several other studies[4] that report that trading in equity derivatives does not destabilize the market.

Following are some of their work which examines the impact of futures on different dynamics. Gahlot and Datta, (2012) check the impact of single stock futures on spot market of BRICS by using GARCH in mean model. Debasesh (2009) study the impact of derivative trading in the stock market of India by using pre and post year data. The econometric methodology GARCH used to estimate the volatility. The findings suggest that there is no volatility impact of index futures in stock market. Malik & Shah (2017) examines the impact of SSFs on market efficiency and volatility. This study also investigates whether SSFs destabilize the spot market. The hypothesis of this study suggests that the reflection of information in spot market tends to increase the volatility. The sample period consists of pre and post two-year data of 22 SSFs and 23 non-SSFs stock listing in spot market with their respective introduction date. Equal pre and post for two years daily closing prices on each side are used to investigate the impact of SSF in underlying cash market. CAPM is used mean equation, while GJR-GARCH is used as variance equation. The results indicate that in respective stock market the introduction of SSFs did not increase the volatility and market efficiency of cash market. Hence, decided at least, there is no stabilization impact of SSFs. There are several studies[1] that are conducted in the context of Pakistan. Khan, Shah & Abbas (2011) studied the impact of Single Stock Futures on the return volatility of KSE. The study covers 9-year data, initiated from 1999 to June 30, 2008 by using GJR-GARCH approach to check the unconditional volatility of stocks. The empirical evidence presents mix findings for SSF listing stocks in cash market. However, results show the inducements of SSFs not change the return volatility. Awan & Rafique (2013) examined the impact of SSFs in cash market and investigates the structure and volatility containing 24 companies listed in Karachi Stock Exchange. This study shows variance by testing F test and GRACH model is used to estimate the time

[1] [1] Malik, Shah and Khan (2019; 2013, 2012) and Malik and Shah (2017, 2016; 2014).

based volatility of stock exchange. This study contradicts the previous study of Khan, Shah and Abbas (2011) that volatility occurs but structural changings are also observed.

In 2007, the futures contracts were introduce based upon the listed real estate market in Europe. After the launching of futures in European market has received attention from property investors. Lee, Stevenson & Lee (2012) examine the impact of derivative market on spot market volatility and market efficiency. This study concern whether SSFs stabilize the spot market with respect to volatility and market efficiency. To investigate the impact, the data sample comprised 2004 to 2010. this study used GARCH and M-GARCH models for European real estate securities market. Similar with previous studies, this study also depicts the introduction of SSFs did not destabilize the underlying listed market. Numerous studies have been conducted to check the effect of futures respectively. This study contributes the impact of futures on Taiwan stock market. This study contributes the stabilization impact of futures trading in Taiwan Stock Exchange (TSE). The stabilization impact of index futures involves the study cash market volatility behavior. Whether derivative contracts sustain the information transmission tendency in spot market, the volatility decline in spot market. The sample period consists of 5 years daily prices taken from Taiwan Economic Journal (TEJ) database. (Garman & Klass) adopted daily volatility measures in this paper and GJR model is used to measure the volatility in spot prices. This study suggests alter in volatility pattern TAIEX derivatives while MSCI stocks shows has no destabilization impact after the introduction on spot price fluctuation (Chiang & Wang, 2002).

As we observed more and more studies that has been conducted, directly based on the disability impact of futures on spot market however, according to (Bohl & Wilfling, 2010) this study tends to filter the hypothesis that stability and disability impact of futures more accurately than previous studies. The data period comprises from 1997 to 2007 covers 10 year. This paper uses the GARCH model to check the volatility behavior of futures trading developed in (Gray, 1996). This study supports the argument that the futures trading is not considered volatility factor in Poland stock market

Alexakis (2011) examines the stabilization and stabilization impact of derivative trading in equity market. This research highlights the impact on absolute angles, weather futures creates changings, increase(decrease) in volatility or any of positive or negative impact on cash market. This study makes use the data from 1997 to 2004 by using GJR-GARCH and GARCH model to estimate volatility but findings shows no significant relationship of futures and spot market index

Indian capital and futures markets contribute the extensive literature in derivative innovation. However, this study once again primarily studied based on weather Indian market shows any significant volatility after the futures introduction. This investigation has been undertaken with a comprehensive sample data of daily prices beginning from 1996 to 2007. This study concludes that the introduction of derivative trading has reduced the marginal volatility and less reduction in spot market volatility after their introduction (Deo & Saravanan, 2008).

In Turkish context, (Kasman & Kasman, 2007) considers the impact of futures is Istanbul market by using the daily closing price of stock market starting from July 01, 2002 to October 8, 2007. The E-GARCH model used to support the finding whether the introduction of futures plays a vital role in

stability of Istanbul spot market. Hence, no volatility impact is observed after the introduction of futures. These results are consistent with the earlier findings that SSFs did not destabilize the underlying spot market. As we observed different researcher conclude mixed results by using different tools, sample period and other factors. The debate regarding introduction of futures trading alongside spot market is the interesting area and going concern in literature because it supports the investment decisions based on the market information and fluctuation in prices. Few studies are conducted to investigate the impact of index futures on market efficiency and volatility of stock market especially in emerging countries.

Given the continual developments in the debate on the impact of introduction of different forms of derivatives in the market across the globe, there is a need of further evidences that can help conclude this idea. This study also intends to explore the related issue in the context of BRICS countries by using advance econometric methodologies and different data set with the introduction of futures in each country. This study provides the another way to look the volatility and market efficiency effect of futures in emerging countries in the presence of feedback traders that are involve with the deviation of prices from their fundamental values along with enough liquidity. This study is an attempt to provide another evidence from the perspective of emerging markets.

Data and Methodology

This section presents data and econometric methodology that is employed to find out the results.

Data Description

This study mainly considers indices for each country of BRICS to show stock index of each country separately. The daily closing prices of cash market is taken from yahoo finance and respective website of BRICS. To check the volatility in returns and market efficiency for each country the whole sample is divided into main two section: (pre-futures and post-futures data). Table 1 presents the description of the data period respectively.

Table 1: Listing Dates of Futures Indices in BRICs

Country (underlying index)	Pre-data period	Introduction date of index futures	Post-data period	Whole period
Brazil (IBrX-50)	October 17, 1998 to October, 16 2003	October 17, 2003	October 17, 2003 to October 16, 2008	October 17, 1998 to October, 16 2008
Russia (RTSI)	August 03, 1995 to August 02, 2005	August 03, 2005	August 03, 2005 to August 02, 2015	August 03, 1995 to August 02, 2015
India (S&P CNX Nifty)	June 12, 1994 to June 11, 2000	June 12, 2000	June 12, 2000 to June 11, 2006	June 12, 1994 to June 11, 2006

China (CSI300)	April, 16 2005 to April 15 2010	April, 16 2010	April, 16 2010 to April, 15 2015	April, 16 2005 to April, 15 2015

Methodology

This section explains the detail about the tools, techniques and measures that are used for data analysis. In prior studies different tools are used to measure the market efficiency and spot market volatility of underlying stocks. This study encompasses the relationship between volatility and operational efficiency. Famous AR (1) augmented GJR-GARCH model is used to check the level of market efficiency and volatility on underlying stock.

Estimation of Volatility and Market efficiency

This study use following approach[2] to measure the change in volatility and market efficiency. This model is constructed for pre and post period for each stock separately. To generate residual term, AR (1) model is used as mean equation as follows:

$$R_{m,t} = \propto_{i} + \beta_{i,t} R_{m,t-1} + \varepsilon_{i,t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 3.2.1.1$$

Here $R_{m,t}$ is used to the market return.$\propto$ is the constant term. $\beta_{i,t}$ Which appears provides excess market return $R_{m,t}$ over RFR. The company specific risk is measured by $R_{f,t}$. For each coefficient, the associated p-values are used to interpret the statistical significant variables. The mean equation (3.2.1.1) is estimated for each stock and required coefficients and their respective t-statistics are obtained.

The destabilization hypothesis suggests that the single stock futures increase the market efficiency and volatility of underlying stock market. For this purpose, (Glisten, Jagannathan & Runkle, 1993) proposed asymmetric GJR-GARCH model to check that if any observed changes in variation of prediction error are permanent. On the another hand, to diagnose stability/disability futures impact on common market is to check weather futures accelerate the speed at which new information is subsume in the stocks market while comparing from pre- to post-SSFs trading period. (Malik and Shah) proposed the model to check the impact of single stock futures on volatility of stock and information incorporated coefficient $\delta_{i,1}$ is measured by estimating the following equation for pre and post SSFs separately for each stock.

$$\sigma^2_{i,t} = \varphi_{i,t} + \delta_{i,1}\varepsilon^2_{i,t-1} + \lambda_{i,1}\sigma^2_{i,t-1} + \partial_{i,1}\varepsilon^2_{i,t-1} I_{t-1} \ldots\ldots\ldots\ldots\ldots\ldots\ldots 3.2.1.2$$

For, unconditional variance the statistically significant is estimated the p-value of $\varphi_{i,t}$. the market efficiency for each pre and post year stock is present by $\delta_{i,1}$ and conditional variance $\lambda_{i,1}$ is the conditional variance from the past period, and $\partial_{i,1}$ depicts effect of asymmetric news ($\partial_{i,1}$ is dummy variable I_{t-1} takes the value of zero $\varepsilon_{i,t}$ if is negative and the value of one otherwise). If the introduction of SSFs decreases the volatility in the underlying stocks, the variation in the error term

[2] Used by several other studies (e.g., Malik and Shah 2019, Mazouz and Bowe 2006 etc.)

$\varepsilon_{i,t}$ will decrease subsequent to SSFs listing. Market efficiency increases (decreases) with increase and (decreases) in $\delta_{i,1}$ in following stocks, shows the positive rate of information interact in the stock prices. Likewise, the increase (decrease) in unconditional volatility depicts $\varphi_{i,t}$.

Results and Discussion

Tables 2 and 3 present preliminary statistical measurements. Jarque-Berra (JB) test is used to check the normality of each episode of stock returns. Similar descriptive statistics are calculated for developed countries, the results of descriptive statistics for BRICS are given bellow:

Table 2: Descriptive Statistics for Pre-Futures Stock Indices

Stocks	Mean	Median	Minimum	Maximum	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Probability
IBRX_50	0.00	0.00	-0.12	0.05	0.01	-2.82	63.90185	277000.00	0.00
RTSI	0.000361	0.00	-0.09	0.07	0.012716	-0.35	8.455449	3120.00	0.00
NIFTY_50	0.00	0.00	0.04	0.04	0.01	0.12	5.97	423.00	0.00
CSI300	0.000442	0.00	-0.04	0.04	0.009336	-0.43	5.186582	280.00	0.00
JSE40	0.000203	0.00	-0.04	0.027745	0.01	-0.28	6.84	316.6831	0.00

Note: Table 2 presents preliminary statistical measurements. Jarque-Berra (JB) test is also used to check the normality of each episode of stock returns.

Table 3: Descriptive Statistics for Post-futures Stock Indices

Stocks	Mean	Median	Minimum	Maximum	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Probability
IBRX_50	0.00	0.000000	-0.04	0.055963	0.01	0.487540	8.35	1410.00	0.00
RTSI	0.00	0.000426	-0.09	0.087745	0.009986	-0.42	13.91235	12400.00	0.00
NIFTY_50	0.00	0.000680	-0.06	0.03	0.006283	-0.97	9.99	3300.00	0.00
CSI300	9.78E-05	3.84E-05	-0.03	0.021390	0.01	-0.24	5.485078	323.00	0.00
JSE40	0.00	0.00	-0.02	0.02	0.005476	0.144133	3.31	3.672790	0.00

Note: Table 2 presents preliminary statistical measurements. Jarque-Berra (JB) test is also used to check the normality of each episode of stock returns.

Table 4: Maximum Likelihood estimates for CAPM-GJR for Stock Indices:

S. No.	Index	Period	$\propto_i$	Prob.	$\beta_{i,t}$	Prob.	$\varphi_{i,t}$	Prob.	$\delta_{i,1}$	Prob.	$\lambda_{i,1}$	Prob.	$\partial_{i,1}$	Prob.
1	**IBRX_50**	**pre**	49.30	0.00	48.10	0.00	0.00	0.11	0.09	0.20	0.57	0.13	(0.10)	0.19
		post	30.40	0.00	30.00	0.00	0.00	0.01	0.11	0.01	0.58	0.00	(0.11)	0.01
2	**RTSI**	**pre**	169.00	0.00	159.00	0.00	0.00	0.00	0.26	0.00	0.79	0.00	-0.10	0.01
		post	125.00	0.00	119.00	0.00	0.00	0.00	0.16	0.00	0.89	0.00	-0.12	0.00
3	**NIFTY_50**	**pre**	21.40	0.00	21.10	0.00	0.00	0.01	0.12	0.00	0.83	0.00	-0.07	0.08
		post	674.00	0.00	466.00	0.00	0.00	0.00	0.00	0.89	0.68	0.00	0.32	0.00
4	**CSI300**	**pre**	21.20	0.00	20.90	0.00	0.00	0.06	0.06	0.00	0.93	0.00	0.02	0.38
		post	0.27	0.00	0.27	0.61	0.00	0.04	0.03	0.01	0.95	0.00	(0.01)	0.53
5	**JSE40**	**pre**	28.90	0.00	27.50	0.00	0.00	0.07	0.05	0.04	0.83	0.00	0.16	0.01
		post	0.00	0.00	0.00	0.98	0.00	0.00	(0.05)	0.00	1.01	0.00	0.06	0.00

Table 4 shows the results obtained by applying equation 3.2.1.1 and 3.2.1.2 that report mean and variance equation for each index of BRICS for pre- and post-period. For the per period all stocks (i.e., IBRX, RTSI, NIFTY, CSI300 JSE40) shows positive volatility at 5% level of significance. For market efficiency except IBRX, RTSI, NIFTY, and CSI300 and JSE40 show positive market efficiency at same level of significance. Similarly, for post period all stocks IBRX, RTSI, NIFTY, CSI300 and JSE40 shows positive volatility at 5% level of significance. Expect NIFTY all stocks show positive volatility.

Furthermore, the volatility coefficient ($\varphi_{i,t}$) depicts the pre and post period results of BRICS countries. In fact, the study based on the comparison of pre and post volatility of underlying stock market. The p-value of ($\varphi_{i,t}$) determines the change in volatility, however mix results are obtained for each stock index in per and post period. For IBRX, in pre period volatility coefficient is statistically insignificant that means there is no volatility found in pre period. In contrast, the volatility is found by results and conclude that after the introduction index futures in stock market the volatility is found.

For, RTSI, same results are observed for pre and post period the same results are obtained. The p-value of ($\varphi_{i,t}$) is statistically significant presents that the volatility is observed in both period. These results suggest there is no impact of index future in Russian underlying stock market. Furthermore, for NIFTY p-value for pre period (0.0074) and post period (0.0000) is statistically significant suggest that the NIFTY are volatile both in pre and post period. However derivative tools did not affect the underlying stock market nor destabilize after the introduction. Similarly, for CSI300, in pre period the statistical figures (0.0572) show no volatility in underlying stock market but after the introduction of index futures in underlying stock market volatility is found through results. Finally, the top 40 stocks of JSE shows similar results as Chines volatility results that the volatility is not found in pre period but after the introduction of index futures the volatility is found. However, the volatility in stock market is found after the introduction of index futures in the stock market of Brazil, China and South Africa. While the volatility is found in pre and post period of Russian and Indian stock market also suggest no impact of index futures in underlying stock market.

Apart of volatility, literature suggest that index futures simultaneously increase the market efficiency of underlying stock market. However, the coefficient of market efficiency ($\delta_{i,1}$) suggest whether the market efficiency increase or not after the derivative enter in common market as a risk-free investment tool. Same like volatility results, the statistical results are also mix with the patter of time frame. Firstly, in pre period market efficiency was not found in Brazilian stock market but later on the market efficiency is found after the introduction of futures. The results show that index futures effect the market efficiency of underlying stocks. While in Russian market efficiency is found in both pre and post period.

Similarly, the p-value of market efficiency coefficient in NIFTY index (0.0007) is significant suggest that the Indian stock market was efficient before the introduction of index future. On the other hand, the p-value (0.8943) shows the insignificant results in post period. Furthermore, in chines and South African stock market the market efficiency is already found in pre and post period similar with the results of Russian stock market concludes the index future neither increase nor decrease the market efficiency of underlying stock market. On the other hand, the Brazilian and Indian stock market presents indifferent results regarding market efficiency.

***Table* 5: Results for Volatility: AR (1) augmented GJR-GARCH Approach**

Number of stocks with 5% level of significance (Pre period)	3(2)
Number of stocks with 5% level of significance (Post period)	5(0)
5% significantly positive (negative) (Pre period)	5(0)
5% significantly positive (negative) (Post period)	4(1)

Table 5 presents the volatility coefficient ($\varphi_{i,t}$) of stocks. The results explain out of (5) stocks (3) stock indexes are statistically significant in pre period. While in post period, all indexes are statistically significant with 5% level of significance. Similarly, all indexes are positively significant with 5% level of significance in pre period. While only one stock index is negatively significant with same level of significance.

***Table* 6: Results for Market Efficiency: AR (1) augmented GJR-GARCH Approach**

Number of stocks with 5% level of significance (Pre period)	4(1)
Number of stocks with 5% level of significance (Post period)	4(1)
5% significantly positive (negative) (Pre period)	5(0)
5% significantly positive (negative) (Post period)	4(1)

Table 6 presents the results of market efficiency coefficient ($\delta_{i,1}$). In per period out of (5) only (0) stock index is insignificant at 5% level of significant. Similar results are obtained for post period. On the other hand, all stock indexes are positively significant at 5% level of significant. While, (4) stock indexes are positively significant and (1) is negatively significant at same level of significance.

Several other studies have been conducted to check the volatility and market efficiency directly by using different modes to conclude results, weather the index futures stabilize or destabilize the spot Index. The index futures either increase the volatility and market efficiency or stabilize the stock index. Three aspects are necessary to elaborate while concluding results: index futures are increase/decrease or no change in volatility and Market efficiency. With respect to BRIC as emerging zone (Gahlot and Datta, 2012) approach to summarize the results. The empirical evidence suggests that Russian stock market became efficient after the introduction of futures. In contrast (Debasish, 2009) argue that Indian stock market became more volatile and inefficient after the introduction of futures trading in Indian market. The results are also augmented with results of Ang and Cheng (2004), who confirm in his report the market efficiency is improved after derivatives in One Chicago and NQLX and decline in volatility post-SSFs. The results of (Kasman and Kasman, 2008) are consistent with (Gahlot and Datta, 2012). Worth (2010) suggest that the information flow after futures entrance is speed up and market

became more efficient. Regarding volatility, (Hasan, Chowdhary and Snabyashachi, 2011, Milovanova, 2013). Suggest that futures are wholly or partially responsible with the stock volatility. In contrast, (Khan, Shah and Abbas, 2011, Spyrous, 2005 and Ghullen and Mayhew, 2000) argue that there is no change in the volatility of cash market. In this study, combination of results is obtained and present mixture of results because different tools, methodologies and sample techniques are being used to conclude results. These results are consistent with the mix results found by Lien and Zhang (2008) while surveying in emerging indices. (Lee, Sion and Lee, 2012) suggest that in European region, no destabilization impact is found. The results of Gahlot and Datta (2012) are consistent with the results of this study. They argue that the market efficiency increases while the volatility of NIFTY reduced but this study suggest the volatility is found both pre and post period. These results differ on the basis of different methodology Gahlot, who use ACF and Run test to estimate the volatility. On the other hand, this study use GARCH model to summarize the results. Furthermore, Bae, Kwon and Park, (2004) investigated the volatility and market efficiency of KOSPI200 and summarize that index futures destabilize the cash market. However, this study is also similar in results, the volatility of IBRX and CSI300 stocks increase and market efficiency is increased after the introduction except NIFTY. These results are similar with the results of (Bae at al, 2004).

Khan, Shah and Abbas (2011) argue that there is no change in volatility but this study suggests that the stock of CSI300 and JSE 40 became more volatile. Empirical evidence shows both studies used same methodology to depict results but different set of data or any industrial movement may change the findings. McKenzie et al, (2001) report decline unconditional volatility due to the introduction of non-cash financial instrument on spot market but this study argues that there is no impact of futures on the volatility of BRICS. Another study of Malik and Shah (2016) argue that that stringent regulations are unjustified, which may reduce the liquidity and efficiency of the market and do no good to the market. In this study NIFTY stocks are consistent with fallowing investigation. In contrast this study present that there is ultimate increase in volatility after the introduction while the study of Malik and Shah (2012) and Malik (2013 suggest the decrease systematic risk. Same approach is used in both studies but Malik and Shah (2013) used single stock futures and compare with non-single stock futures. The data set is different by summarizing robust results. The contradictory results might be possible while investigating particular variable. Regarding this study, the results deviate due to different factors: methodology, sample size, sample period or any other industrial variations.[3]

Conclusion

The derivative trading in stock market serves as a risk free financial tool that may help to stabilize the cash market. After the introduction of parallel futures market, extensive debate spur on whether index futures stabilize or destabilize the cash market. The destabilization hypothesis explains the simultaneously increase in volatility and market efficiency of stock market. It is obvious while investing in this new financial environment that investors wish to know the impact and future possibilities that are connected with it. They can perceive the true value of such securities form different perspectives that how it is better and affect the spot market. Only one study elaborates the impact in the case of BRICs and no existing study is providing the complete group of nations as

[3] A

BRICS. This study is the first one to highlight the going concern of index futures in the context of volatility and market efficiency by using equal pre- and post- data for all five countries and advance econometric methodology for robustness of results. This study is concern with the comparison of pre and post data and highlights the significant change in volatility and market efficiency. The empirical results show the mixed results for each index. The results show that there is a significant change in volatility of underlying stocks of BRICS indices while comparing pre and post period data set.

Similarly, the index futures increase the market efficiency and the flow of information that reflect the stock market. The empirical results show that market efficiency is increased in BRICS spot index except NIFTY stocks consistent with the study of (Gahlot and Datta, 2012) and opposite with the study of (Malik and Shah, 2016). In nutshell after the inspection of pre and post comparison study shows that the spot volatility and market efficiency is increased. The destabilization impact of futures trading is found thorough this study.

Practical Implications

The results of this study suggest important implications for investors, policy makers, decision makers, practitioners, researchers and regulatory bodies of BRICS. The emerging countries are more attractive market for international as well as domestic investors. Due to the inefficiencies of cash markets the investors are not able to find the risk free way of investment. This study will help the investors and they will be able to know the future trends, returns and volatility of spot market and can take appropriate decisions according to the direction and variation of stocks. Risk averse investors adjust their portfolio by showing interest towards futures markets. This study also highlights the standards and action to be taken for stabilization of cash market. When the volatility increases in market which in turn, tends to great uncertainty, high deviation of prices, less liquidity, market inefficiencies and higher rate of return is observed in previous studies. For making short term profit, speculators and arbitrageurs are attracted towards stock market. Regarding futures, better knowledge about the progress, profits and volatility dynamics help to minimize, manage risk and budget-planning decisions. The regulators and policy makers will be able to understand the anomalies existing in stock market. Findings are important to regulators for reviewing the contract specification (i.e., contract size, contract period, starting and ending dates, overlapping period) and trading mechanism could lead to enhancement of derivative as better risk management tool. Hence, a best market policy for derivative trading would be uplift market stabilization still not effecting market efficiency in stock market.

In emerging markets, the constructive development of futures contracts has to be encouraged by sound macroeconomics updated policies need to be supported. There is no uniform optimal development procedure to stabilize or sequence the stock markets; gradual important amendments for dynamic in different stock markets are encouraged.

Suggestions for Future Research

The following pattern regarding futures provides an outlook from different dimensions to check the stabilization or destabilization impact of derivative market in underlying stock market. This study also suggests to use the different time interval to check the concerning impact. There is need to be construct

different theoretical framework by using different methodologies to conclude the indices of BRICS. It is imperative to state that composite index data might not be a good proxy. Respective individual stock prices or sector indexes might have a more generalized result. This important point can be discussed in future research, while collecting the data on SSFs. This study primarily focused on the pre and post time series regarding the establishment of index futures. Furthermore, the future studies related derivative tools need to be encouraged in BRICS zone. This study highly recommended the study of comparison between developing and developed exchanges by including more indices. This will help to regulators to understand what steps need to be taken for the stabilization of markets as mature markets. The in-depth comparison will be useful to understand the macroeconomic variables which in turns, associated with the destabilization of underlying stock market.

Endnotes

[1] BRICS stands for Brazil, Russia, India, China and South Africa

[2] There are some other reasons for autocorrelation patterns as well. For example, Lo and Mackinlay, 1990; Scholes and Williams, 1977 attribute this behavior to microstructure bias (overlooking "nonsynchronous trading). On the other hand, there are few studies that risk as the main reason of such type of autocorrelations. For example, Conrad and Kaul, 1988; Fama and French, 1988 anticipate temporal varying risk premium in the short run as the primary reason for this type of autocorrelation.

[3] Buncic and Moretto, 2015; Bekiros, Gupta and Kyei, 2016; Chiang and Chen, 2016; Gupta et al., 2016; Shang et al., 2016; Sousa et al., 2016; Cai et al., 2017).

[4]Baldauf and Santoni (1991), Becketti et al. (1997), Schwert (1990), Fortenbery and Zapata (1997), Jochum and Kodres (1998) and Nets (1995).

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Exploring the Role of Technological Interventions in Consumer Buying Behvior

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Abstract

Historically, abundant research has explored the dimensions of consumer behavior within the context of traditional retail businesses. However, with the rise in digitalization, availability of faster internet speeds, and emergence of freemium business models there is a dire need to revisit our understanding of traditional consumer behavior models. An application of this radical change can be seen within the context of various online free-to-play multiplayer games that offer in-game customization options such as cosmetic changes within the character designs, possibility of changing whether effects, innovation map designs, new playable game modes, and similar options offered to customers in a form of a compendium. This phenomenon has greatly rejuvenated the need to rethink consumer behavior models from physical to digital marketplace. Therefore, this paper attempts to present a better understanding of consumer buying behavior within the context of digital marketplace by incorporating the theoretical foundations of digital innovation. Furthermore, variety of customer orientations have been explored with an aim to provide better understanding of customer purchase decisions in an online multiplayer game called Defense of the Ancients 2 (Dota 2). Lastly, the paper proposes several theoretical propositions that lay down the foundational work towards reconceptualizing consumer behavior as a consequence of digital innovation within the context of virtual marketplace.

Keywords*:* freemimum business model; consumer behavior; digital innovation; virtual market

Introduction

Understanding consumer buying behavior is one of the contemporary topics within the context of digital marketing. The availability of faster internet speed and technological upgradation has allowed the consumer to purchase almost anything online. However, researchers generally agree that high levels of customer satisfaction and website purchase experience has remained an essential component towards establishing long-term profitable relationships (McKinney, Yoon, & Zahedi, 2002).

Technological upgradation has effectively changed the way consumers undergo buying processes and make purchasing decisions especially within an online setting. Debate within marketing literature is now focusing on developing the understanding of such processes and the factors that may influence consumer decision making processes. Therefore, consumer experience in an online purchase settings and its interaction with surrounding factors in now a central focus of e-marketing literate (Constantinides, 2004).

In conjunction to this debate, there seems to be a rapid growth within the technological-based improvements (both software and hardware) in hand handle devices, computer hardware and software designs, availability of large storage space through dedicated server hosting for organizations to increase its customer base that has led to the creation of entirely intangible products and services for consumers to choose form. For instance, the development of various mobile phone apps (games, utility software and educational learning software) which can be bought by the consumers in order to fulfill their specialized needs. Similarly, variety of console-based, mobile-app based, and computer-based games are no longer selling a one-packaged deal to its consumer, instead various subscription-based offers, customization options, ambient effects, just to name a few, are now available for purchase that represents the way gaming industry business model has transformed. This in-fact present a freemium business model where the price of the original digital product (games and software) is free, however, offering several in-application purchases.

This presents a new era of intangible product market where consumers can purchase new products, subscriptions, customizations and other cosmetic options that may or may not affect the performance of their original product. In fact, now organizations can engage with their customers in an act of co-creating the intangible product and services that can be made available to every customer as an option to purchase. Proceeds of such co-created intangible items are usually shared with the content creator and allows the organization to effectively position its products in parallel to the needs and wants of the consumers. This paper presents the example of Defense of the Ancients (Dota 2) gaming platform to that is developed by one of the biggest names in digital gaming industry Valve Corporation. The case of Dota 2 is presented to better understand the change in the nature of consumer decisions making processes in a digital mark place.

Dota 2 represents a gaming genre of multiplayer online battle arena (MOBA) where two teams of five players compete against each other with an aim to destroy the ‘ancient’ (main base) of another team. As simple it may sound however, the game itself presents an opportunity to the players to employee variety of different strategies, hero (playable character) combinations, in-game environment interactions that require high level of player skill and gaming knowledge in order to compete.

As the game has achieved considerable popularity among the gaming community since it is free to play, Valve Corporation has incorporated several purchase options for its consumers such as in-game sound effects, items visualization upgrades, cosmetic updates in the playable character models, compendium purchase options, and variety of other customizable offers. To make the game more engaging, valve has also included a new battle points system, a kind of in-game currency that can purchase through real

money quickly or through playing the game itself that can be used to purchase the above-mentioned customization options. A quality recognition system that differentiates the rarity of each item has been implemented with most expensive of the items being categorized as immortals. However, customizable items are solely associated with the outlook of the game being played and can be observed by other players within a particular game. They don't necessarily provide any advantage in the gameplay.

Literature within the domain of consumer behavior has essentially focused on the factors associated with understanding consumer buying behavior in physical market environments, or the purchase of physical products/services in digital market place see for example, (Bellman, Lohse, & Johnson, 1999; Ming-Sung Cheng, Shih-Tse Wang, Ying-Chao Lin, & Vivek Shiri, 2009). However, understanding of consumer behavior during the purchase on intangible products (digital products) has largely been ignored. Therefore, it is of utmost importance to develop an understanding of consumer behavior, its processes, and corresponding factors within the context of digital products being purchase online in games such as of Dota 2. Keeping in view, this paper aim is twofold. First it attempts to explore the factors associated with consumer behavior in digital purchase decisions. Second this paper attempts to redefine the consumer purchase process during digital purchase decisions.

In order to achieve research objectives, this review paper is composed of four major sections that are discussed in a sequential order. First section highlights the historical developments in consumer behavior research that is presented in a chronological sequence. Second section attempts to discuss a shift from traditional to contemporary consumer behavior theories with an attempt to identify influencing factors of digital consumer process. Third section tends to provide a deeper understanding of processes and steps involved in consumer purchase decisions in digital context. Lastly, conclusion and future recommendations are presented.

Literature Review

The dominating view largely associated with consumer behavior research has understand it as a part of shopper's learning experience that comprise of information processing decision making before making a purchase (Bettman, 1979; Capon & Burke, 1980; Dibb, Simkin, Pride, & Ferrell, 2005). Additionally, marketing academicians has been interested in understanding the associated processes of consumer decision making, the way they interact with incremental and radical changes in product/service designs, and exploration of factors that affect behavioral outcomes during purchase decisions. (Ajzen, 1991). Some of the generally accepted factors that influence consumer decision making processes have been the consumer demographics, economic conditions, cultural settings, social ties (Jobber & Ellis-Chadwick, 2012; Solomon, Hughes, Chitty, Marshall, & Stuart, 2013).

Even so, consumer behavior process that are based in an online setting presents a depart from the traditional understanding of the phenomenon and move beyond the simple application of marketing mix tools majorly because it presents several intervening elements such as customer online experience, website layout, content design and presentation that constantly shape the way a consumer engage into the processes of decision making. (Constantinides, 2004).

Consumer Behavioral Process in Traditional Theoretical Underpinnings

Conventionally, there are several approaches that tends to explain the process of consumer buying behavior. These approaches are briefly discussed in the subsequent sections with purposes of bringing clarity to the subject matter.

Consumer decision making process has been a center of interest for researchers. Traditionally, different approaches have been used in developing the understanding of consumer decision making process. These approaches are discussed here in a chronological manner.

The Economic Man

Domain of economics have explored humans as 'rational beings' that tends to seek utility maximization (Richarme, 2005). In other words, humans are considered as rational beings that have the ability to choose between the alternatives keeping in view the option that has the potential to maximizes its benefits. (Schiffman, Kanuk, & Wisenblit, 2000). It is however argued that consumers decision making process are not solely associated with utility as they tend to lean towards the options that ultimately provide satisfaction in any given transaction (Simon, 1991). Additionally, the role of customer value plays a major part in consumer decision making processes (Eggert & Ulaga, 2002) and is subject to context-specific variation (Peterson & Wilson, 1992). Therefore, the concept of 'economic man' hasn't received much popularity as a basis for explaining consumer behavior processes.

Psychodynamic Approach

Psychodynamic approach is based on the foundational work of Sigmund Freud and puts forward the notion that individuals' behavioral outcomes are associate with their biological drives and the role of cognitivism not necessarily entails logic in every decision-making situation (Freud, 1989).

Behaviorist Approach

On the other hand, Behaviorist approach put forward the notion that behavior of an individual is not only changed due the presence of intrinsic aspects but also several external factors for instance, mindedness, feelings, or happenings in surrounds does change the way someone behaves. (Watson & Rayner, 1920).

Cognitive Approach

Essentially, cognitive approach highlights the importance of information processing and present individual as rational decision maker based on the alternative information that is provided and processed by him/her (Ribeaux & Poppleton, 1978). In this view, Customer (individual) is seen as an information processor that takes the information from several external stimuli in order to make a decision. Here information as an external stimuli serve as an aid in decision making process (Cziko & Press, 2000). Cognitive approach to understanding human decision making has gained considerable attention and popularity over the years (Furedy & Riley, 1987). It is argued that cognitive approach towards

understanding provides greater insights not only in physical purchasing situation but also in online virtual market settings.

A Paradigm shift from Traditional to Contemporary View of Consumer Behavior Process

Wu and Chen (2000) presented an integrative model of customer buying behavior taking into account the factors of consumer purchase time, its decisions making process in stores settings and repurchase behavior. As indicated by them, physical purchasing environments tends to engage consumers in initial purchase transaction which in turn increases the likelihood of repurchase decisions. They further noted that consumers are different in terms of the quantity they purchase and so their decision-making processes for purchasing goods and services. Similarly, Fader and Hardie (2002) emphasized that one-time buyers should be considered and accounted for in the integrative model of consumer buying behavior. Proposing few changes to the integrative model, they provided the reasons behind on-time buyers not make a repurchase after their initial purchases.

Additionally, there are several other factors that serve as an 'external stimuli' such as in-store ambience and demographics of the consumers that plays an important role in consumer decision making process and information processing. In contrast, Pawar, More, and Bhola (2014) argued that knowledge of the consumers about the store and the availability of the time directly influences consumer purchase decisions. They further noted that knowledge deficiency about the store in terms of the products, services, or layout necessarily increases the time it will take for the consumer to make a decision and thus lead towards failure to purchase.

Research stream within the domain of marketing has also identified 'continence' factor has a influencer over consumer purchase decisions (Bradley & Nolan, 1998; Jarvenpaa & Todd, 1997; Strategies, 1998). While some studies (Brown, Pope, & Voges, 2003) has also shown disagreement towards consumer orientation hypothesis. In other words, several product-based features may influence consumer while purchasing online. Furthermore, Brown et al. (2003) identified six unique clusters of online shoppers represented by either single or combination of specific orientations, namely, personalized shoppers, recreational shoppers, economic shoppers, enjoyment seeking shoppers, convenience-oriented shoppers and community-oriented shoppers.

This section attempts to theorize a link between consumer orientation factors and consumer buying process within the context of digital virtualized market place of Dota 2 keeping view the literature discussed in the above section. Several factors present a link between consumer shopping experience, its orientation and buying behavior in an online setting, especially when the product in question is intangible in nature. For instance, consumer recognition system in Dota 2 virtual market place tends to identify the consumers with profile badges such as in-game ranking, community contribution badges, milestone achievement badges, games ownership badges and the years of service badges for the Dota 2 community. Therefore, it is proposed that

Proposition No.1: Personalized services in a form of online consumer recognition positively influences consumer purchase intentions in a virtualized marketplace.

While there are consumers who simply tends to enjoy the process of purchasing online. The availability of Dota 2 marketplace, its extensive purchasing options and featured products tends to initiate a sense of recreational pursuit for consumers and are associated with compulsive nature of buying online. Variety of factors are linked with such forms of compulsive consumer behavior. Notable of which is associated with an individual need to communicate a self-completion value (Yurchisin & Johnson, 2004) and maintenance of a social status (Jalees, 2007). Here, consumers are compulsive to fulfill the need of their social desire though acquiring the possession of rare Dota 2 items that are either expensive to purchase directly or difficult to obtain otherwise. Therefore, following proposition emerges

Proposition No.2: Consumers' compulsive need to fulfill social desirability positively influences consumers' purchase intentions in a virtualized marketplace.

Moreover, Dota 2 store offers several discounts offers to consumers that subject to weekend sales, special promotional discounts, and cost saving due to purchasing in larger quantities. From the perspective of 'economic man' rationality presented in previous sections, such offers present an opportunity for utility maximization for the consumers to acquire digital (intangible) products in larger quantities or to gain relatively higher battle pass levels in order to unlock several cosmetic features in the game. Figure number 1 highlights an example of such offers.

Fig. 1. An example of discount offers presented to consumers for purchase in Dota 2 virtual markeplace

Dota 2 community market is also a feature made available for the Valve corporation that allows the consumers to purchase Dota 2 tradable items directly from other consumers at a discount rate. While Valve charge percent of each transection as a fee. Following proposition has been presented

Proposition No.3: Promotional bundles and discounts offers in virtual store influences consumers to purchase in higher quantities.

Additionally, Dota 2 offers a system of loot-boxes which allow the consumers with a small chance to obtain rare items. These loot boxes include various types of cases, collectors' cache, chests, and treasures that includes a list of droppable items. The digital intangible contents of these loot boxes are comprised on various cosmetic items that be used within the game, although, they do not provide any competitive advantages in PVP (Player versus player) matches. Consumers seeking to obtain rare items tends to spend relatively higher compared to consumers who restrict spending in a freemium business.

This encourage the consumers spend relatively higher real money with hopes to acquire rare items and successfully 'winning' the rare items from the loot boxes sometimes encourage the consumers to spend even more (Griffiths, 2018).

Figure number 2 highlight an example of a loot box from the game Dota 2 that highlights a list of possible items that can be dropped from the loot box on each consecutive purchase. Therefore, following proposition is made.

Fig. 2. An example of a loot box that can be obtained from Dota 2 store

Proposition No.4: Speculation based items such as loot-boxes influences consumer re-purchase intentions.

Contextually speaking, the concept of continence in physical purchase settings is relatively different within the online store environment. It is due to the fact that any purchase of intangible items on Dota 2 store usually transfer to consumer account instantaneously for usage. Therefore, continence here resembles other benefits that Dota 2 virtual store provides to its customers, such as 'demo' option where consumers can use a trial of the any particular product, he/she is interested to purchase. Moreover, the refund option in Dota 2 store can also be utilized which serve as a continence to the consumers who made an accidental purchase. Lastly, Dota 2 consumer help feature allows one to one communication with Dota 2 customer service that provide convenience in terms of consumer quarries handling and troubleshooting technical issues.

Proposition No.5: Virtual convenience in terms of product demos and rapid online customer service positively influences consumer purchase intentions.

Dota 2 supports several charity events and professional players support programs. These community charity events include game tournaments funds raisers. While Dota 2 biggest gaming annual tournament 'The International' dedicates almost 2.5% percent of the in-game compendium sales proceeds to the overall prize pool of the tournament. This allows consumers to donate directly to the gaming tournament

in order to support their favorite professional players Witkowski, Recktenwald, Manning, & Ge, 2016). Such phenomenon supports a participatory culture among the community of Dota 2 and delivers a sense of accomplishment towards the professional players to work hard towards obtaining higher rewards.

Proposition No.5: Digital products that promotes community development positively influences consumer purchase intentions.

Following table represents an overview of identified consumer orientations and their link with consumer purchase intentions within the context of online Dota 2 store.

Table 1Unveiling the Link Between Online Purchase Intentions and Consumer Orientations

Consumer Factors	Explanation	Link with Dota 2 Online/Virtual Market place
Personalized-Shoppers	Personalized services are prefered by the consumers	Personalized consumer badges and recogniztion programs
Recreational-Shoppers	Consumers that enjoys shopping as compared to those who doesn't like the process	Dota 2 virtual store offers extended experience for online shoppers through store browsing options
Economic-Shoppers	Consumer seeks utility maximization	Discount bundles and weekend promotional offers on Dota 2 store
Enjoyment oriented Shoppers	Consumer enjoys the process of purchasing in an online environemnt	Customizable in-game options, weather effects, sound track purchase options, just to name a few
Convenience oriented Shoppers	Convinence seeking consumers that require extended customer support and product trials	Dota 2 after sales services and intengable product demo feature for consumers
Community oriented Shoppers	Consumers that like to make purchases that directly or indirectly supports community service	Compendium purchases from Dota 2 store directly contributes towards the prize of Dota 2 competitive events that supports Dota 2 professional players

It is vital to note here that combination of above-mentioned consumer orientations can be the source of consumer purchase decisions and not necessarily one particular reason. Discussion so far has highlighted the role of several precedent factors that influence consumer purchase intentions. However, it is important to note that recent advances within computer technology have enabled the creation graphic intensive character design models and aminations. This has allowed the organizations to incorporate technological innovations within game architect designs. The tech-based upgradations have paved the way for innovations at both incremental as well as radical model designs. Consequences of such innovations has directly influenced consumers' engagement and ultimately their perchance intensions. At a theoretical level of analysis, the link between technological innovations and consumer buying behavior is yet to be discussed in detail.

At its core, technological innovations within software design has greatly rejuvenated the freemium business model since such innovations allow the consumer to not only engage more with the product/service but also serve as an 'aid' in decision making processes. Complex cognitive processes that entails purchase decision regarding intangible products and services are therefore are aided with information simplicity through radical/incremental design changes within the available cosmetic upgradation options. Consumers find it simpler to associate the product and service in question with reference models that allow them to proceed with the purchase decision. Following section elaborate the theoretical underpinnings with the help of elaboration likelihood model.

Role of Digital Innovation in consumer purchase intentions

Discussed previously, cognitive school picture information processing as a way to provide ease in consumer cognitive processes, particularly, the purchase intentions (Cziko & Press, 2000). Bettman (1970) not only emphasize on the nature of the information itself but the way it is perceived and acquired by the consumer during purchase decision making processes. While Jacoby, Chestnut, and Fisher (1978) provided a concrete model for consumer information processing during buying behavior. Bettman (1979) further highlighted that consumers problem solving activities entails several task-format strategies that help them make decisions regarding purchasing a product and choosing between alternatives.

For the elaboration of how consumer reach to a particular decision, it important to understand the process of solving a particular problem by the consumers. For instance, Capon and Burke (1980) highlighted the role of consumer preferred strategies during decision making processes that are subject to choice tasks, the resultant behavior is then an outcome of both preferred and task format strategies. They further noted that consumer undergo two key cognitive processes during decision making. Here, attribute process portrays a behavior of consumer to compared alternative products attributes during decision making and is subject to logical way of making a decision. While brand processing is likely

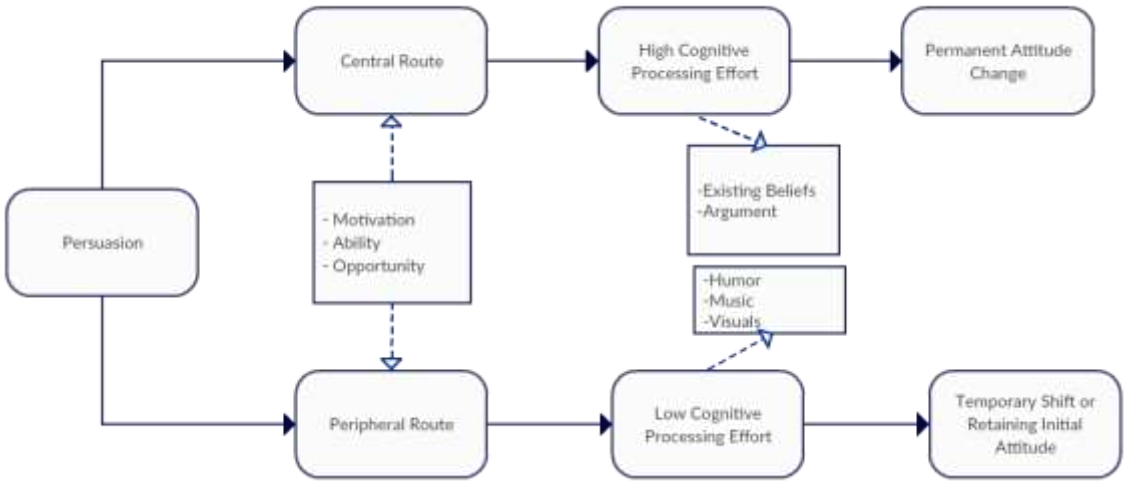

Fig. 1. Elaboration Likelihood Model

the outcome of a situation where information is abundantly that required low level of cognitive effort for making purchase decision. Here consumers are likely to rely on excessive brand information and association towards making a purchase decision.

Within the context of digital innovation, it can be seen that attribution process is likely to be the result of an innovation that results in more choice options (incremental changes within existing products) while less in terms of information being provided. On the contrary brand processing seems to be an outcome of innovations that tends result in an entirely new digital product being offered in a dedicated theme format.

Further studies highlighted the shifts that can occur within the consumer attitudes. See for example, Petty and Cacioppo (1986) put emphasis on explaining the consumer attitude change with the help of elaboration likelihood model. This integrative model explains shift in the consumer attitude change (purchase intentions) with the help of two alternative cognitive embedded processes namely central and peripheral route of information acquisition and processing. A former is an outcome of consumer intensive thought processes and careful consideration during a purchase decision. Consumers are likely to engage central route of information acquisition and processing under situations where product information is less readily available or/and complex in nature that requires careful consideration of the attributes associated with the digital product in question. On the contrary where information aid is available in a sense that consumer can related to (such as brand information and themed-based digital products) during the cognitive processes, they are likely to engage in cognitive heuristics for faster decision making.

Figure number 2 highlights consumers' elaboration routes under different contextual parameters and usually depends on the level of motivation and the ability of the person (consumer) (O'Keefe, 2008; Petty & Cacioppo, 1986) to engage into various type of cognitive processes during purchase decisions.

The information being received by the consumers and their resultant cognitive processes can be seen in a form of continuum ranging for high information/low cognitive effort to low information/high cognitive effort. While information here refers to the level of information being received by the consumers as they perceive the digitally innovative product in different product offerings available in freemium applications. (Petty & Cacioppo 1986).

Keeping in view the digital innovation context, this paper argues that technological innovations when presented to consumers in a form of newer products are likely to motivate the consumers to engage in one of the cognitive processing routes during purchase decisions that ultimately lead towards a change in consumer attitude. In other words, product design innovations, specifically the intangible ones, trigger unique consumer responses based on end product design itself. Additionally, upgrades in old product designs or newer product designs on the existing products present a classical situation of creative destruction. Here consumer acceptability of the new design, general view of the consumers towards the innovative design, and accessibility of consumer towards newly designed product set standard in terms of which product design among the released so far is dominant (thus incorporating a

high value/rarity) (Suárez & Utterback, 1995). This can be seen in price variability reflected in the Dota 2 community market where consumer can resell their cosmetic upgrades at prices determined by the consumer market and not by the Dota 2 itself.

Keeping in view the above discussion, it can be seen that cosmetic upgradations options within DOTA 2 store can be viewed in terms of incremental and architectural product designs changes. Newly released cosmetic upgrades (digital product design innovations) complete with the older cosmetic upgrades of the same product and can be considered as competing technologies. Several factors can play their part towards the general acceptability and perception of the competition technology as a dominant one, however discussing them this exceeds the scope of this paper. Furthermore, new cosmetic options can be viewed under two main categories. Architectural changes that refers to major design changes (addition of comprehensive background story, modification in character animations, addition of new ambiance features, alternative character voice upgrades, just to name a few) within the product once equipped and incremental ones that more or less changes one or two features of an existing model.

This paper propose that incremental design changes reflected in innovative designs results into a situation for consumers to process more information in an attempt to make an overall understanding of the product itself. While extensive architectural design changes reflected in new innovative cosmetic designs provide more information in terms of background story, design concept, ambient effects, and such that gives a 'holistic picture' to the customer about the product and thus consumers are likely to engage in the peripheral route of processing the information.

In order words, any innovation in the digital product design will either lead towards central route of processing information where consumers might be interest in the several attributes changes within the product design innovation or peripheral route of information processes where consumer would be interested in the overall holistic picture of the product design. Therefore, following propositions are presented

Proposition No.7: Incremental changes in the product design (customization in parts) effectively motivates the consumer to take a central route of processing information and requires high cognitive effort during purchase decisions

Proposition No.8: Architectural changes in the product design (customization in parts) effectively motives the consumer to take a peripheral route of processing information and requires low cognitive effort during purchase decisions

Conclusion

Technological uncertainties are attributed to cyclic processes technological change within the product designs(Dota 2 store) (Anderson and Tushman 1990). This cyclic process initiates with a technological discontinuity of older technologies and initiation of newer product designs. This paper attempts to link the cyclic processes of technological innovation (in this case digital innovation in terms of cosmetic

product designs) with the change in consumers' buying behavior patterns, a link that has been less discuss within the literature so far.

This paper also provides foundational work towards understanding the consumer behavior responses as a result of making a decision about purchasing intangible (digitally available) products. This link has been less discussed within literature since majority of existing explanations are subject to tangible products purchases either in physical or online market place settings. Lastly, the paper also contributes towards highlighting several consumer orientations that may play an antecedent role towards influence consumer buying behavior within the context of digital innovation.

Furthermore, this paper attempts to explain the difference that exists within the price ranges of digital products that are result of digital innovations (both incremental and architectural in nature). It is argued that price difference doesn't exists due to nature of design innovation per se but also because of the way organizations expect their customers to perceive the information associated with such innovations. Here, the role of co-creation is also highlighted that allows the organizations to design product/services that can created the desire perception in minds of the consumers through digital innovation in a form of new cosmetic designs. Failure to design a digital product that can provide an information aid during cognitive processes would require further reinforcement to sustain (Griffin, Neuwirth, Giese, & Dunwoody, 2002).

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Impact of On Job Training, Training Design and Training Delivery Style on Organizations Performance

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Abstract

Organizations are struggling hard for the success and attainment of competitiveness utilizing skilled human resource. The particular problem discussed in this research is to determine the influence of training on performance of employee and organization within the education sector of Rawalpindi and Islamabad. For getting the primary data about the concepts of people, a survey through questionnaire comprising of 15 questions was carried out. The questionnaires were sent to 300 people, in Rawalpindi/ Islamabad. To depict a good representative of the study, the sample size was chosen randomly. The replies were collected on paper. The independent variables of the study were three in numbers (On job training, Training design, Delivery Style) and Organizational performance is a dependent variable which is being affected by these independent variables by mediation of employee's performance. The data has been tested on SPSS. To find the importance of these variables and to evaluate the results Cronbach's Alpha, descriptive statistics, correlation, regression and ANOVA were used. The results show that the independent variables training design, delivery style and on the job training has positive and significant relationship with the dependent variable organizational performance by mediating variable employee's performance and clearly depicts the strong variability among variables.

Keywords Training & Development, Job Performance, Human Resource Management, Training Design, Organization Performance.

Introduction

It is a valuable for the organization to be aware of all the important and realistic aspect to keep their resources up to date (Initiative, L.A. 2002). High attention is required by the manager to Human Resource Management functions. This study, precisely, focuses to confer vital basis, amongst many, of human resource that is, training, employ functioning and the way the former influences the latter.

Now a day organization has to accept much more of globalization, variations in technology, political and economic environment (Björkman & Stahl, 2006) and for this purpose firms are encouraged to pay special attention to employees for training as one of the influential ways to make themselves be ready to adjust to boost their capability. Over the last decade, it has been essential to not pass over the existing verification on flourishing of knowledge in the company group. This escalation is not only the result of proficiency nor a collection of resources to producing goods and services but expanded and enhanced efforts put towards the progress of organizational employees caused this much growth. It is, therefore the duty of every firm to extent and improves the performance of employees, undoubtedly mostly firm's required achievement in training and development. It is essential for the employees to participate towards the company objectives for the better performance. Manager is responsible to hire sufficient and skilled staff to increase the performance of organization (ADIK, 2014).

Work force is considered as an inestimable asset of any firm because they can break or make a company's repute and can negatively influence the utility and efficiency of a firm. If there is no proper training for the employees than there will be lack of skills and very low potential of proficiency in their task. Trained employees always provide long term benefits to the organization as compared to untrained employees (Johnston, 1991).

The particular problem discussed in this research is to check out the significance of the training for the lecturers and examine its association amid training and their performance. Though overall goal is to investigate the impact of Training Design, Delivery Style and "On the Job Training" on Organizational Performance through mediation of Employees Performance. Some of the sub-goal set for this study are followings:

1. To achieve the impact of training design on employees' performance.
2. To achieve the impact of delivery style on employees' performance.
3. To achieve the impact of on the job training on employees' performance.
4. To achieve the impact of training design on organizational performance.
5. To achieve the impact of delivery style on organizational performance.
6. To achieve the impact of job training on organizational performance.
7. To achieve the impact of employees' performance on organizational performance.

Training and development helps organization to achieve their goals effectively and efficiently (Garavan et al., 2020). Organization must seek the problem and bottle neck arises in implantation of these. The main purpose of this study is to determine the influence of training on performance of employee and organization within the educational sector of Rawalpindi and Islamabad. The hypothesis

has been developed and validated by assemblage and assessment of quantitative data achieved from related respondents to ascertain the contributory connotation amongst various variables. Performance of employees is very significant for the performance of organization; organization should adopt the certain modes for training their employee that enhance their overall efficiency as well as the productivity of the organization.

Literature Review

Undoubtedly HRD function was an essential function of HRM and training and development was included in HRM function(Weil & Woodall, 2005). Earlier training was considered as an important research topic and extensively preferred by the researcher for the research as it was a paramount function of HRM (Beardwell & Claydon, 2010).

Training Design

It was mandatory for any organization to design its training program with deep concerns (Michael, 2000). Training program should be designed by focusing the requirement of employees towards the organizations. Organizations that focused the requirement of employees and organizational goals while designing training program then it will be always very beneficial to them.(Partlow, 1996).Lack of effective training design not only leads to the loss of time but also increased the expense of company (Tsaur & Lin, 2004).

For successful training and proficiency in performance of organization, the trainees should be equipped with some skills, the motivation to learn. Since the objective of training was to assist learners to learn and practice at their own pace, it was therefore very obvious that a clear understanding of the ways in which learning theories were applied when designing training programs are explained and demonstrated where possible.

Delivery Style

Delivery style was very relevant to Training and Development. It is much worthy Delivery style made workforce responsive and conversant (Michael, 2000). If a trainer had not delivered in a massive manner and also he was unable to capture the trainees' attention than it clearly depicted that he had wasted his time. Therefore a trainer should adopt the best method to attract the attention of addressees as much as he can. The HR Department must ensure that the session should be able to catch the trainees' interests. The general recommendation was that training should be conducted on a trial basis to identify the requirements regarding training design (Gowri, 2011).

On the Job Training

OJT was the very best technique to enhance the skills of employees (Deming & Edwards, 1982). It helped the employees to learn from their practices by performing their duties on the job in a better way. On the job training was very beneficial both for the employees and organization because it reduced the cost of training and also saved the time of employee and employer (Flynn, Schroeder, & Sakakibara, 1995). On the job training could be beneficial for the employees as well as for the organization because it not only saved the time of the organization but also reduced the cost(Taylor & Davies, 2004).

Employees Performance

Employee performance was defined as mutual output and addition of effort of employees to achieve the specific goals given by an organization in perspective time (Pigors & Myers, 1969) while performance referred to accomplishment of responsibilities with respect to process, results, relevancy and success. Employee performance demonstrated the improvement in production by perfect use of new technology with the help of highly aggravated employees (Al-Omari, Alomari, & Aljawarneh, 2020).

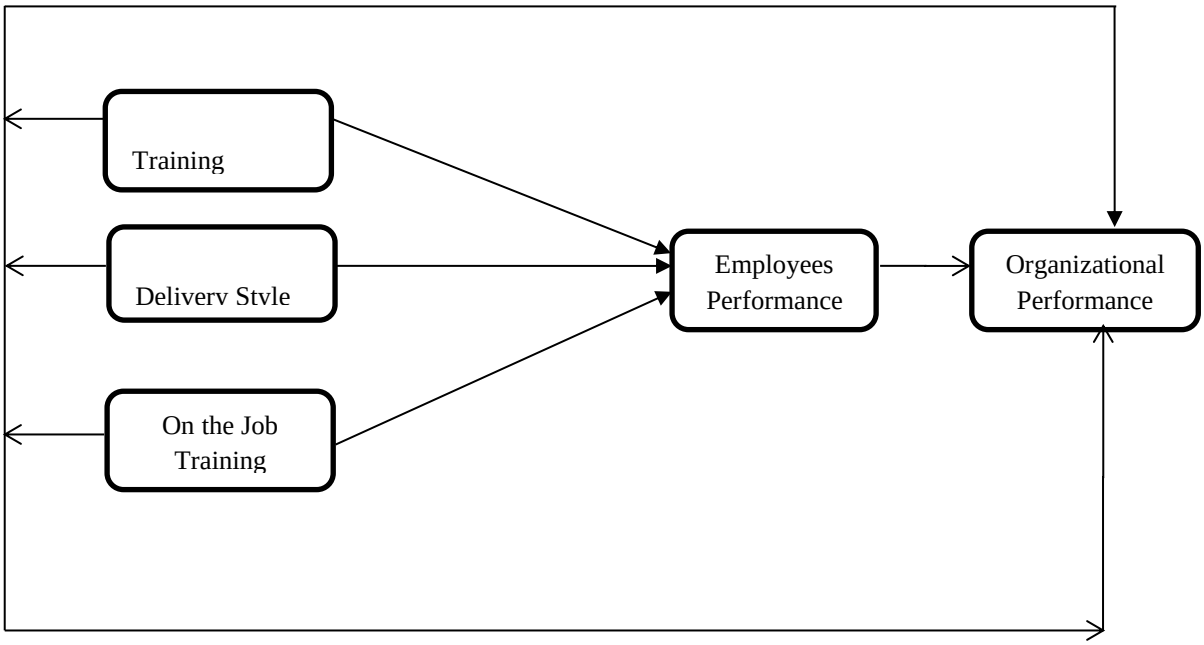
As noted by (Waters, 1992) company managers were responsible in making every effort by the organizations to achieve high performance levels. Manger used to set high standards for individual in order to measure the performance of employees for the betterment of organization (Buchanan & Badham, 2020).

Organizational Performance

Organizations played a very important role in our daily lives as they affect the progress and development of nations and therefore more flourished organizations leads to successful and developed nation (Garavan et al., 2020). Organization also affected the social, economic and political progress of a country. Specifically for this reason, in the last 22 years, those researchers who focused on analysis of different organizations and institutions were awarded with noble prizes almost 6 Nobel prizes had been distributed on this effort.

The most significant variable in management research was organizational performance and possibly the most important indicator. As the performance measurement is different for different sector industry so it was not easy to determine and access the performance of employees and no general definition was so compared to value the degree of performance.

Conceptual Framework



Hypothesis

H2: Delivery style impact significantly on employee's performance.
H3: On the job training has significant impact on employee's performance.
H4: Training design impact significantly on organizational performance.
H5: Delivery style impact significantly on organizational performance.
H6: On the job training has significant impact on organizational performance.
H7: Employees performance has significant impact on organizational performance.
H8: There is a significant impact of training design on organizational performance through mediation of employee's performance.
H9: There is a significant impact of Delivery style on organizational performance through mediation of employee's performance.
H10: There is a significant impact of "On the job training" on organizational performance through mediation of employees' performance.

Research Methodology

A quantitative research was applied on this study. The population of this study was the employees of Indus Group of Colleges, working in Pakistan particularly situated in twin cities of Islamabad and Rawalpindi. Conducting a statistical survey allows researchers to predict some characteristics of the aggregate or the entire population (Eboh, 2009). A survey through questionnaire was carried out and in this research sample size was 300. To depict a good representative of the study, the sample size was chosen randomly. The replies were collected on paper. The independent variables of the study were three in numbers (On job training, Training design, Delivery Style) and Organizational performance is a dependent variable which is being affected by these independent variables by mediation of employee's performance. Similarly, these all variables had calculated by the five-point Likert scale (e.g., Strongly agree=1, agree=2, neutral=3, disagree=4, strongly disagree=5). Where strongly agree was represented by 1 and strongly disagree was represented by 5.

Analysis and Discussion

Reliability Analysis

If we repeat the measurements a number of time, consistent results will achieve, which can be termed as reliable. Such analysis can be called as reliability analysis. In a scale proportion of systematic variation is used to determine the reliability analysis and the scores which we get from various administrations of the scales are helpful in this regard. Hence if reliability analysis shows good relationship, the results of scale will be reliable.

Table 1: Case Processing Summary

		N	%
Cases	Valid	262	100.0
	Excluded[a]	0	.0
	Total	262	100.0

a. List wise deletion based on all variables in the procedure.

Table 2: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.715	.715	15

Cronbach's Alpha provides the reliability coefficient for set of different variables. It is a measurement tool of providing interior strength. It is mostly used when we have quite a few questions to choose with in an assessment analysis. Here Cronbach's alpha had scuttle on a mock-up volume of 262 employees. In the above table, value of Cronbach's Alpha is 0.715 (15 elements) which shows the sound reliability and consistency.

Regression Analysis

English biometrician, Sir Francis Galton (1822-1911) used the term regression as a phenomenon in which he analyzed the heights of children with their parents. These days, Regression is used in finding a dependence of one variable called dependent variable on one or more variables called independent variables. He has given an equation for the estimation of regression by predicting the average value of the dependent variable from the given values of the independent variable. Independent variable has a fixed value whereas dependent variable is a random variable. Regression relation is a relationship between the foreseeable value of independent variable and dependent variable. In a simple and two variable regressions we study the dependence of one variable on the other one independent variable. When we have one dependent variable and two and more independent variables then their relationship is called multiple regression. Furthermore, when the dependence of variable is demonstrated by a straight line equation then regression is known as linear otherwise nonlinear.

It is valuable to note that the variable of our interest is dependent variable while the variable which is used to analyze the variation in the dependent variable is known as independent variable.

Some more terminology: The dependent variable is also known as response, regressed, explained and predicting variable whereas the independent variable is known as the regression, explanatory and predictor variable.

Table 3: Summary of Regression Analysis

Hypotheses	**Independent Variable**	**Mediating Variable**	**Dependent Variable**	**Sig. Value (p)**	**R Square**	**Adjusted R Square**	**Unstandardized coefficients**		**Standardized coefficients**
							α	**β**	**β**
H1	Training Design		Employees Performance	.000	.632	.630	.019	.972	.795
H2	Delivery Style		Employees Performance	.000	.165	.475	.795	.489	.410

H3	On the job Training		Employees Performance	.000	.302	.300	.409	.587	.550
H4	Training Design		Organizational Performance	.000	.632	.630	.019	.972	.795
H5	Delivery Style		Organizational Performance	.000	.168	.165	.795	.489	.410
H6	On the job Training		Organizational Performance	.000	.302	.300	.409	.587	.550
H7	Employees Performance		Organizational Performance	.000	.709	.708	-.037	1.040	.842
H8	Training Design	Employees Performance	Organizational Performance	.000	.837	.835	-.037	1.040	.842
H9	Delivery Style	Employees Performance	Organizational Performance	.000	.713	.710	-.037	1.040	.842
H10	On the job Training	Employees Performance	Organizational Performance	.000	.739	.737	-.037	1.040	.842

H1: Training design impact significantly on employees 'performance.

From the analysis the independent variable studied here which is training design had a positive relationship with dependent variable employee's performance as explained by R of 0.795 which shows that 79.5 % relationship among variables and R^2 of 0.632 which demonstrates that 63% variability related to its means. The **Coefficients** table indicates the standardized beta which is .795which demonstrates that .79 units change in dependent variable can be explained for every unit change in independent variable. Here, $p < 0.05$, and indicates that, on the whole regression model statistically significantly, predicts the resultant variable.

H2: Delivery style impact significantly on employee's performance.

From the analysis the independent variable studied here which is delivery style had a positive relationship with dependent variable employee's performance as explained by R of 0.410 which shows that 41% relationship among variables and R^2 of 0.168 which demonstrates that17% variability related to its means. The **Coefficients** table indicates the standardized beta which is .410 which demonstrates that .41 units change in dependent variable can be explained for every unit change in independent

variable. Here, $p < 0.05$, and indicates that, on the whole regression model statistically significantly, predicts the resultant variable.

H3: On the job training has significant impact on employee's performance.

From the analysis the independent variable studied here which is on the job training had a positive relationship with dependent variable employee's performance as explained by R of 0.550 which shows that 55% relationship among variables and R^2 of 0.302 which demonstrates that 30% variability related to its means. The **Coefficients** table indicates the standardized beta which is .550 which demonstrates that .55 units change in dependent variable can be explained for every unit change in independent variable. Here, $p < 0.05$, and indicates that, on the whole regression model statistically significantly, predicts the resultant variable.

H4: Training design impact significantly on organizational performance.

From the analysis the independent variable studied here which is training design had a positive relationship with dependent variable organizational performance as explained by R of 0.795 which shows that 80% relationship among variables and R^2 of 0.632 which demonstrates that 63% variability related to its means. The **Coefficients** table indicates the standardized beta which is .795 which demonstrates that .79 units change in dependent variable can be explained for every unit change in independent variable. Here, $p < 0.05$, and indicates that, on the whole regression model statistically significantly, predicts the resultant variable.

H5: Delivery style impact significantly on organizational performance.

From the analysis the independent variable studied here which is delivery style had a positive relationship with dependent variable organizational performance as explained by R of 0.410 which shows that 41% relationship among variables and R^2 of 0.168 which demonstrates that 17% variability related to its means. The **Coefficients** table indicates the standardized beta which is .410 which demonstrates that .41 units change in dependent variable can be explained for every unit change in independent variable. Here, $p < 0.05$, and indicates that, on the whole regression model statistically significantly, predicts the resultant variable.

H6: On the job training has significant impact on organizational performance.

From the analysis the independent variable studied here which is on the job training had a positive relationship with dependent variable organizational performance as explained by R of 0.550 which shows that 55% relationship among variables and R^2 of 0.302 which demonstrates that 30% variability related to its means. The **Coefficients** table indicates the standardized beta which is .550which demonstrates that .55 units change in dependent variable can be explained for every unit change in independent variable. Here, $p < 0.05$, and indicates that, on the whole regression model statistically significantly, predicts the resultant variable.

H7: Employees performance has significant impact on organizational performance.

From the analysis the independent variable studied here which is employee's performance had a positive relationship with dependent variable organizational performance as explained by R of 0.842 which shows that 84% relationship among variables and R^2 of 0.709 which demonstrates that 70%

variability related to its means. The **Coefficients** table indicates the standardized beta which is .842which demonstrates that .84 units change in dependent variable can be explained for every unit change in independent variable. Here, $p < 0.05$, and indicates that, on the whole regression model statistically significantly, predicts the resultant variable.

H8: There is a significant impact of training design on organizational performance through mediation of employee's performance.

From the analysis the independent variable studied here which is training design had a positive relationship with dependent variable organizational performance by mediation of employee's performance as explained by R of 0.915 which shows that .92% relationship among variables and R^2 of 0.837 which demonstrates that 84% variability related to its means. The **Coefficients** table indicates the standardized beta which is .842which demonstrates that .84 units change in dependent variable can be explained for every unit change in independent variable. Here, $p < 0.05$, and indicates that, on the whole regression model statistically significantly, predicts the resultant variable.

H9: There is a significant impact of Delivery style on organizational performance through mediation of employee's performance.

From the analysis the independent variable studied here which is delivery style had a positive relationship with dependent variable organizational performance by mediation of employee's performance as explained by R of 0.844 which shows that .84% relationship among variables and R^2 of 0.713 which demonstrates that 71% variability related to its means. The **Coefficients** table indicates the standardized beta which is .842which demonstrates that .84 units change in dependent variable can be explained for every unit change in independent variable. Here, $p < 0.05$, and indicates that, on the whole regression model statistically significantly, predicts the resultant variable.

H10: There is a significant impact of "On the job training" on organizational performance through mediation of employees' performance.

In the above table on the job training is an independent variable which has significant impact on organizational performance that is dependent variable by mediation of employee's performance. From the analysis the independent variable studied here which is on the job training had a positive relationship with dependent variable organizational performance by mediation of employee's performance as explained by R of 0.860 which shows that .86% relationship among variables and R^2 of 0.739 which demonstrates that 73% variability related to its means. The **Coefficients** table indicates the standardized beta which is .842 which demonstrates that .84 units change in dependent variable can be explained for every unit change in independent variable. Here, $p < 0.05$, and indicates that, on the whole regression model statistically significantly, predicts the resultant variable.

Conclusion and Recommendations

Findings

The findings reported in this study suggest that training and development have an impact on the performance of employees with regards to their jobs.

- Training design has a positive relationship with employee's performance which shows that that 63% variability in independent variable training design is explained by the dependent variable employee's performance. The relationship between training design and employee's performance is highly significant.
- Delivery Style has a positive relationship with employee's performance which shows that that 16% variability in independent variable delivery style is explained by the dependent variable employee's performance. The relationship between training design and employee's performance is highly significant.
- On the job training has a positive relationship with employee's performance which shows that that 30% variability in independent variable on the job training is explained by the dependent variable employee's performance. The relationship between training design and employee's performance is highly significant.
- Training design has a positive relationship with organizational performance which shows that that 63% variability in independent variable training design is explained by the dependent variable organizational performance. The relationship between training design and organizational performance is highly significant.
- Delivery style has a positive relationship with organizational performance which shows that that 16% variability in independent variable delivery style is explained by the dependent variable organizational performance. The relationship between training design and organizational performance is highly significant.
- On the job training has a positive relationship with organizational performance which shows that that 30% variability in independent variable on the job training is explained by the dependent variable organizational performance. The relationship between on the job training and organizational performance is highly significant.
- Employee's performance has a positive relationship with organizational performance which shows that that 70% variability in independent variable on the employee's performance is explained by the dependent variable organizational performance. The relationship between employee's performance and organizational performance is highly significant.
- Training design has a positive relationship with organizational performance through mediation of employee's performance which shows that that 83% variation in employee's performance is explained by the dependent variable organizational performance.
- Delivery style has a positive relationship with organizational performance through mediation of employee's performance which shows that that 71% variation in employee's performance is explained by the dependent variable organizational performance.
- On the job training has a positive relationship with organizational performance through mediation of employee's performance which shows that that 73% variation in employee's performance is explained by the dependent variable organizational performance.

Conclusion

In any sort of employment training has distinct impact on employees. If we want to get best performance from our employees, we can't ignore training. The more carefully and dedicatedly training will be designed, it will produce more distinctive and long-lasting effect. No doubt training is

the very first milestone that has to be achieved by organization if they want to get desired results from their employees. More well designed or carefully delivered trainings depicts the level of expectation employees do have from employees. On the hand for employees, training and workshops have always been helping tool for them training increase skill. Training is like an icing on the cake of knowledge and skill so in this factor should not be ignored.

The objective of the study was to examine the impact of training and development on organizational performance by mediation of employee's performance in context of Indus Group of Colleges, Rawalpindi Pakistan. The data has been collected from different campuses of IGC. There were 262 respondents that answered the questionnaire. The survey questionnaire was consisting of 5 Likert scale. Thus, it is concluded that training and development imposes large impact on employee for performance for Indus Group of Colleges, Rawalpindi.

Recommendations

The study recommends that trainings should be designed and delivered on international standards. There should be particular pattern of training depending on nature of organization. Since this task has to be performed by HR department so they should have been observation on what they'll achieve and how they'll. If we quote education department as an example. So if training will be organized in such a way it will be more effective so at very initial stage trainings should be ensembles properly depending upon their style and nature.

It truly is realized that it is very necessary to conduct teachers training programs for the improvement of skills, capabilities, understanding, career journey and efficiencies of the teachers at work. Training increases the motivation level of employees for their job. If an organization hired untrained employees, then they will not increase the efficiency as compared to trained employees.

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The Impact of Education on Consumer Behavior in District Dir Lower

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Abstract

The role and importance of education cannot be ignored. Education plays a significant role in grooming the people in shaping their character buildings and career too. Education provides a healthy society to state. In this context, education has a dominant role in the consumption pattern, food items, health, females' spending pattern, human capital formation. Education enables the common people to read, write, serve and support their families to live good standard of life.

In this study, an attempt is made to explore the impact of education on consumption behavior. We have selected three villages of District Lower Dir for the purpose of collecting primary data. Specifically the impact of academic performance, family composition, family size, farming, use of forming techniques etc. using primary data collected through well designed questioners and applying the linear regression model. Our findings suggest that education plays a significant role on consumption behaviors of households of District Lower Dir.

Keywords: Expenditures on education, joint family, consumption pattern

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Introduction

It is a well-known fact that education influences consumer behavior in many ways (Micheal, 1975). Even casual observations well reveal that individual behavior, such as the choice of occupation, mobility, consumption expenditure, labor leisure choice and so on are influenced by schooling. The impact of education on variables such as national income and economic growth are well documented as the new growth theory place much more emphasis on human capital as the driving force of economic growth (Romer, 2006). But the micro level studies that explain the link between education and saving/consumption behavior, and its subsequent impact on growth are lacking, especially in Pakistan. Education in a broad sense have very effective role on human mind, character and physical ability. Similarly, technical education makes the human being more skillful and vocal.

Backer conventional theory of human capital views that education and training have direct and positive effect on individual income and consumption and on its life time earnings. The increase in total enrolments at schools positively affects economic growth rate (Maddison, 1983; Jargenson & Fraumeni, 1991). This is a well-known fact and numerous studies, even in case of Pakistan, have reported this positive relationship between human capital and consumption (Afzal, Farooq, Ahmad, Begum & Quddus, 2011). The conventional theory of human capital developed by Becker (1964) and Mincer (1974) viewed that the education and training as the major sources of human capital accumulation. On the other side it has direct and positive effect on individual consumption.

Education has very bright and distinguish role in the human capital formation. Through education the efficiency and productivity of individual raises which positively affect the economy and it will lead the economy on sustainable economic development. (Nazil & Nasir, 2000). Education system has old history since its origin .Now a day's education is much more structured in comparison to yesterday, when there was no such concept of a formal education system. Each philosopher has defined education in their own words and different ways. But the complete and meaningful definition of the education is the knowledge of putting one's potential into maximum use. It helps a person to make the right decision in one's sphere of life. A positive association between the levels of education and house hold consumption and the inverse relation between the degree of income inequality and educational attainment has also been noted.

The figure 1 shows the trend of GDP growth rate and Degree colleges' enrollment red line indicate the GDP growth rate while blue line shows the enrolment in degree colleges. Surprisingly that there is continuous rise in the enrollment of degree colleges and parallel to GDP growth rate, which is good sign for Dir district. In figure 2, green-line indicates the share of labor force in the agriculture sector while the red and blue color lines indicate the share of the labor force in the industry sector and enrollment in the degree colleges respectively. It is viewed from the figure that most of the people engaged in agriculture sector and less in industrial sector. Though there is gradual rise in all three sectors including agriculture, industry and educational enrollment at degree level but there is huge gap among three.

Figure 1: Trends of GDP and Degree college enrolment in Dir

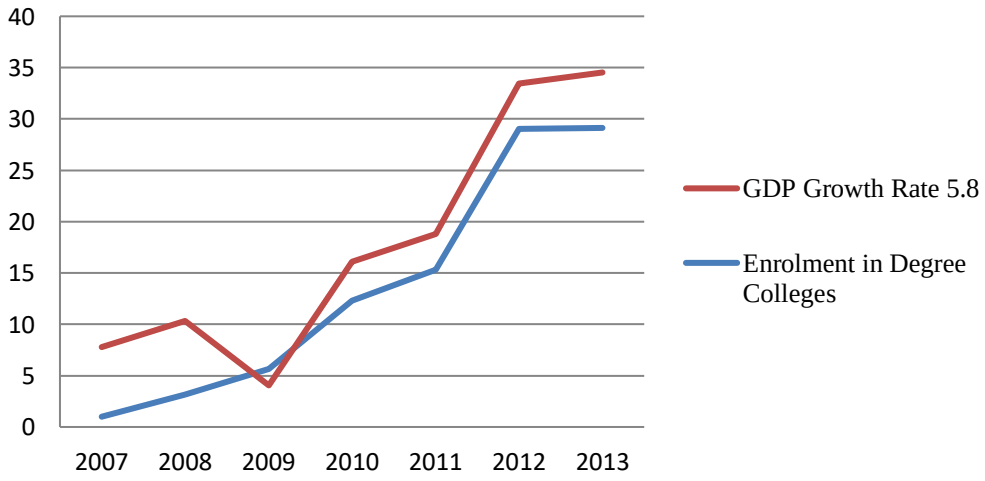


Figure 2: Share of labor in agriculture, Industry and total enrollment in Colleges

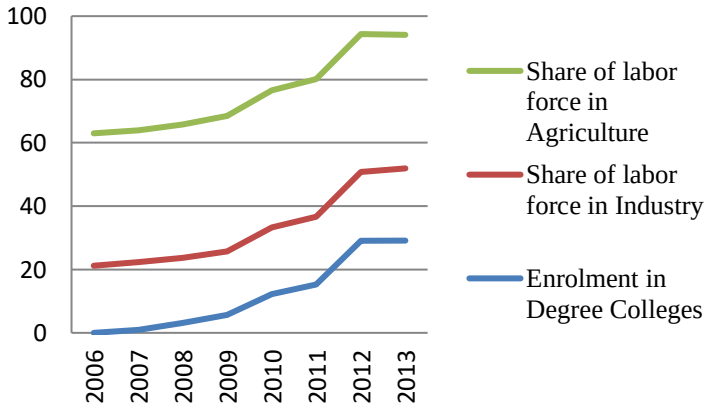
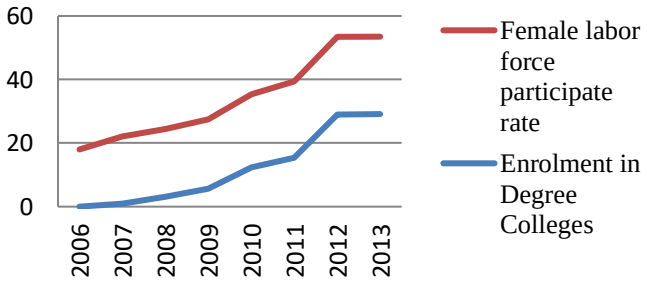


Figure 3: Female Labor Force participation Rate and Enrollment in Colleges



In the figure 3, red line indicate us the female labor force participation rate and blue line indicate enrolment in degree colleges. Figure 3 reflects that most of the females involve in the different kinds of jobs as red-line is above to enrolled, which indicates that not only they are getting education, but also play role in agriculture sector to the maximum helping their husbands to run their families. Similarly, education is said to be effect a number of other socioeconomic variables. For example, borrowing opportunities vary amongst people from various education backgrounds simply because more educated people are more willing to take loans from formal financial institutions than less educated people. The same general conclusion emerges in case of mode and purpose of savings and household management. However, there is a general dearth of aggregate data on such variables (the size of black economy could be used to proxy mode of saving but such data are mere approximations). The specific objective of the study is to explore the link between education and household disaggregated and aggregate consumption behavior of district Dir Lower.

Literature Review

The development of modern literature on education and household consumption can be attributed to the work of Becker's research on human capital (Becker, 1964) and household allocation of time (Becker, 1965). To explain the work of Becker, consider that a household is an organizational unit which engages in the production of many different things. Within the household the family seeks to achieve as great a level of satisfaction or utility as possible, subject to its resource limitations. The

household, then, is a small multiproduct firm which produces many commodities by combining time and other market goods. The household production capabilities are limited by the available time and the hourly wage rate. Thus the household either directly use his time to produce commodities, i.e. household production, or indirectly by first selling his time in the marketplace and then using the income to purchase goods and market services

Given that households combine market goods with their own time to produce commodities, it is reasonable to assume that education will affect the household's capacity to convert market goods and time into commodities. This is so because given that labor markets are perfectly competitive implies that wages are paid according to marginal productivity, and that wages are positively correlated with the level of education. If education increases the productivity of time in one activity (labor services), it is logical to predict that it will also enhance productivity in other activities, such as consumption (Taubman & Wales, 1974).

A second reason for expecting education to increase the efficiency in all activities is the similarity between education and technology (Becker & Murphy, 2007). The introduction of additional education into the household's production process is similar to the introduction of new technology into the firm's production process. Households having more educated members have relatively more access to knowledge, concepts, facts, and ideas that may enable the household to arrange nonmarket production more efficiently (Micheal, 1975). Thus, given that education increases the value of time in the labor market and that education in household production is similar to technology in firm's production, education is expected to increase efficiency in non-market activities and thus affect consumer behavior.

If education improves the household's capability in converting time and money into commodities, this may affect behavior in two ways. First, since education has a bigger impact on efficiency in some activities than in others, this will alter the relative prices of the commodities. For instance, if education is particularly effective in improving reading efficiency but is ineffective in improving physical exercise efficiency, then, with increases in education, the commodity associated with reading becomes cheaper relative to the other commodity. Economic theory suggests that there will be an incentive to shift consumption toward the relatively cheaper activity. Second, if education improves the average efficiency of nonmarket production, then households with more educated family members are wealthier in the sense that they can produce more with a given amount of time and money. Thus even if their available time and money are held fixed, families with more education will have more real wealth in terms of commodities (Michael, 1975). Economic theory suggests that this difference in real wealth among households will affect observed behavior systematically.

Education has a wide range of impacts, some of which may be termed market impact while others non market / non pecuniary impacts. There is no doubt that education enhances job market prospects, productivity and hence wages. But economists have researched even the minute specifics resulting from education. Economists are beginning to investigate the causes and consequences of financial illiteracy to better understand why retirement planning is lacking and why so many households arrive close to retirement with little or no wealth. For example, Hytti, Stenholm, Heinonen & Seikkula (2010), studied the impact of studying entrepreneurship courses

on generation of business ideas. For this purpose, a total of 117 students, who participated in pre-program and post-program surveys, provided the sample data. First, explorative factor analyses were employed to examine the latent variables. Second, hierarchical lineal regression analyses were carried out to test the proposed hypotheses. The study found that intrinsic motivation has a negative effect on the learning outcome while extrinsic motivation had a positive one.

Economists have also investigated the impact of education on health outcomes. One such study (Silles, 2009) used changes in compulsory schooling laws in the United Kingdom to test whether schooling improves health outcomes or good health improves schooling outcomes. Multiple measures of overall health are used. The results provide evidence of a causal relation running from more schooling to better health which is much larger than standard regression estimates suggest. Another study by Cutler and Lieras-Muney (2010) with similar purpose reported that income, health insurance, and family background can account for about 30 percent of the improved health. Knowledge and measures of cognitive ability explain an additional 30 percent. Social networks account for another 10 percent.

Methodology

Study Area, Sample Size and Data

The study is carried out in two Tehsils of District Lower Dir namely, Tehsil A (Chakdara) and Tehsil B (Tamergara). From each of the two Tehsils, three villages will be selected purposively. For the selection of villages, we scaled different villages according to their education level and then select one village from the upper education level, middle and lower education levels respectively. Then households are divided into those who are in proximity to the local market and those who are situated away from the local market. In each village a total of 40 households, 20 living away from the market and 20 living in the neighborhood of the market were interviewed. Since a total of six villages are considered for data collection, total of 240 respondents are interviewed for the purpose.

Analytical Methodology

Basic characteristics of the respondents is analyzed through descriptive statistics, such as mean, median, standard deviation, graphs, charts and other associated measures of dispersion. Moreover, regression analysis may be utilized to explore the relationships between variables of interest. For example, if we are interested in the impact of education on consumption levels, a typical regression can be specified as;

$$C_i = \beta_0 + \sum_{i=1}^{N} \beta_i Xi + \varepsilon_i \qquad (1)$$

Where C_i is the consumption of the i^{th} household and X_i is a vector of explanatory variables including education. ε_i is the white noise error term. Let the total covariates of consumption are income (Y), education (E), age structure (AS), locality (L), land ownership (LO), then a typical regression to assess the impact of all those covariates on consumption could be specified as;

$$C_i = \beta_0 + \beta_1 Y_i + \beta_2 E_i + \beta_3 AS_i + \beta_4 L_i + \beta_5 LO_i + \varepsilon \qquad (2)$$

Since the study is based on survey data, necessary diagnostic checks, such as outlier checks, post stratification weighting, multi co-linearity and heteroscedasticity are be carried out to get reliable estimates of the desired parameters.

Results and Discussion

First of all, we have compiled cleaned the data and provide the main characteristics of data and in the later section analyzed by applying simple model.

Table 1: Distribution of Respondent Sex-Wise

Male/Female	Frequency	Percentage
Female	**24**	**10.0**
Male	**216**	**90.0**
Total	**240**	**100.0**

Source: Authors' calculation

Table (1) provides the total number of respondents. Out of 240 married respondents, 24 were female and 216 male respondents were interviewed for purpose of research work.

Table 2: Respondents' Education

Education level	Frequency	Percent (%)
Illiterate	87	36.2
Middle	26	10.8
Matric	45	18.8
Intermediate	23	9.6
Bachelor	31	12.9
Master	28	11.7
Total	240	100.0

Source: Authors' calculation

Table 2 shows that 36.2% households were illiterate and rest of 53.8% were educated at different level. Out of which 10.8 % were having middle level education, 18.8% were matriculate, 9.6% have done intermediate, 12.9% were bachelor, and 11.7% have done the master degree.

Table 3: Respondent Family Type

Family type	Frequency	Percent
Nuclear	172	71.7
Joint	68	28.3
Total	240	100.0

Source: Authors' calculation

Table 3 indicates types of the family in their livings. Out of 240 households there were 172 were living in nuclear system while 68 are living in joint family systems.

Table 4: Respondent Area Level in Education

Area level of education	Frequency	Percentage
High	84	35.0
Middle	78	32.5
Low	78	32.5
Total	240	100.0

Source: Authors' calculation

Table 4 tell us the area level of education .the researcher have interweaved 35% households t from the high education level area while 32.5% households from middle and low level area of education respectively

Table 5: Respondent access to clean water / availability of electricity/education/health facility

Respondent	Yes	Frequency	Percentage	Total
Respondent access to clean water	Yes	234	97.5	240
	No	6	2.5	
Respondent electricity at home	Yes	183	76.2	240
	No	57	23.8	
Respondent education facility near to home	Yes	178	74.2	240
	No	62	25.8	
Respondent health facility near to home	Yes	157	65.4	240
	No	83	34.6	

Source: Authors' calculation

Table (5) tells us the household's access to clean water, availability of electricity at home, education, and health facility. Second row of the table shows us that out of 240 respondent 234 have accesses to water while only 6 respondent doses not have this facility. Further it shows the availability of electricity at home .So 183 respondent have the electricity at home while 57 respondents does not have this facility at home. The fourth row indicate that the education facility near to home .178 respondents have the education facility near to home while 62 respondents have not. Last row shows the health facility near to respondents home. 157 respondents have health facility near to home while 83 respondents have not this facility near to home.

Table 6: Households Saving Purpose

Household	Response	Frequency	Percent	Total
Respondent uses the saving amount for family Debt	Yes	152	65.0	240
	No	82	35.0	
Respondent uses the saving amount for precaution	Yes	83	35.9	240
	No	148	64.1	
Respondent uses the saving for land assets	Yes	63	27.2	240
	No	169	72.8	
Respondent uses the saving for marriages	Yes	47	20.3	240

	No	185	79.7	
Respondent uses the saving for the home construction	Yes	72	31.0	240
	No	160	69.0	
Respondent uses for the business establishment	Yes	79	33.9	240
	No	154	66.1	
Respondent uses for the child education	Yes	137	59.1	240
	No	95	40.9	
Respondent uses for the religious obligation	Yes	96	41.4	240
	No	136	58.6	
Respondent have personal car	Yes	44	19.0	240
	No	187	81.0	
Respondent other use of saving amount	Yes	27	11.6	240
	No	205	88.4	

Table 6 indicates the households saving purpose. At first place it shows that how much household use savings for the family debt. 152 household use their saving amount for the family while 82 household are not using savings for this purpose. Out of 240 respondents the 83 household used their saving for precautionary purposes while 148 household does not use their savings for the precautionary purposes and 9 household refused to answer the question. 63 respondents use the saving for land assets while 169 people answered that they do not use their saving for this purpose. 47 respondents use their saving for marriages while 185 respondent does not used their saving for the marriages. 72 respondents used their saving for the home construction while 160 respondents do not use their saving for this purpose. Out of 240 respondents the 79 respondents use their savings for the business establishing while 154 respondents do not use for this purpose. 137 respondents out of 240 use their saving for the child education while 95 respondents does not use for this purpose. 96 respondents use their saving for the religious purposes while 136 respondents do not use for this purpose. 44 respondents use their saving for the purpose to have a personal car while 187 respondents out of 240 do not use their saving for this purpose. Out of 240 only 27 respondents use their saving for the other purposes while 205 respondents do not use their saving for the purpose.

Table 7: Respondent Family Composition

Variables	Min	Max	Mean	Std. Deviation
Respondent illiterate family members	0	12	3.53	2.854
Respondent primary level family members	0	13	2.41	1.433
Respondent middle level family members	0	7	1.99	1.365
Respondent family male members	2	12	5.30	1.983
Respondent family female members	2	19	5.58	2.298
Respondent family disable members	0	3	0.23	0.539
Respondent total family members	4	31	11.08	3.599

Table 7 shows us the Household family composition and their education level. The household has minimum 0 unit illiterate family members and maximum 12 unit's illiterate family members. An average illiterate family member of household was 3.53 minimum primary level family member was 0 unit and maximum were

13-unit, average primary level family member was 2.41 unit. Minimum middle level family members of household are 0 unit and maximum is 7 units and average is 1.99 units. Minimum male member of household is 2 units and maximum was 12 units' members and average was 1.99 units. Minimum female member of households was 2 units and maximum was 1 unit and average 5.30 units. Minimum household disable family members were 0unit and maximum was 3 units and average .23 units' members. Minimum household total family members were 4 units and maximum was 31 units' members and an average of 11.8 members of household.

Table 8: Households management

	Education level	Response	Percent
Household Home Management	High	Very Good	8
		Good	17
		Average	43
		Bad	4
		Very Bad	6
	Middle	Very Good	8
		Good	13
		Average	37
		Bad	16
		Very Bad	2
	Low	Very Good	3
		Good	10
		Average	43
		Bad	19
		Very Bad	1

Source: Author's calculation

The table 8 indicates the different education level respondents home management .8 percent high education level respondent have very good,17 percent good,43 percent average ,4 percent bad and 6 percent very bad home management.8 percent middle education level respondent have very good,13 percent good,37 percent average ,16 percent bad and 2 percent very bad home management.3 percent low education level respondent have very good,10 percent good,43 percent average ,19 percent bad and 1 percent very bad home management.

Regression Analysis

Dependent Variable: Per capita expenditure on education

Model 1:

$$EDEX = \beta_0 + \beta_1 Y_i + \beta_2 E_i + \beta_3 AS_i + \beta_4 L_i + \beta_5 LO_i + \varepsilon$$

Table 9: Regression Analysis

Variables	Coefficient	Standard error	T value	Sig
(Constant)	85.000	51.325	1.656	.099
Location of the respondent	19.802	6.343	3.122	.002

Per capita income	.045	.003	14.464	.000
per capita value of land holdings	.044	.021	2.068	.040
male female ratio	18.799	18.862	.997	.320
average household age	-2.680	1.635	-1.638	.103
AR= 0.576	F= 56.129,		Sig= .000	

The above table indicate us the results of the model 1 in which the dependent variable is per capita expenditure on education while independent variables are (Location of the respondent, Per capita income, per capita value of land holdings, male female ratio average household age). The entire variables have positive relationship with per capita expenditure on education. All explanatory variables are statistically significant. F value 56.12 which explain the significance of the model it means that all the variables have jointly effect variation in education. one unit increase in location of the respondent leads to increase 19.80 unit in per capita expenditure increase in education .by change of one unit in per capita income ,per capita land holding ,and male female ratio resulted increased .045,.044,.18.79 unit respectively in per capita expenditure on education .One explanatory variable that is average household age which effect 2.680 unit negatively by increasing one unit of household age.

Conclusion and Recommendations

Education is said to be one of the major determinants of how individual behave in various situation. It influences many, if not all, household decisions such as the choice of residential area, consumption and its composition, occupational choice, borrowing and saving decisions and the way household is managed. To investigate the impact of education on the variable mentioned above, this study utilizes survey data from district Dir lower. The survey was conducted in six villages of two Tehsils (namely Chakdara and Timergara) of district Dir lower. A total of 240 respondents (including 216 male and 24 female respondents) were interviewed in the study area. Information on various household decisions, education level and other socio economic and demographics are collected and analyzed through SPSS. The analysis constituted descriptive statistics (frequencies, means, standard deviations and cross tabulations) and regression analysis.

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Exploring the Strategic Approach of Higher Education Institutes for Using Social Media in Pakistan

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Abstract

This study aims to explore management's perspective for the use of social media in Pakistani universities through in-depth data analysis. Through the lens of qualitative research method, Grounded Theory (Glaserian Approach) has been applied to explore and interpret the management's perspective on the use of social media networks in Pakistani universities. Method Triangulation technique was used to collect data in two different parts; through semi-structured face to face as well as telephonic interviews and by e-mail to ensure the rigor, validity and maximum representation of higher education sector. The data obtained through email were ordered and analyzed using the latest version of NVivo. Major findings highlight that majority of Pakistani universities & HEIs are proactive using social media for marketing purposes and admission campaigns to target the potential students from all parts of the country, promotions of the academic achievements, information dissemination on latest conferences & innovations, image building through showing strong commitment to community service, and to bridge industrial-academia liaison. However, approved policies and guidelines by academic authorities and statutory bodies are not available. Findings also highlight the dire need of well-crafted social media marketing strategy, guidelines, rules and regulations for monitoring and evaluation. The study pragmatically helps universities management for developing a framework, set of suggestions, guidelines and social media policies in higher education sector in order to achieve its optimal benefits. Moreover, results display deeper insight for future researchers into the managerial and strategic issues being faced by Pakistani universities for using social media networks.

***Keywords*:** Social Media, Higher Education, Management, Policy, Marketing, Digital Technologies, Social Networks

Introduction

Social media has transformed the communication landscape for institutions of Higher Education by providing improved teaching and learning experience. (Rahman et al. 2020). It has emerged as the fastest source for building global business communities and reducing the communication gaps. Drastic adoption of social media technologies has resulted in a fundamental change in the way communication and collaboration take place in higher education sector. As staff, faculty and students use social media technologies in their personal lives, it is important to explore how social media technologies are being used as an educational tool for management practices at universities (Chugh, R., & Ruhi, U. 2018). It is also established fact that emerging technologies have continuously been changing the traditional ways of communication and immensely affecting human life making it more interactive, collaborative, comfortable and fast paced (Ozuem, Howell et al. 2008). Therefore, in today's world of globalization, social media is playing an indispensable role in transforming the nature of business communication and traditional marketing practices. It is introducing new learning and development needs and paradigms. People are getting close to each other by utilizing different digital platforms, social media sites, networks and applications.

There has been a significant emphasis in making such platforms easy to use and better integrated with other activities that people carry out (Qureshi, Reuben et al. 2014). An extensive use of information communication technologies like Web.2 and electronic gadgets like mobile phone, iPod, tablets etc., have reduced the distances among the people, living in different parts of the world. It is very evident phenomenon that the use of information communication technologies now a day has reached to a stage where the internet users have become very proactive and creators as compared to their passive communication styles in the past. Since, users now a day can create contents as well because of the digital revolution; therefore, social media is a platform which has significantly empowered users to share their views about the brands, services, products, political as well social issues openly and independently. Social media network sites create an influential word of mouth which helps the potential consumers to make their decision regarding the brands. Lam maintained that the social media network sites are perceived by consumers as a more trustworthy source of information regarding products and services than corporate-sponsored communications, transmitted via the traditional elements of the promotion mix (Bernoff and Li 2008).

This phenomenon has helped the higher education institutions in Pakistan to modernize, marketing techniques, teaching methodologies, communication styles and creating online research groups of the academicians from around the world. As Belanger et al., (2014) argue that to maintain and enlarge their market position, universities have adopted corporate-like branding practices which involve catchy slogans, versatile logos, impressive taglines, advertising campaigns and printing communicative broachers etc., on a larger scale. The practice is visible in Pakistani institutes of higher education which have dived into the social media storm to get maximum benefits. However, the questions remain to explore that why higher education institutes use social media, the strategic approach behind (if any) and how it is being used? Hence, there is a significant need to know about the strategic approach of the management about the use of social media in various contexts of higher education institutes in Pakistan.

Literature Review

In today's modern world of artificial intelligence and digital economy, effective use of information and communication technologies are the attributes of grand success in businesses. Universities and institutes of higher education have no exemption in this regard, and they are equally rolling up sleeves to compete in these rapidly changing technological advancements. Hence, none of them can afford to lag-behind these developments as these can provide valuable insights to the academic community (Dumpit, D. Z., & Fernandez, C. J. 2017). Overall, internet is an important part of technology change in modern world and has an influential impact on our life, too (Hafeez, 2014). There are over 3 billion Internet users in the world (World Internet Users and Population Stats, 2014). It indicates that more 42% of the world's population has access to the Internet. Moreover, the report shows that there are 5.9 billion Google searches every day and over 409 million people read word press blogs on daily bases in different parts of the world. It also includes more than a billion unique users who watch 6 billion hours of video every day on YouTube. Anderson, T. (2019) discusses that during these last two decades of the social media era, researchers have discovered and argued for the advantages that social media can or could bring to lift the higher education sector to the new heights of growth and progress all over the world.

As per changing trends in the international arena of higher education, the use of social media has become imperative for various purposes e.g., image building, information dissemination, students recruiting, foreign faculty hiring, building alumni networks and institutional branding (Rosmala 2012). An international survey "Social Media for Education" (2012) reflects that 70% of the students suggest that colleges should have a presence on social networks and 50% of students want to be contacted directly through a social network site, whereas around 81% of them have an easy access to internet wirelessly.

Benson, V., & Morgan, S. (2018) also argue that the importance of social networking is no longer contested; it is viewed by many as a game-changing innovation set to transform the face of higher education. Moreover. in an earlier research published in 2014, Benson & Morgan emphasized that social media is on the verge of gaining exceptional and phenomenal standing amongst educational technologies which will help to attract the attention of industry and academia. The social media adoption in higher education sector has become widely accepted model for the end users including students, teachers, and management. Social media in higher education took on a multi-faceted role: serving as networking enabler, marketing and recruitment tool, collaboration, teaching and learning tool as well as a medium presenting career management and entrepreneurship opportunities.

On the other hand, the rapid boom in internet has also given an opportunity to the world to change its communication styles and their behavioral norms. These norms include publishing speed, 24/7 connectivity, and a desire for two-way conversations rather than one-way promotion. These elements bring out the power of social media where people have free control to express their stories, sharing their knowledge and making new friends from around the world. It has been defined that social media as a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0 and allow the creation and exchange of user generated content (Kaplan and Haenlien,

2010). Mangold and Faulds (2009) have discussed that social media has brought a major shift in individual behavior which includes awareness, information acquisition, opinions attitudes, communication and evaluation of available products & services. This phenomenon has created a new paradigm in the mainstream marketing activities of organizations around the world and the higher education institutes are in the limelight.

According to the research, since 2009-2010, 100% of colleges and universities in United States of America are using some form of social media as the marketing strategy to recruit the prospective students and this trend is increasing every day with new tools (Barnes and Lescault 2014). Moreover, Facebook, You Tube, Twitter, blogging and podcasting are the tools of choices for US institutions. It has become necessary for the "always connected" generation to use hand-held devices, multi-tasking and constant communication now a day. Taking advantage of this emerging opportunity, the Ohio State University (OSU) uses Facebook, Flicker and You Tube to develop interaction with their target audience. University of California Berkeley has got one of the most well-known channels and volume of You Tube Subscribers with around 2 million views and has created sub channels of more specific contents which include courses, events, campus life and athletics. Apart from this, business schools like Southern Illinois University College of Business sees social networks sites as the best channel to communicate and provide school news to its members, alumni and the students (Reuben, 2013). Hafeez (2014) has argued that social media networks have opened new avenues for organizations and manufacturers to make their presences felt and communicate with their target markets allowing them to reach out to the niche audience and adapt their marketing communication accordingly.

This equally applies on the higher education organizations around the world and specifically in Pakistan with respect to this study being undertaken. Research shows that the use of social media and other search engines are very much favorite activities for internet users in Pakistan and top of all, Facebook is the most popular and highly used social network which handles more than 3 billion connections per day (Yousafzai, 2015). Facebook users in Pakistan are between 10.6-11.8 million (Nasir, 2013). Half of the users are in the age of 18 to 24 that indicates the popularity of Facebook among youth in Pakistan and in the same time, there are 2.9-3.2 million users who are university graduates (Qureshi et al., 2014).

The extensive popularity of social media networks among the youth of Pakistan makes it compulsory for public and private universities to make best possible use of social media networks. However, it is worth mentioning that internet users in Pakistan are still hovering around 10 to 15 percent of total population in the country with less than just 2 percent connected with high speed board band internet (Khan, 2013). Like all other Asian countries, Pakistan yet needs to reach its highest level of penetration and the Government of Pakistan is making efforts to outreach the internet facilities in remote areas of the country. In this regard, the launch of 3G & 4G LTE mobile broadband technologies have put the internet influx into the urban and rural areas of Pakistan on the fast track. As far us of Social Media in Pakistan is concerned, it is a relatively new phenomenon which has gained immense popularity in short span of time while transforming the ways in which the youth of Pakistan communicates, interact and socialize. It is evident that because of social media in Pakistan, organizations can reach out to the niche

audience and adapt their messages accordingly. Following the same trend, colleges and universities in Pakistan are adopting the same media to extend their reach and impact.

Hafeez (2014) has highlighted in her case study on use of social media in Institute of Business Administration Karachi, Pakistan that the use of social media networks as an appropriate channel of communication and marketing for academic institutions in developing countries like Pakistan is yet unclear but it is of greater importance to study how higher educational institutions universities are integrating the use of social media in various functions like marketing and recruiting, learning, student engagement as well as employing it to connect with their students to facilitate them effectively. The use of Facebook is rapidly expanding in Pakistan. Majority of the universities are Facebook as their primary choice. There are for the apparently showed purposes including recruiting students, interacting with communities, information dissemination and image building etc. However, it there is no concrete literature available which can justify and substantiate these assumptions from the strategic perspective of higher education institutes officials who are the decision makers.

Moreover, in the spontaneous dive of using social media, it is not clear so far that the decision makers in higher education sector of Pakistan have given any statutory approval for a comprehensive social media policy and strategic framework to get the optimal uses of such networks. These factors urge and motivate to conduct an in-depth study higher education institutes for using social media from strategic point of view. The study shall explore and interpret the strategic approach of management using social media. Hence, it highlights the "the true meaning and spirit of using social media and its stringent requirements in line with strategic approach of the management of higher education institutes in Pakistan.

Methodology

Grounded Theory (Glaserian approach) has been adopted as research strategy for this paper as Glaser maintains that theory simply "emerges" from the actual data. Method Triangulation technique was used to collect data in two different parts through semi-structured face to face & telephone interviews as well as by e-mail to ensure the rigor, validity and maximum representation of higher education sector. The data obtained through email were ordered and analyzed using the latest version of NVivo and the results were shown in word cloud and graphical representations.

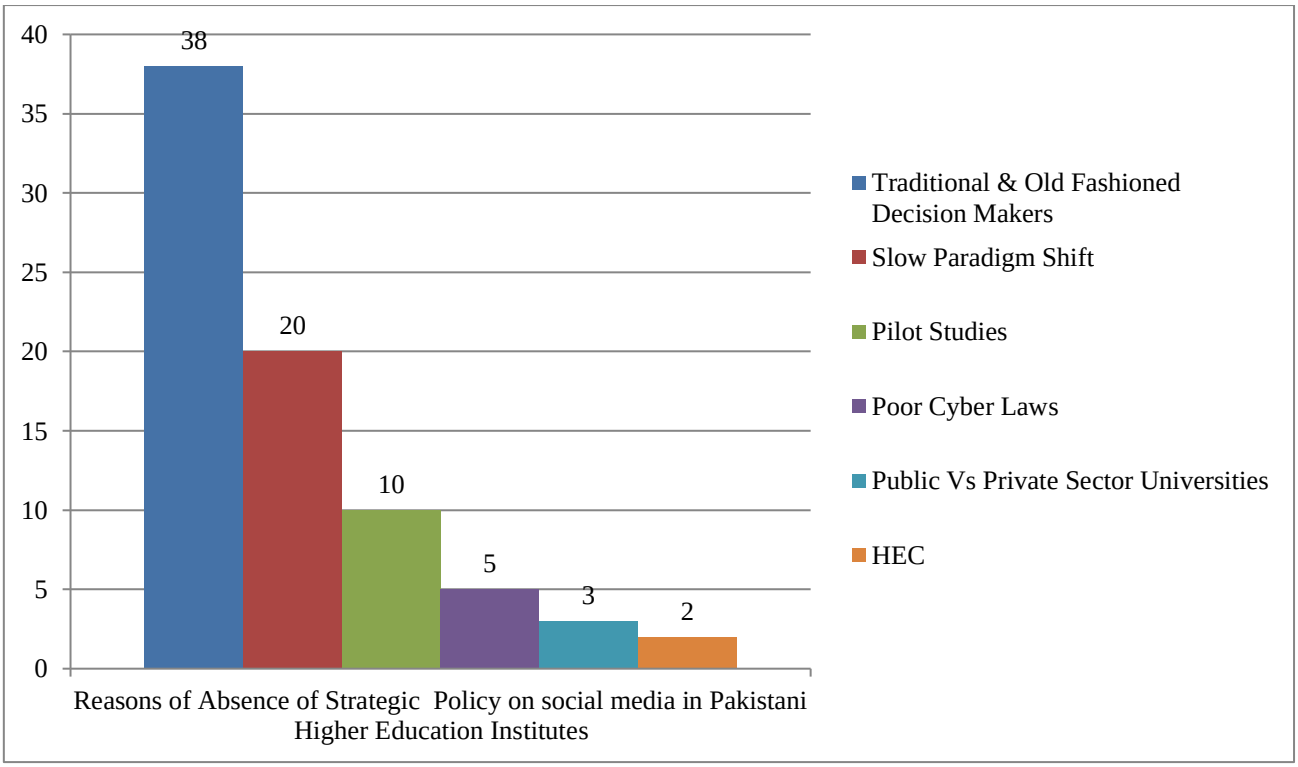
Glaser maintains that theory simply "emerges" from the actual data (Bryant and Charmaz 2007). Glaserian approach of grounded theory find the more open approach to data analysis, liberating and user friendly with all compatibility of the contemporary thinking when there is no sufficient literature is available on a research topic (McCallin, 2003). Data was collected through semi-structured interviews from most relevant officials from the 47 higher education institutes in Pakistan from the total four provinces. After a thorough search from different social media platforms, 130 institutes of higher education were identified for data collection because of their active presence on social media. The most relevant officials from the identified 130 institutes were approached to conduct in-depth interviews, discovery and insight into understanding of the strategic approach of the management. Out of 130 universities, the researchers received 47 responses in total; 10 institutes refused to provide any

information and 73 institutes did not respond to the interview requests. Credibility, rigor and validity of the information were ensured by triangulation of data collection methods. At first stage 10 face to face interviews were conducted till the point of theoretical saturation. In second phase and due to distance & logistics issues, to confirm and enhance the validity of the data collected in first phase, 12 telephonic interviews were conducted with another 12 higher education institutes. Furthermore, in third stage, 25 new responses were received from different institutes and universities from across the country to ensure a multi layered perspectives from all the country to interpret the strategic approach of management.

Results

The first question was about inquiring either the universities have their official social media accounts/pages or not? 90% of the informants said that their universities have an official presence on social media networks including Facebook, Twitter, Instagram and LinkedIn. However, 10% of the informants said that they do not have any official presence on any social media network. They said that they prefer to manage the official web sites of their institutes instead of using digital media. They also shared the couple of arguments and reasons for being away from social media networks usage which include lack of interest of the decision makers, poor cyber laws and legal complications in Pakistan, Government governing bodies have not passed on any instructions so far regarding officially initiating the use of social media, managing time and deputing staff for social media add an additional work load and less need of social media marketing for public sector institutes compared private sector institutes. The second question was about policy making regarding use of social media in the higher education institutes of Pakistan.

90% of the Informants told that although all of them were using social media for various purposes but there is no specific approved policy, set of rules, guidelines or a legal frame work from strategic point of view, duly approved by the statutory bodies of the institutes to make social media as part of mainstream marketing and communication activities. Further to state, all the informants were unanimously agreed that they were experiencing enormous benefits of social media sites in form of effective admissions campaigns, outreach to aspirant students, universities image building, attracting international students and providing a platform to students and faculty to interact with each. However, policy making from futuristic perspective on use of social media shall take some more time due to certain factors.

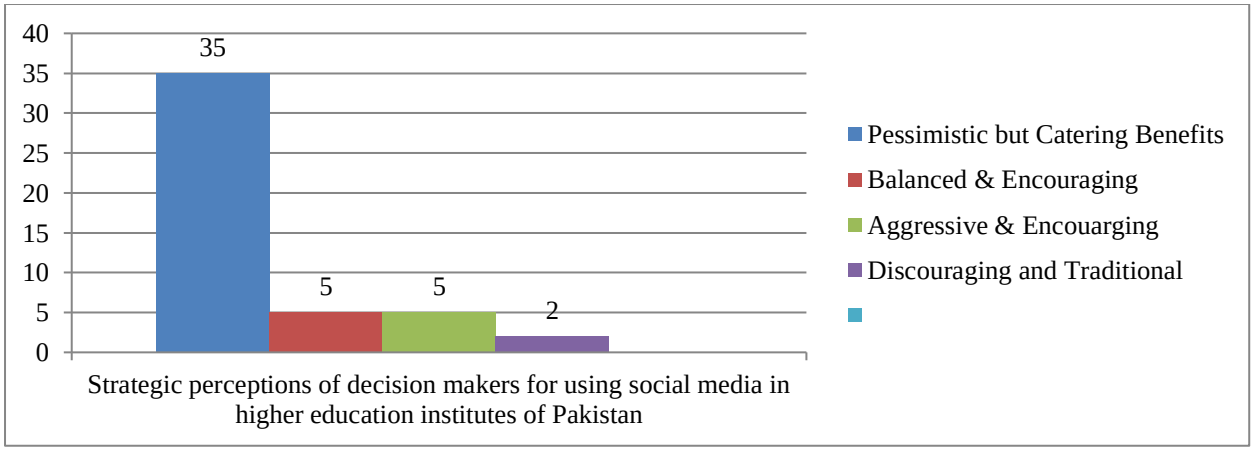


Figure#1 Why not strategic policy for social media in Higher Education Institutes

However, having proper strategic policy on the use of social media in higher education institutes brings better results as 10% of the informants who have duly approved policies, planning and guidelines for using social media networks. The informant from Institute No. 6 said that "policy and guidelines are further expanded and clarified with the development of comprehensive set of Standard Operating Procedures for streamlining all the social media activities keeping in view the current and future challenges in the external environment". Similarly, the informant from Institute No.34 quoted "The University has experienced high rise in admissions & enrolments, engagement of students, faculty, staff and external audience on the official Facebook pages in form of "likes" "comments" "subscriptions" and coordination among different affiliated colleges, independent teaching schools and institutions of their universities". The third question was about the strategic perception and approach of the higher management or decision makers regarding the use of Facebook as a marketing tool for universities.

80% of the informants said that the Vice Chancellor, Rector, the Registrar or Campus Director, make decisions in their institutes. All these decision makers are agreed on the aspect that in order to be successful in today's competitive business environment, they must come out of our comfort zones and adopt the changing landscape of the marketing, administration and communication in the higher education sector which is the only source of providing qualified workforce for socio economic development of Pakistan. The higher management considers it welcoming to get maximum benefit of social media networks. They believe that the new ideas are necessary for innovation in higher education sector and adopting the new methods of marketing to take a competitive edge in this regard has become necessary in 21st century. However, the informants told that at the same time, the decision

makers are reluctant and pessimistic towards building and maintaining strategic approach towards use of social media as marketing tool and its integration in the main marketing activities of institutes. Only 10 % of the informants told that their higher management is extreme aggressive and has high degree of support of usage of social media. They have developed independent Departments for social media activities and hired professional staff for effective generating results. The higher management perceives that implementation of proper rulers, social media policies and strategic planning which are extremely essential to provide institutional commitment to such initiatives. The informants i.e., university No. 5 said that "The management understands the fact that 86% sales of various products are done through social media networks in the world these days." On the contrary, the informant from institute No.8 as one of the 3% of the informants said that "The higher management perceives using social media as wastage of time and cause of incurring legal complications for the universities in future. They believe that it causes online harassment issues for female students and misuse of university information for malice purposes by the external parties. Hence, the higher management advises not to use or integrate social media networks for any official activity."



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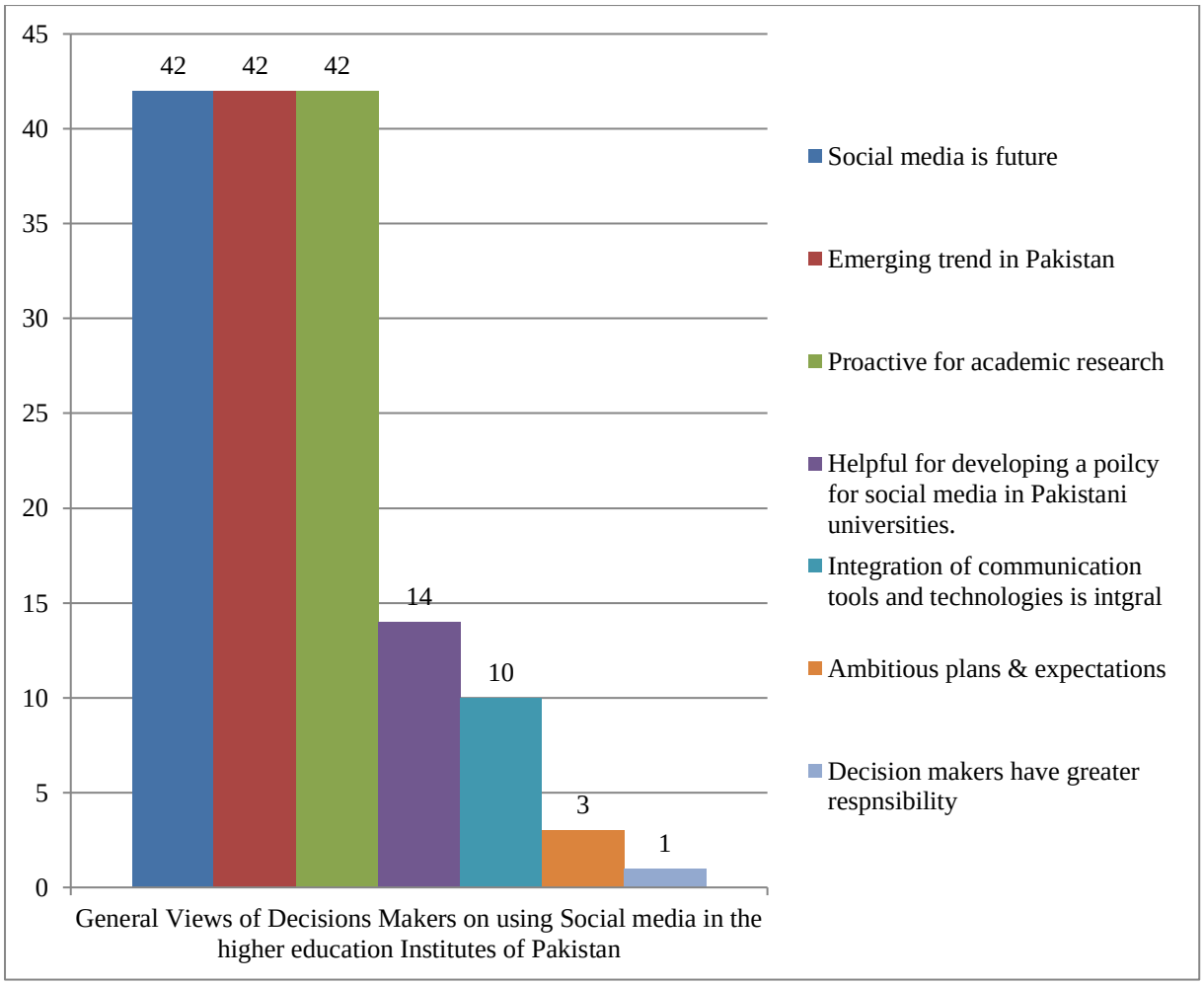
Figure#2 Strategic Perceptions of the Decision Makers

The last question was general inquiry into the views of informants about role of social media as a digital source for the advancements of higher education institutes and its significance in academic research for future studies in Pakistan being a developing country.



Figure#3 General Views of the Decision Makers for Social Media Use

The indispensable research for higher education sector as access to internet grows

90% of the informants said that social media networks are growing day by day. Every segment of society prefers using Facebook, Twitter, Instagram etc., all the time and it is changing the shape of world. Higher education institutes in Pakistan have no exemption as well. This will grow as technology is rising and there will be indefinite advantages for Pakistani universities. The informants believe that there is very high potential and benefit of academic research in this area for the young researchers. It is absolutely a new emerging trend in Pakistan which has radiant future. It has become necessity and there is dire need to investigate and study public relation theories and marketing theories with respect to social media in the higher education sector of Pakistan. The technologically advanced countries are moving ahead based on their development in information communication technologies. Hence, the informants said that social media is future, so it must be explored in academic research with respect to its impacts on higher education from different perspectives including the strategic approach.

Source for developing social media policy & guidelines in higher education sector of Pakistan

30% of the informants said that it generally very interesting and will help to come up with some policy guidelines for higher education sector of Pakistan which is lacking. Such research can be very thoughts provoking if conducted at strategic level. The informant showed their concern as well that there is not enough research or literature already available in Pakistan. More and more studies should be conducted in management sciences with respect to social media the higher education sector of Pakistan. 25% of the informant said that there will be more need of such studies in future because higher education sector is growing day by day and integration of communication tools and technologies shall become an integral part is dynamic progress of universities while competing with other universities in the region and on the globe.

The decision makers in higher education must come forward to practically encourage the integration and such studies

The informant from institute No.17 said that "The decision makers of the universities must be motivated with the significance of using social media at university level. There needs to some formal proposals to be discussed in academic and administrative statutory bodies meetings of higher education institutes where there should be detailed deliberation on the prospects of the use of social media for various purposes because the future belongs to a digital age".

Discussion

The increasing popularity of social media networks in Pakistan, coupled with the importance of institutional branding and dissemination of information, has motivated Pakistani higher education institutes to venture out on social media for multiple purposes. 90% of the Pakistani higher education institutes are maintaining their presence on social media where they show different levels of engagement with the audience.

The most important and notable factor is that among all the higher education institutes using social media, the similar percentage i.e., 90% don't have any formal social media strategy, policy, set of well-crafted guidelines, rules of business and regulations duly approved by their respective statutory bodies for getting effective results and benefits from the use of social media technology. It is the first and foremost drawback towards not having a strategic approach for social media. Being unable to ignore and hide from the changing needs of marketing paradigms in the 21st century, the institutes are using social media based on informal and general understandings.

There could be multiple reasons for not having a social media policy which include traditional & old fashioned decision makers, paradigm shift from traditional to digital media is time taking, yet it is time for trial & error method i.e., start using social media on experimental basis initially, week cyber-crime laws in Pakistan, university structure i.e., public & private as education is very cheap in public universities and very expensive in private universities and last reason can be lack of interest of higher education governing bodies in Pakistan which are acting very passive to make digital higher education sector with devising and implementing centralized policies. Despite catering immense benefits as

found in the results, Pakistani higher education institutes are still reluctant to frame proper policy and a strategic framework for the use of social media networks which is the main hurdle in the way of social media networks integration in higher education sector of Pakistan.

This scenario needs attention and necessary measures to fill the policy gap. Bélanger (2014) has highlighted the need and significance of a well-established social media marketing strategy and policy guidelines for universities for two significant reasons. First, having a social media marketing policy would allow the universities to keep social media accounts easily transferable between different employees instead of being dependent of single person. Secondly, it would also help a university to keep its social media efforts aligned with other running marketing campaigns of the competitor universities. Another paradoxical situation has while analyzing the results achieved through interviews. Like the above mentioned, it also directly relates to strategic approach of the higher education institutes in Pakistan with respect to effective use of social media. While majority of the decision makers are agreed to the fact that there is no existence possible without being present on social media and integrating social media technologies in teaching, marketing and communications. However, at the same time they are not ready to fully accept this paradigm shift. It can safely be judged from the fact that only 10% of the higher education institutes in Pakistan, having official presence in social media, have hired professional& qualified staff for operating social media accounts whereas in the remaining 90% institutes, the responsibilities of managing social media networks have been assigned as additional duties to irrelevant and non-professional staff from various other departments including Registrar Offices, Information Technology Department, Mass Communication Department and in some cases, the Admission and Students Affairs Offices have been involved in discharging such duties which kills the spirit of the subject. There could be some other valid reasons of these prevailing paradoxical situations.

Conclusion

Majority of the Pakistani higher education institutes are being headed either by researchers or professors where there is immense need of professional educational managers and leaders who must have excellent visionary administrative skills to steer higher education institutes in true letter and spirit of the local needs and global trends. Moreover, old age, bureaucratic style of management, a huge generation gap, misperceptions about the learning needs of the millennial and lack of exposure to the progressive global educational world are other big hurdles which stop these decision makers to welcome digital changes in the higher education system. Ultimately, these factors affect the strategic insight of the decision makers and they land in using social media just for the sake of it instead of looking forward to the challenges of digital age for preparing futuristic planning and achievable goals from the use of social media. The examples set by US universities as mentioned in Literature Review regarding integration of social media in mainstream activities could be a great source of inspiration and a benchmark to put the Pakistani education sector on digital roads.

As highlighted in literature section there is not much research available with respect to the use of social media in higher education sector of Pakistan. The results of current study display in its question no.4 that the decision makers are positive and optimistic about the need of academic research on social

media in higher education. As 90% of the informants told that social media was changing the world every day and there was dire need to incorporate social media in the mainstream activities of the institutes. To pace with the global trends and to encourage further research on the topic, social media needs attention in Pakistan. The question arises if the decision makers acknowledge the significance of social media and its impact on daily educational life of a university, why they are not willing to adopt a strategic approach towards the adoption and integration of social media? There are certain reasons that have been highlighted in the current study, but further research is required explore in depth other factors too.

Recommendations

i. The development of a comprehensive policy and strategic framework for the use of social media in the higher education sector of Pakistan is extremely important in the existing scenario. If universities are willing to join the conversation and embrace social media sites in some form, they must create strong and effective policies for their use and assign staff members with specific monitoring and contribution tasks (Solis 2008).
ii. The attitude of decision makers must be encouraging, motivating and supportive in this regard so that information communication technologies and social networking sites can fully be integrated in higher education system of Pakistan through proper procedures and mechanism.
iii. The higher education governing bodies in Pakistan including Higher Education Commission, Ministry of Federal Education & professional Training and Ministry of Information Technology should devise a centralized policy for incorporating information communication technologies in the higher education sector of Pakistan.
iv. There should be frequent seminars and awareness sessions throughout higher education institutes of Pakistan on smart learning techniques and the use of web-based technologies. It will motivate the youth to explore the uses of social media from different perspectives of higher education.
v. The government of Pakistan should organize national and international workshops and discussion forums for decisions makers in collaboration with professors and professional of communication studies and digital media for addressing the future challenges which universities may face in the long run.

Future Research

However, for future research, some further studies can be made on comparative investigation regarding strategic approach toward social media between public and private sector institutes of higher learning in Pakistan and Inter-provincial universities study can be conducted in Pakistan to assess the trends of use of Facebook and other social networks in Pakistan. Students' perspective can also be explored in comparison to management's perspective for future studies.

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Impact of Employee Empowerment on Organizational Performance with Mediating Role of Organizational Commitment. An Empirical study of Telecommunication Sector of Pakistan

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Abstract

The study was conducted to observe an impact of employee's empowerment on organizational performance with mediating role of organizational commitment. The aim of this study was to measure the impact of empowerment through psychological and structural empowerment on organizational performance. Research study was conducted based on deductive approach to follow Kanter theory of power. the study was conducted on telecom sector of Pakistan where a survey questionnaire of 300 in numbers through convenience sampling were distributed to collect the response. Out of those 300, 262 were found significant which were included for data collection. Correlation among constructs were significant in nature. The empowerment indicators both structural and psychological were making significant impact through regression analysis on organizational performance. Mediation was analyzed through Barren and Kenny approach where partial mediation was observed. The study had provided practical implications to understand the importance of both psychological and structural empowerment for the better outcome of the overall performance of the firm.

***Keywords*:** Psychological Empowerment, Structural Empowerment, Organizational Commitment, Organizational Performance, Kanter theory of Power

Introduction

The concept of globalization has made rapid change in structures and operating procedures for different organizations running their businesses in different parts of the world (Aragón-Correa, García-Morales, & Cordón-Pozo, 2007). Different class of audience prefer different modes of operating principles from organization which must be met to achieve distinctiveness in the market. Organizations are now days continuously looking to transform their activities through incorporation of different ways to improve their performance (Keskin, 2006). Enhancing the performance of firm is a complex phenomenon which require multiple dynamics from both sides of the coin. In other words, both internal and external factors are an important consideration for the firm to look upon and implement to change the dynamics of the organization (Noruzy, Dalfard, & Azhdari, 2013). Previous studies had emphasized on the critical factors that includes motivation of employees, empowerment of employees through different drivers, development of different training methods for employees which enhance the development procedures for the firm. Different methods for learning new avenues of innovation are an important consideration for organization as a whole (Mathieu & Taylor, 2006). Other indicators might include continuous

learning, transformational leadership, and organizational commitment to achieve distinctiveness in the form of high performance in the market shall be of prime contemplation for any organization (Maynard, Luciano, D'Innocenzo, & Dean, 2014).

Employees as discussed in the above developed argument are an important asset of any organization to not only excel but to find out new methods, which can be implemented to enhance the productivity. For this purpose, it is important for the organization to motivate their employees to achieve more and more (Seibert, Silver, & Randolph, 2004). Employees expect a lot from their organization in the form of different outputs. Sometimes they seek benefits to perform better and sometimes only motivated gesture will work out to perform better. Empowering employees is an important driver which enable an organization to walk independently in the market (D'innocenzo, Luciano, Matheiu, & Maynard, 2015).

Those organizations which primarily focused to provide freedom for their employees shall seek benefits in the form of high, performance, dedicated employees and achieved short term and long-term objectives. Moreover, empowerment can be of two major types psychological and structural which is governed by different organizations according to the type of structure they have internally. Furthermore, commitment is an important construct to be highlighted for this research study (Spreitzer, 2007). Organizations must endorse the element of commitment for continuous performance of their employees in different domains. Performance of any organization is solely dependent on the type of environment they have internally. Those organizations who endorse strong sense of commitment through empowerment of their employees in different tasks shall enjoy high performance ratio in the form of high achievements of goals (Thomas & Velthouse, 1990).

Companies are continuously focusing to endorse such practices which enhance the psychological empowerment of employees to perform better and participate in different management practices. Psychological empowerment contributes in many ways as it enhances the satisfaction and loyalty among employees (Mainiero, 1986). These two factors when implemented in any employee the organization will then enjoy commitment in the form of sheer dedication and commitment to achieve their desired goals and objectives (Conger & Kanungo, 1988). Furthermore, research have evidenced the importance of psychologically empowered employees have high organizational commitment and career satisfaction as they are highly concentrated, motivated and focused towards their goals and objective which in turn shall enhance the performance of overall organization (Joo & Lim, 2013). The research study was incorporated to study an impact of empowerment of employees on overall organizational performance. Structural empowerment was studied in context of competence of employees, their ability to gather different sources of information and implement it accordingly. Their ability to utilize their available resources effectively can enhance the performance. Moreover, author had clearly stated in the body of limitations that psychological empowerment must be observed along with structural empowerment to observe an individual impact of decentralized decision making on the behavior of employees to take initiatives accordingly (Joo & Jo, 2017).

The research study was primarily chosen with different parameters of psychological and structural empowerment to study an impact of empowerment on organizational performance through commitment which must be addressed as the key promotor to enhance the overall performance of

organization. The research study was conducted primarily in railway industry of Pakistan where organization had beard major problems regarding accomplishment of goals and objectives. Moreover, employee turnover ratio was increased in the past few years due to major drawbacks an organization was facing before privatization. So, the chosen framework had helped answered different questions through proposed constructs for this research study. The chosen research study was important from two major perspectives first the combination of both psychological and structural empowerment on organizational performance had executed significant outcome which can be an important element for theoretical implications to consider this variable at dimensional level. Organizational commitment is also an important contribution to endorse while any firm is going for high performance. Secondly, an organization should consider a combination of both dimensions to achieve high performance. Moreover, the importance of organizational commitment cannot be neglected as any employee no matter how empowered he is or is given authority cannot achieve distinctiveness unless and until he is committed to perform distinctively.

To address these uncertain findings and identified challenges, we apply social learning hypothesis (Bandura, 2001) to build up a novel method for empowering of employees. Vicarious adapting, likewise alluded to as vicarious experience and demonstrating (Manz & Sims, 1981)happens as a central individual comes to see how specific activities and their outcomes are translated. Data increased about the experience of others is connected to one's own future social choices (Manz & Sims, 1981) as summed up view of adapting capacities in comparable circumstances are framed (Bandura 2001), occasionally notwithstanding abrogating the effect of direct understanding.

Applying social learning hypothesis to empowering, it might be that representatives will show following the perception of another person acting in a way that demonstrates control has been imparted to them. That is, a worker who watches a chief exhibiting self-ruling and practical conduct may then gain from such conduct, and compatibly take part in such practices him or herself.

Kanter Power of theory as proposed by Kanter in had significantly argued about the empowerment of employees is an important observation in any organization to perform efficiently. Any employee who is given power to take decisions and is given enough resources to manage the gathered information has performed in an effective manner as compared to those organization where employees have to follow strict rules for conveying their thoughts (Kanter, 1989). They were also given little autonomy to express their thoughts in an on-going project. This expression is not favorable rather it restricts an organization to achieve its desired goals and objectives.

Literature Review

Psychological Empowerment and Organizational Performance

Empowerment of employees is an important practice which is now considered by every organization to retain their employees for longer span of time (Baird & Wang, 2010). It is also an important consideration from research point of view to look upon several ways for incorporating different avenues which enhance the productivity at both organizational and at individual level (Conger & Kanungo, 1988). With change in the societal and global level, the preferences and choices of different organizations to operate in the society changes due to global competition, greater innovation and higher

creativity have changed the preferences of employees to work in the organization (Joo & Jo, 2017). Those organizations who have autocratic culture with centralized decision making are now a days losing their most of the employees and customers for not retaining their quality. So, to maintain the pace in this competitive environment where acquaintance employees are prevalent and firms are espousing regionalized and flat organizational structures (Anderson, Potočnik, & Zhou, 2014)

Previously, organizations were more declined towards centralized decision making and autocratic environment, but with passage of time as more integrated the activities were aligned the more awareness was given among organizations to retain their employees as they are an important asset for organizations to perform distinctively (Conger, 2017). Empowerment is known as the distribution of power among employees in decision making. It is more linked with decentralized decision making which enable an employee to recognize his importance in an organization (Newman, Schwarz, Cooper, & Sendjaya, 2017). Moreover, the performance of employees shall decide an overall performance of an organization. Therefore, sheer commitment and dedication by endorsing such drivers which enhance their competence to perform better, enable them to determine self-worth among different subordinates (Sumpter, Gibson, & Porath, 2017).

Most importantly, as discussed by different researchers that empowerment in turn can enhance the performance through strong communication channels which were not present at the time of autocratic cultures where every employee must follow proper hierarchy to contribute in decision making platforms (Yi, Wei, Ren, & Di, 2015). But in this framework, it allows an organization to treat their employees as partners and is the prime source of development of intrinsic motivation among employees. Psychologically empowered employees are equipped with intrinsic motivation to take independent charge of their jobs to drive things independently through self-determination and self-efficacy (Amundsen & Martinsen, 2015). As Spreitzer (1995) designates, "characteristic assignment inspiration showed in an arrangement of four perceptions mirroring a person's introduction to his or her work job: skill, effect, which means, and self-assurance". These extents mirror a reasonable arrangement to a representative's work job (Thomas & Velthouse, 1990) Core self-assessments are identified with self-concordant accomplishments and peculiarity through inspiration, reliability and employment fulfillment. (Thomas & Velthouse, 1990) Core self-evaluations are related to self-concordant achievements and distinctiveness through motivation, loyalty and job satisfaction.

Furthermore, such environment will motivate the favor of intrinsic work goals rather than extrinsic which in turn shall favor the outcomes in the form of high performance in organization. Such initiatives may drive to tale positive decision making in different phases of job activities (Jaiswal & Dhar, 2016). Intrinsic motivation refers to “motivation that arises from the individual’s positive reaction to qualities of the task itself; this reaction can be experienced as interest, involvement, curiosity, satisfaction, or positive challenge”. Employees who are intrinsically motivated are more committed due to self-determination and motivation to perform independently (Newman et al, 2017).

Therefore, based on above developed argument it is hypothesized that:

H1: Psychological Empowerment relates in enhancing Organizational Performance.

Structural Empowerment and Organizational Performance

Research had emphasized the importance of empowerment which was discussed earlier in the above argument. Empowerment was initially discussed as two major forms which were psychologically and structurally (Conger & Kanungo, 1988). Different frameworks were designed to discuss an impact of structural empowerment on the overall performance of an organization (Avolio, Zhu, Koh, & Bhatia, 2004). Kanter theory of power which was initially discussed as the prime source of following for this research have incorporated structural power in organization to achieve its goals and objectives (Kanter, 1989).

Moreover, it was discussed by the author that social structures in the organization are also an important consideration to be considered which shape the attitude and behaviors of employees to work and achieve the organizational goals and objectives through sheer dedication and commitment (Kanter, 1977). Although personal characteristics and self-stimulated drivers are important and cannot be denied but on at the same time employees work place behavior is stimulated and motivated through socially and structured stimuli's. author had argued that situational circumstances may compel best job recital and lesser firm efficiency to produce as an output (Kanter, 1993). Access of knowledge and information, perceived support from subordinates, availability of resources and opportunity to excel are an important consideration from kanter's theory of power among employees which shape the structure and behavior of overall organization (Jr, 1979).

Opportunity can be defined as an extent to which different avenues of learning are open to organization to excel in different domains of advancements. Structural empowerment is an essential requirement along with psychological empowerment which aloe an employee to enjoy formal support and resources to complete task (Johnson & Szamosi, 2018). Moreover, availability of information is in turn is a blessing which must be shared among every employee to take decision accordingly. Empowering structures in different organizations must be facilitated by formal distribution of power among employees to take initiatives accordingly (Lee, Cheong, Kim, & Yun, 2017). Different nature of jobs which allow employee to be flexible shall enhance empowerment. Different informal initiatives in job including different kind of alliances with peers, seniors and subordinates enhance empowerment which was evidenced by Kanter to posit such features in organizations shall enhance overall performance (Shin & Konrad, 2017).

Employees are more conscious when they are given an authority to perform effectively in an organization and organizational goals are met only when employees were given an autonomy to take decisions on their own according to the given circumstances (Armstrong & Laschinger, 2006). Structural empowerment is related to number to factors which must be considered by an organization while they are encountering such transformation. It may include many outcomes related to job satisfaction, high job performance, trust among employees, increased organizational commitment which ultimately leads towards high organizational performance. Moreover, such factors on the other hand shall decrease the turnover ratio, and burnout among employees which are the major factors for low performance (Horwitz & Horwitz, 2017). For example, (Johnson & Hall, 1988) have anticipated and emphasized on social support in organization is a critical factor which can turn the position of organization because those employees who are in high strain can feel isolated in work environment may lead to high stress.

H2: Structural Empowerment relates in enhancing organizational Performance.

Psychological Empowerment and Organizational Commitment

Psychological empowerment is a state of mind which refers to an extent of an employee who is in control of his tasks and given projects. Author categorized such state of mind through different elements which might include self-determination, impact, meaning and competence of an individual which serves as a fit between different requirements (Joo & Shim, 2010) and roles of individuals and their beliefs which is gained through self-efficacy and ability to govern the actions of an employee which were influenced through work outcomes in an organization. Psychological empowerment is in actual a perception about an organization and its work environment (Farzaneh, Farashah, & Kazemi., 2014). Those employees which are psychologically empowered are in actually more committed with procedures of organization in which they are working.

Research had evidenced in the light of literature that organizational commitment is an important outcome of psychological empowerment (Bani, Yasoureini, & Mesgarpour, 2014). Empowered employees are more motivated to achieve organizational goals and objectives through sheer commitment and dedication which is given in the form of authority and decision-making power during their tasks and projects to complete in stated span of time (Fong & Snape, 2015). This phenomenon shall enhance the overall performance of employees which shall increase the overall performance of organization. Delegation of responsibility from the supervisor is an important element which makes an employee empowered to make decision regarding their tasks. This increases their loyalty and enhance organizational commitment (Macsinga, Sulea, & Dumitru, 2015). Commitment is related with intrinsic motivation which can be enhanced through incorporation of several elements such as meaning, self-determination, competence and impact. These drivers are an important stimulus towards job-satisfaction and are believed to be more committed towards organization (Islam, Khan, & Bukhari, 2015).

Therefore, it is hypothesized

H3: Psychological Empowerment relates with Organizational Commitment.

Structural Empowerment and Organizational Commitment

Structural empowerment also known as basic strengthening likewise alluded to as social strengthening (Hatcher & Laschinger, 1996) views empowering as a basic property of an association prove by administration rehearses. This methodology customarily measures strengthening from the point of view of the administrative voting public doing the engaging, regularly with a solitary thing asking a member regardless of whether they have presented an enabling administration hone (Gilbert, Laschinger, & Leiter, 2010). Those concentrated on frameworks and practices have discovered that participative administration strengthening improving HR shall enhance commitment through data sharing efforts (Malik, Javed, & Hassan, 2017) are related with positive results in firms, including firm-level execution of different plans and activities for high organizational performance.

Second, other research has related empowering atmosphere (defined as shared impression of enabling hierarchical structures, strategies, and practices) with upgraded execution, fulfillment, and worker commitment (Yang, Liu, Chen, & Pan, 2014). Third, enabling initiative research centers around pioneers' immediate and deliberate connections with their subordinates, and their proactive endeavors to formally offer capacity to their subordinates (Hanaysha, 2016). At last, a fourth stream of research has discovered mental strengthening (Maynard et al. 2014; Spreitzer 1995), defined as a mental state comprising of four encounters: which means, skill, self-assurance, and effect, to anticipate singular occupation execution, authoritative responsibility, client introduction, and employment fulfillment which shall enhance the commitment of employees with organization to initiate their work independently for achieving higher performance (Seibert et al. 2011).

H4: Structural Empowerment relates with organizational commitment.

Organizational Commitment and Organizational Performance

Even though ways to deal with the meaning of authoritative responsibility may change, certain patterns are clear. Specifically, a significant number of these definitions center around responsibility related practices. For instance, when we discuss somebody getting to be "bound by his activities" or "practices that surpass formal as well as regulating desires," (Yousef, 2000) we are in actuality concentrating on obvious signs of duty. Such practices speak to sunk expenses in the association where people swear off elective approaches and connection themselves to the association (yang et al, 2014). Organizational commitment is basically comprised of three major kinds which are normative, continuous and affective commitment. The nature of this study is focused to see the overall performance of the firm. Therefore, organizational commitment is based on the collective measure of these three categories.

Organizational commitment has three major components that includes identification, belief and loyalty which must be endorsed among employees in order to achieve high performance (Yousaf, 2000). Empowerment despite of having strong importance is directly linked with commitment as more the employee is given autonomy to take decisions more he will be committed and dedicated with his tasks and achieve them timely (Joo & Shim, 2010). This factor shall contribute directly to enhance the importance of employee which in turn shall increase overall performance of organization in the market (Chen, 2014)

H5: Organizational Commitment relates with organizational Performance.

Mediating Role of Organizational Commitment

Empowerment can fall flat if administrators enable just in foremost, yet not in real life. For instance, it is important for directors to give up power over representatives' day by day exercises, and give satisfactory assets to workers with the goal that enabling does not simply mean moving a weight of obligation (Spreitzer & Doneson, 2005). Commitment is an important indicator which enhance the overall performance of employee in organization. This mirrors speculating by who presumed that there can be dangers associated with those employees who are not committed enough to pursue their goals and objectives shall suffer from many drawbacks (Hardy & Leiba-O'Sullivan, 1998). Such symbolic assignment of power, without access to essential data and assets, can result in specialist abuse. So,

commitment is an essential factor for employees to drive their motivation in the form of practical achievements through decision making power they were given from top management (Sumpter, Gibson, & Porath, 2016).

To begin with, self-rule is a feeling of having decision in activities and choices about one's own particular work exercises free from administrative control, for example, work techniques or pace (Cheng, 2014). A worker who watches a boss exhibiting the ability to act with self-rule settling on one's own choices, not looking for endorsement from upper administration, and working without the points of confinement of excessively lumbering bureaucratic controls (Choi, Tran, & Park, 2015) will probably settle on self-ruling choices and make free move themselves, as this conduct is viewed as standardizing. Independent activity may result from practices, for example, participative basic leadership and representative association (Gillet & Vandenberghe, 2014) however isn't synonymous with these practices, on the grounds that self-sufficient conduct envelops something other than basic leadership or the arrangement of recommendations and exhortation to administration.

Association with work execution. Since a definitive reason to examine psychological empowerment is to enhance work execution. As of now, the outcomes about how psychological empowerment influences work execution were not reliable (Sun, 2016). For instance, (Liden, Wayne, & Sparrowe, 2000) utilized four-dimensional structure of psychological empowerment scale created by Spreitzer to contemplate how the four measurements influence work execution, and found that self-adequacy has a noteworthy positive effect on work execution.

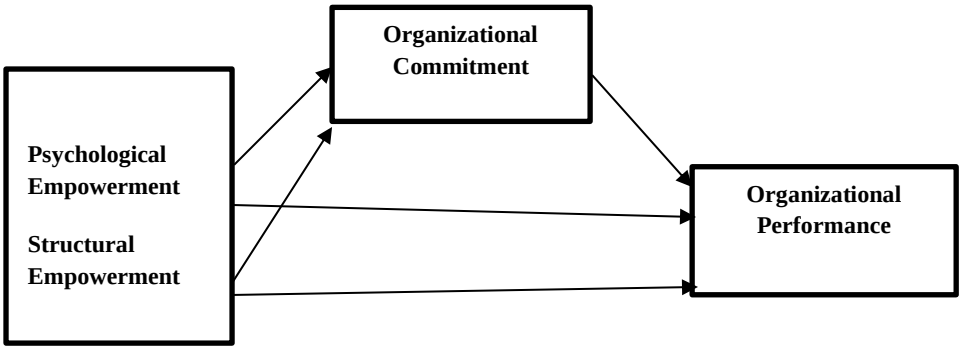
Employee creativity, defined as the age of novel and valuable thoughts is basic to hierarchical survival and viability. For structural empowerment there has been expanding research enthusiasm for looking at what pioneers may do to energize the generation of inventive results in the form of high performance through sheer commitment (Anderson, Potočnik, & Zhou, 2014). For pioneers of groups, specifically, this can display an uncommon test. From one viewpoint, thoughts are at last presented by people, and henceforth, it is valuable for pioneers to build up people's learning and abilities required for innovativeness (Dong, Bartol, Zhang, & Li, 2016). Then again, related research proposes that group inventiveness is more than the aggregate of its individual parts and requires the trading of learning among colleagues. Stressing advancing people's improvement (Dvir, Eden, Avolio, & Shamir, 2002) while empowering aggregate commitment (Eisenbeiss, Knippenberg, & Boerner, 2008), transformational administration (TFL) is especially appropriate to set in movement fitting procedures at both the individual and group levels to deal with this double test.

H6: Organizational Commitment positively mediates a relationship between psychological empowerment and organizational Performance.

H7: Organizational Commitment positively mediates a relationship between structural empowerment and organizational performance.

Theoretical Framework

Figure 1



Methodology

Research study was followed by positivist stance to pursue quantitative analysis for valuable output. Deductive approach was implemented following social learning theory and Kanter theory of power to significantly observe an impact of proposed constructs for this research study. Non-probability sampling following convenient sampling technique was used to draw potential sample from the chosen population of this research study. Out of potential sample drawn a total of 300 closed ended questionnaires were distributed among employees of different telecom organizations situated in Rawalpindi, Karachi, Lahore and Islamabad. Out of 300 questionnaires 262 were found significant. Survey design was used for this research study. Study was cross-sectional in nature and data was collected at one point of time and from multiple respondents for this research study. Structural empowerment was measured using five-point Likert scale adapted from (Horwitz, 2017). Psychological empowerment was measured using five-point Likert scale based on 12 items adapted from (Jaiswal, 2016) based on its four potential dimensions. Organizational commitment was measured using 6 items adapted from (Jaiswal, 2016) and organizational performance was measured using five-point Likert scale based on 4 items adapted from (Noruzy, 2012). Gathered questionnaires were used to analyze the results through alpha values, correlation analysis and mediated regression for this research study.

Results

Reliability

Table 1

LEVEL	ALPHA VALUE	NO. OF ITEMS
Psychological Empowerment	0.77	12
Structural Empowerment	0.84	19
Organizational Commitment	0.79	6
Organizational Performance	0.74	4

The table had shown significant values of alpha for every variable used for this research study.

Descriptive

Table 2

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Psychological Emp	262	1.00	5.00	4.8920	1.17736
Structural Emp	262	1.00	5.00	4.8373	1.32405
Organizational Commt	262	1.00	5.00	4.8199	1.28666
Organizational Perf	262	1.00	5.00	4.6647	1.26131
Valid N (listwise)	262				

Descriptive was used to analyze the overall response rate with mean values and standard deviations on five-point Likert scale for this research study.

Frequency

Table 3

Measures	Items	Frequency	Percentage
Age	18-24	157	74
	25-34	69	26
	35-44	36	13
Gender	Male	139	65
	Female	123	46

Marital Status	Unmarried	90	34
	Married	172	81

Different individuals having different age groups, and demographics had participated to provide valuable feedbacks. Out of potential sample of 262 individuals 157 respondents were falling in the age group of 18-24 with frequency of 157 and percentage of 74. 25-34 were those having frequency of 69 and percentage of 26. 36 were those candidates who were falling in the age of 35-44. Moreover, 139 were males and 123 were females who were working in different organizations. 90 were unmarried and 172 were married with valid percentage of 34 and 81

Correlation

Table 4

	Psy.Emp	**Str.Emp**	**Org.Comm**	**Org.Perf**
Psy.Emp	1			
Str.Emp	0.54**	1		
Org.Comm	0.63**	0.74**	1	
Org.Perf	0.58**	0.64**	0.51**	1

Correlation was used to observe an association among chosen variables. Performance indicators of employee empowerment were both having strong and positive association of (r=0.58**) and (r= 0.64**) with organizational performance. A positive and strong association of (r=0.63**) was observed in between psychological empowerment and organizational commitment. Structural empowerment was observed to have the strongest association of (r=0.74**) with organizational commitment. Organizational commitment was observed to have moderate relationship of (r=0.51**).

Regression

Table 5

	Org.Commitment			**Org.Perf**		
Step 1	B	t	R^2	B	t	R^2
Psy. Emp	.88*	20.9	.68	.81*	17.8	.59
Str.Emp	.79*	17.1	.54	.94*	21.7	.71
Step 2						
Org.Commitment				.69*	14.3	.48

Step 3			
Org.Commitment	.33*	3.7	
Psy.Emp	.54*	7.2	.58
Org.Commitment	.36*	4.2	.66
Str.Emp	.74*	16.6	

(Step 1 I.V- D.V)

a. Dependent Variable: Organizational Performance= O.P
N=262, *P<0.05, **P<0.01

b. Predictors: Psychological Empowerment= psy.Emp, Structural Empowerment= Str.Emp

(Step 2 I.V- M.V)

c. Dependent Variable: Organizational Commitment= Org.Commitment
N=262, *P<0.05, **P<0.01

d. Predictors: Psychological Empowerment= Psy.Emp, Structural Empowerment= Str.Emp

Step 3 Mediation

a. Dependent Variable: Organizational Performance= Org.Perf

b. predictors: Organizational Commitment=Org.Commitment

c. predictors: Organizational Commitment= Org.Commitment, Psychological Empowerment=Psy.Emp, Structural Empowerment= Str.Emp N=262, *P<0.05, **P<0.01

Regression was analyzed to observe an impact of independent variables on organizational performance. Mediation was analyzed using Barren and Kenny technique in four major steps. First step was performed to see an impact of psychological empowerment on organizational performance and a positive impact of .81* with t value of 17.8 was observed for this research study. An overall change of .59 was observed for this research. Thus, accepting H1 for this research study. Structural empowerment was also observed to be significant with positive beta value of .94* with t value of 21.6 indicating a highly significant response to accept H2 for this research study. Second step was analyzed to observe an impact of both predictors on organizational commitment. A significant impact of .88* and .79* was observed on organizational commitment accepting H3 and H4 for this research study. Third step was analyzed to see an impact of mediating variable on dependent. A significant impact .69* was observed with significant t value of 14.3 accepting H5 for this research study. Mediation was analyzed in fourth step where mediator was controlled in first step seeking an impact of independent variable. The values of predictors were dropped but were significant which indicates the presence of partial mediation thus H6 and H7 were partially accepted for this research study.

Discussion

As far as the study is concerned, this investigation is the primary examination to analyze the relationship between supporting strengthening as proposed by Kanter and the way of life of patient security utilizing an associate of Managers. Regardless of the wide acknowledgment of worker strengthening and duty in hierarchical research, the point of strengthening in telecom services specifically is scanty as specialists have as of late investigated the impacts of strengthening on authoritative results in human services settings (Armstrong & Laschinger, 2006). Research gap was

justified as the combination of both psychological and structural empowerment exert a positive and significant impact on performance of organization. Moreover, research objectives were successfully achieved, and questions were addressed respectively. Albeit a few ramifications can be drawn from the discoveries of this investigation (Jo, 2017). The results of this study supported all the hypotheses, indicating that employee empowerment and organizational commitment had significant impact on employees' performance. We found that empowering employees through performance indicators were a strong predictor not only for organizational performance (H1) and (H2) but also for organizational commitment (H3). The study was significant which empirically identified the positive association between performance indicators of empowerment, organizational commitment and organizational performance.

Leaders with authenticity exemplify positive moral and ethical values such as honesty, altruism, fairness, and accountability, all of which encourage followers to share the leader's values and beliefs. As Simons (2002) suggested, authenticity and integrity of leaders enhance their credibility and trustworthiness among subordinates. The more the subordinates trust leaders, the more they believe that psychological contracts with the leaders would not be violated. In addition, authentic leadership provides employees with opportunities to develop their potential capabilities and self-efficacy (Kirkman & Rosen, 1999). Findings of this study reveal that those employees who perceived less support from their supervisor lowered their commitment level towards the organization thus establishing that empowerment and organizational commitment are positively related thus supporting (H4) and (H5) for this research study. These findings are in line with those of previous studies (Baranik et al., 2010; Hochwarter et al., 2003) which assert that lower level of empowerment led employees to lower their commitment level towards the organization. The telecom industry of Karachi, Lahore, Rawalpindi and Islamabad are characterized by unconducive environment such as unsupportive behavior by seniors, absence of training and development programs, no recognition and unstable working schedule (Kandasamy & Ancheri, 2009) which is an indicator of low organizational support and decreases commitment levels of employees resulting in poor quality services delivered (Sharma et al., 2015).

Recommendations

To begin with, representatives tended to be all the more mentally engaged, when they saw higher true initiative from their directors. This investigation found the positive connection between true administration and mental strengthening. That is, workers who saw their bosses as a credible pioneer (i.e., mindfulness, moral/moral, adjusted preparing, and straightforwardness) tended to see their employments as more mentally enabled (i.e., which meaning, competence, self-awareness, and impact). Second, representatives tended to be psychologically and structurally empowered, when they had higher center self-assessments. Center self-assessments (i.e., confidence, general self-adequacy, inside locus of control, and enthusiastic solidness) will be decidedly identified with mental strengthening (i.e., which means, skill, self-assurance, and effect). Individuals with high in confidence, and consequently they tend to evaluate basic occasions as a test decidedly and center around the positive parts of their employments (i.e., meaning). As recommended, the general population with abnormal state of self-viability tend to favor all the more difficult exercises (i.e., competence). So, organizations must develop situations to empower their employees at every hierarchical level so they

must communicate effectively. The more employees are confident to take decisions, the more an overall performance of the company will increase.

Managerial Implications

Management need to assemble trust, reinforce, and build up a superior comprehension of workers by giving them chance to take an interest in basic leadership so they feel all the more mentally enabled (Spreitzer, 1995), along these lines expanding administration quality to clients. Administrators can guarantee the conveyance of better-quality administration by understanding the requirements and mind of their workers and attempting cognizant endeavors to lead them, make them feel engaged and thought about, in this way expanding their dedication levels towards the association. By guaranteeing worker duty, supervisors can, all things considered, ensure conveyance of superb administrations. This investigation would enable experts to comprehend the noteworthiness of the forerunners considered, and their noteworthiness to the result, focusing on which, they can fuse hones that prompt more prominent responsibility of representatives, hence bringing about more noteworthy administration quality.

Limitations and Future Directions

The study besides provision of valuable insights has many limitations. First, the study was conducted on one sector only. Future studies must incorporate multiple industries for better understanding of theoretical foundation. Empowerment of employees was measured through both psychological and structural empowerment. Future research should study these performance indicators at dimensional level so that better understanding of constructs should be developed. Sample size was not very large. Future research should use random sampling with large sample size.

Conclusion

The research study has highlighted positive outcomes between different hierarchical levels of management in an organization. It features the significance of strengthening which is a vital supporter of upgrade duty among bosses and subordinates, self-sufficiency and opportunity to workers in playing out their occupations and support and direction from bosses in expanding responsibility levels of representatives which results in representatives conveying brilliant administration to clients. Lodging heads may utilize this examination as a manual for deal with their workforce in a way that expands benefit quality and adds to hierarchical development. Therefore, empowerment is an important predictor which not only enhance commitment but increases an overall performance of the organization.

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Volatility Spillover between Currency and Stock Markets in Financial Crisis Period: Evidence from China

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Abstract

The study aims to investigate the volatility spillover between the currency and stock markets of China for the period from January 01, 2004 to December 31, 2013. The time frame is divided in to pre, amid and post-financial crises periods. "Generalized Autoregressive Conditional Hetroskedasticity (GARCH)" model is used to analyze the shock spread between these markets. The findings suggest significant bidirectional volatility spillover between the currency and stock markets in amidst and post-financial crisis periods. However, the spillover is more pronounced from currency to stock market in the post-financial crisis case. Moreover, unidirectional volatility flow form stock to currency market was observed in the pre-crisis era. The study helps the regulators to make policies that protect the financial markets from shocks. Similarly, the investors can get advantage, i.e. avoid risk and increase returns by diversifying their investment in non-correlated markets.

***Keywords*:** Volatility spillover, Currency market, Stock market, GARCH, China

Introduction

Globalization and revolution in the telecommunication has virtually disappeared borders and distances in today world. World economies and markets are now more integrated and interlinked than ever. This integration posits both costs and benefits for national economies. For instance, on one hand it increases the efficient utilization of scarce resources and accelerates the country's growth process, on the other hand, it worsen the financial crisis of an economy by providing safe path to investors for market exit at the time of economic sufferings. This means that when there is an opportunity in the domestic stock market, foreign investor will exploit it, but at the time of economic unease they will transfer their

resources to the safe heavens. This clientele behavior of foreign investors' may result in volatile capital flow of a country. Thus, the problem faced by the regulators at the time of opening the economy for foreign investors is the regulation of flow of foreign capital. Furthermore, the financial value of an asset is determined by the present value of its future cash flows. Therefore, the relative exchange rate of the domestic currency plays a vital role in the capital flow and market volatility. If domestic currency is appreciating, it will increase the present value of future cash flows of the domestic assets and thus will attract the foreign investors and vice versa. Therefore, volatility in domestic capital flow may be due to the opportunity or challenge posit by the domestic currency and/or stock currency markets.

Extent literature document the potential costs of integrated stock and currency markets (Bae & Zhang, 2015; Maitra & Dawar, 2019; Ngo Thai, 2019). For instance, less diversification options are available to investors and high volatility spillover from one market to the other. This attracted the attention of many economists, policy makers and financial scholars to investigate the association between the stock and currency markets. However, their findings are inconclusive. For instance, Bartov and Badnar (1994) and Jorion (1990) investigated the relationship of US firms' stock returns and US Dollar movements. They failed to document significant association between the US stock and currency markets. Chkili (2012) studied eight emerging economies, i.e. Malaysia, Singapore, Hong Kong, Brazil, Argentina, Maxico, South Korea and Indonesia, and found significant bi-directional volatility spillover in their stock and currency markets. Similarly, (Maitra & Dawar, 2019) reported unidirectional shock transmission between equity and currency markets in Russia and Emerging Eastern European economies. Furthermore, many studies show different linkages in currency and stock markets in normal and crisis periods. For instance, Panda and Deo (2014) investigated the Indian stock and currency markets and reported that significant bi-directional volatility spillover thereof in the post-crisis period than the pre-financial crisis era. Mozumder, N., De Vita, G., Kyaw, K. and Larkin, C. (2015) studied three developed and three emerging economies for volatility spillover in their stock and currency markets in all three periods, i.e. pre, during and post-crisis. Their empirical results reveal significant asymmetric shock flow in stock prices and exchange rates amid-financial crisis period in both developed and emerging economies.

This study aims to provide additional evidences on linkages between the currency and stock markets from China. As an emerging economic giant, China's markets have for greater impact on the global financial system than any other emerging economy. Likewise, emerging economies are also more vulnerable to shock spillover transmitted by global financial system (Prasad E, Rogoff K, Wei S-J, Kose MA). Furthermore, China's financial liberalization drive transforming its economy from

centrally planned to market base economy. Therefore, China set a perfect ground for volatility spillover investigation in its stock and currency markets. Second, the study contribute to the extant literature by providing empirical evidences for the association between the stock prices and exchange rates from all three periods, i.e. pre, amid and post-financial crisis period. This has important implications for both policy makers and investors. Policy makers can anticipate the future stock and currency prices fluctuation in these periods and thus formulate the necessary policies for it. Investors can minimize their risk and increase their returns by analyzing the trend of their security prices in these periods. Third, contrary to other studies which only examined the linkage between the stock and currency markets, we analyzed volatility spillover in these markets.

The remainder of this study is as follow:

Section-2 highlights existing literature, section-3 explains the methodology of the study, and section-4 includes results and discussion while last section, i.e. section-5 presents the conclusion and implications of the study.

Literature

The two widely used explanations for volatility spillover between currency and stock markets are "flow oriented" and "stock oriented" models. Flow Oriented model (Dornbusch & Fischer, 1980; Gavin, 1989) emphasis on the exchange rate effects on firms' output and the country's balance of trade. The decrease in the value of domestic currency improves the local firms' competitiveness in international market and thus encourage them to produce more. Consequently, the firms' income and the country's export increases and imports plunges. This attracts the investors to invest in the country's securities and thus the prices of local stocks rises. While the stock oriented model (Branson & Henderson, 1985; Frankel, 1987) shed light on the choice whether to hold assets in domestic or foreign currency. Stock's return play decisive role in this situation. Higher domestic stock returns increase the country's citizenry wealth and strengthen the domestic currency.

A large number of studies have been conducted to investigate the volatility spillover in currency and stock markets. However, (Franck & Young, 1972) were the first researchers to examine the stock price reaction to exchange rate re-alignment of multinational firms. The extant literature is classified into **six** categories; First, studies with no volatility spillover presence in currency and stock markets; Second, studies with the unidirectional volatility flow in these markets; Third, the literature with findings of bi-directional volatility movement in these markets; Fourth, the work pertinent to the financial crises of 1997 and 2008; Fifth, those studies which have mixed evidences of volatility

transmission in currency and stock markets and finally the group of studies which investigated the volatility spillover shocks amongst different stock markets.

The studies on no volatility spillover between stock and currency markets include; (Kearney & Daly, 1998; Mlambo, Maredza, & Sibanda, 2013; Morales, 2008). A study of Kearney and Daly (1998) investigated the volatility spillover between Australian stock and exchange rate markets and revealed that there is lack of significant volatility spillover from currency to stock market. Likewise, Morales (2008) carried out a similar study for six Latin American Countries i.e. Mexico, Brazil, Argentina, Spain, Venezuela and Colombia with European economies and found no statistically significant correlation thereof. Mambo et al (2013) studied volatility spillover in the South Africa settings for the period of 2000 to 2010. In their study they employed Generalized Autoregressive Conditional Heteroscadasticity Model to investigate the exchange rate volatility and stock prices association. Their findings document a very weak volatility spillover bond in the exchange rate and equity markets. The weak relationship in this market reveal that Johannesburg Stock Exchange (JSE) is a safe destiny for foreign investors.

Literature on unidirectional relationship consist; for instance, (Adjasi, Harvey, & Agyapong, 2008; Chkili & Nguyen, 2014; Doong & Lee; Ebrahim, 2000; Fedorova & Saleem, 2009; Kanas, 2000; Kang & Yoon, 2013; Mozumder, 2013; Ngo Thai, 2019; Okpara & Odionye, 2012; Yang & Chang, 2008). Ebrahim (2000) studied the exchange rate and equity markets for volatility spillover. His results reveal the unidirectional spillover in these markets. Similarly, Kanas (2000) analysed six developed economies i.e. Japan, US, Canada, France, Germany, and UK, and found a unidirectional volatility effect running from equity returns to exchange rate returns for all the mentioned countries except Germany. Similar results, i.e. unidirectional linkage between stock and foreign exchange markets, were also reported by Adjasi et al. (2008) in Ghana settings. Yang and Chang (2008) examined five equity markets, namely, Singapore, Japan, South Korea, Taiwan and USA. Their analyses were carried out on Double Threshold GARCH (DTGARCH) model and suggest unidirectional volatility flow in exchange rate and equity markets of these economies. Fedorova and Saleem (2010) investigated the volatility spillover between the Russian and East Europe Emerging economies' Stock and Currency Markets. They employed Bivariate GARCH BEKK model to investigate it. Their findings show a unidirectional volatility spillover from exchange rate market to stock markets. Doong and Lee (2011) conducted a similar study in South-East Asia economies. They analysed weekly data from 2000 to 2008 for Indonesia, Malaysia, Korea, Taiwan, Philippine, and Thailand for volatility spillover in the equity and currency markets of these economies. Using STCC-EGARCH (1.1) model, they reported

price spillover from stock to exchange rate market. Furthermore, Okpara and Odionye (2012) reported one sided shock transmission in Nigeria settings. Moreover, Mozumder (2013) empirically investigated volatility spillover in Brazil, Ireland, Netherlands, South Africa, Spain and Turkey stock and currency markets. He used EGARCH model and found volatility move from equity to currency markets in these countries. However, the shock spillover pattern is reverse in emerging economies. For instance, Kang and Yoon (2013) documented unidirectional flow of volatility spillover from currency to stock market within Korea. Likewise, Chkili and Nguyen (2014) annualized the BRICS economies and found unidirectional flow in their exchange rate returns and stock market returns.

Likewise, many studies reported bidirectional volatility spillover in currency and stock markets (Aloui, 2007; Andreou, Matsi, & Savvides, 2013; Chkili, 2012; Francis, Hasan, & Hunter, 2006; Kumar, 2013; Qayyum & Kemal, 1961; Sharma & Mishra, 2015; Vardar & Aydogan, 2019; Xiong & Han, 2015). By using Bivariate EGARCH model, Qayyum and Kamal (2006) empirically investigated the volatility spillover in Pakistan's currency and stock markets and found bi-directional relationship between them. Similarly, Francis et al (2006) examined the dynamic relationship of international currency and equity markets. They employed Trivariate GARCH (1.1) model and find significant bi-directional relationship between equity and currency markets. Their results further reveal that the association between USA and foreign stock markets are relatively stronger in volatility than the mean. Moreover, the volatility spillover from currency to stock market is stronger than the equity to currency markets. A similar study was also carried out by Aloui (2007). The result observed the bi-directional flow of volatility between the currency and equity markets of the US and five major European economies. Similar results were also documented in emerging economies. For instance, Chkili (2012) studied eight emerging economies i.e. Malaysia, Singapore, Honk Kong, Brazil, Argentina Mexico, South Korea and Indonesia and found bi-directional flow of shocks between stock and currency markets. In another study, Andreou et al (2013) investigated 12 emerging economies six from Latin America i.e. Argentina, Brazil, Colombia, Chile, Venezuela and Mexico and six from Asia i.e. India, Korea, Malaysia, Pakistan, Philippine, and Thailand. They employed quarto-variate VAR-GARCH and BEKK models to examine the volatility shocks in the equity and currency markets of these developing economies. Their findings suggest bi-directional volatility spillover effect in the equity and currency markets of the studied economies. Furthermore, Kumar (2015) examined currency and equity markets of IBSA (India, Brazil and South Africa). His analysis which was carried on multivariate GARCH and BEKK model confirmed the existence of bi-directional volatility spillover in their currency and equity markets. His findings also suggest that the role of stock market is more significant than the currency

markets in both the first and second movement and spillover. Existing literature also document similar findings for other developing countries, for instance, Xiong and Han (2015) study of China's stock and currency markets, and Sherma and Mishra (2015) investigation of volatility spillover between Indian stock and currency markets.

Volatility Spillover in Financial Crisis

The Asian financial crises of 1997 attracted the scholar's attention to investigate the volatility flow pattern between stock and currency markets in different time periods. The extant literature document this phenomena in financial crisis period of 1997 and 2008 include; for example, rns for shock spillover in three financial crises periods by employing Generalized Autoregressive Conditional Heteroscadasticity model. They revealed that there exists volatility spillover between these two returns during the three crises periods. Further they concluded that there is no a(Choi, Fang, & Fu, 2010; Jebran, Chen, Ullah, & Mirza, 2017; Panda & Deo, 2014; Saha & Chakrabarti, 2011) empirically investigated shock spillover of equity market with currency market of New Zealand in pre-post "Asian Financial Crisis Period" of 1997. They used Exponential GARCH model for analysis purposes and found unidirectional dynamic spillover during pre and post crises period. Saha and Chakrabrati (2011) examined the Indian stock returns with exchange rate retu symmetric affect between currency and stock markets during the three sub-periods. Likewise, Panda and Deo (2014) investigated the shock momentum between India equity and currency market for Pre and Post crisis period. Their analysis, based on GARCH and EGARCH models, reveals significant bi-directional volatility spillover between currency and stock markets in post crises period than pre crises period. Granger et al. (2000) studied the East-Asian countries i.e. Japan, South Korea, Indonesia, Hong Kong, Malaysia, the Philippines, Thailand, Singapore and Taiwan. They used daily data from 1986-1997 and employed Granger causality and Gregory-Hansen co-integration test to find the association between stock prices and exchange rates. Their results reveal that exchange rate changes affects the stocks prices in Thailand and Japan setting. However, contrary relationship was observed in Taiwan case, i.e. stock prices changes leads to exchange rates changes. Moreover, significant bi-directional relationship was seen between the exchange rate and equity prices in South Korea, Indonesia, Malaysia, and the Philippines, a finding in line with Bahmani-Oskooee and Sohrabian (1992) for the USA. Lastly, Singapore failed to record any form of directional relationship. A slimier study Nieh and Lee (2001) investigated stock and currency markets of G-7 countries i.e. USA, Canada, Italy, France, Germany, UK and Japan for the period 1993-1996. They found the dynamic relationship between stock prices and exchange rates.

Furthermore, their results of VECM estimation show that the two variables lack the predictive capabilities for more than two successive days and thus a temporary significant association which remains for a day for certain G-7 countries.

Apart from the above discussion there are also studies that report mixed results, see for example, (Beer & Hebein, 2011; Granger, Huangb, & Yang, 2000; Jebran & Iqbal, 2016). Beer and Hebein (2008) analysed both the emerging and developed economies. Their sample of developed countries consist of US, UK, Canada and Japan while the list of emerging economies include Singapore, South Korea, India, Philippine and Hong Kong. By using EGARCH model they found positive spillover from currency to equity market for Canada, South Korea Japan and India. It means, in these economies when the currency rate plunges the stock prices will decline and vice versa. For other countries the volatility spillover pattern is not persistent. Similar mix results were also reported by Granger et al. (2000) for East Asian countries i.e. Indonesia, Japan, Malaysia, South Korea, Taiwan, Hong Kong, Thailand, and Philippines. They observed bi-directional relationship between the currency rate and stock prices of Indonesia, Malaysia, Philippines and South Korea. In case of Japan and Thailand, their findings were unidirectional. Moreover, no significant association was seen in Singapore currency and equity markets. Furthermore, Jebran and Iqbal (2016) investigated six Asian economies and reported bi-directional asymmetry volatility spillover between stock and currency market of China, Hong Kong, Pakistan and Sri Lanka. Further their study reveals that there exists unidirectional relationship between the Indian markets. They also found no significant shock spillover of Japan's currency and stock markets.

However, a group of scholars of the view that volatility spillover should not be investigated in isolation but the correlation among different markets should also be taken into account. On the basis of correlation among different markets the investors will be able to take important decision about their portfolio diversification. The investors should know about the high correlation among the market indices and the low correlation among the market indices. The high correlated market indices are riskier than the low correlated market indices. Markowitz (1959) investigated the relationship between stock indices and argued that the investors should focus on those markets which are least correlated markets in order to reduce risk. Globalization is the factor which removed the barrier and increased the linkages among the equity markets (Forbes & Rigbon, 2002), same is in updating the technology. Crisis is not only the cause which will affect the local market but these shocks will also transfer to the other markets. There are different factors which interlink the markets, for example, capital flow from

one market to other market, common ties among the economies and same policies related to same issues.

Emerging Markets

Most recently, an attempt was made by many scholars to investigate the volatility spillover in the exchange rate and equity prices by using updated data from many advanced and developing economies. For instance, Alagidebe et al. (2011) used monthly data of five advanced countries, namely Canada, Switzerland, UK, Australia and Japan, for the period 1992-2005 and found no significant long-run association thereof. However, by employing Granger causality test they found causal linkage from currency to stock market in Canada, UK and Switzerland and reverse in Japan, i.e. from stock to currency market. In the same line, Harjito and McGowan (2011) investigated the exchange rate and stock process of four East Asian economies i.e. Singapore, Thailand, Indonesia and Philippines. By analysing weekly data from 1993 to 2002 their findings reveal presence of co-integration between exchange and equity rates and among all the stock markets of these economies. Buberkoku (2013) studied both advanced and developing economies' stock and currency markets for volatility spillover. He used a large dataset comprising monthly data from 1998-2008 of Australia, Canada, England, Germany, Japan, Singapore, South Korea, Switzerland and Turkey. He analyzed the data through Engle-Granger and Johansen cointegration test and Granger causality and observed no statistically significant long-run relationship between currency and stock rates in the studied economies except Singapore. However, in short-run stock prices shocks were observed in the currency markets of Canada, Switzerland and Turkey. Whereas, causality flow is from exchange rate to stock prices for South Korea and Singapore. Furthermore, no causal linkage was seen in either direction in case of England, Germany Australia, and Japan.

For data sensitivity issue, Tsagkanos and Siriopoulos (2013) examined both the daily and monthly data for the period 2008-2012 for US and European Union to check the relationship between the two variables in crises period. They used Johansen co-integration test, non-parametric co-integrating regression and Granger causality test and found short-run shock shocks flow from stock to currency market in USA, while long-run in EU case. Concentrating on financial crunch of 2007-2010, Caporale et al. (2014) analyze the relation between stock prices and exchange rates of developed economies i.e. USA, Canada, UK, Euro area, Japan, Switzerland. They examined weekly data, divided into crisis and non-crisis period by Bivariate UEDCC (Unrestricted Extended Dynamic Conditional Correlation) GARCH model. Their findings suggest unidirectional Granger causality which run from stock prices to currency value in USA and UK; while contrary to this Canada and Euro regions area except

Switzerland bidirectional causality was observed. Kollias et al. (2012) employed rolling regression to investigate the link between the stated variables. The advantage of this technique is that it takes into account the new information as the period proceeds by observation. Their empirical results report no long-run relationship between equity and exchange rates while the causality depends on the market conditions. For instance, the causality direction is from currency market to stock market in non-crisis period and vice versa.

Existing literature also highlight the transmission of volatility spillover from advanced to emerging markets. For instance, Chou et al. (1999) examined the volatility shock spread from the US market to the emerging market of Taiwan. Miyakoshi (2003) find the close association between the Japan and its regional Asian regional stock and currency markets with other global markets. They found that volatility transmit from the US to the Japan's markets and return spillover from Japan to US markets. China showed remarkable high GDP growth in last couple of decades. Therefore, Johansson and Ljungwall (2009) examined the Chines Stock and currency markets with the Hong Kong and Taiwan markets. They employed Multivariate Autoregressive Conditional Heteroscadasticity Model to examine the volatility flow pattern among these markets. Other studies also document no significant association between China and developed markets (Li 2007; Li et al (2009).

The Co-integration Framework

Some of the researchers used the Johanson and Joselius approach along with granger causality test to find the long-run relationship and causality between these two series. Earlier scholars emphasized on the exchange rate and stock returns and did not pay attention to the time level effect of the two variables. This is because of econometric assumptions requiring non-stationarity of data in many finance and macroeconomic analysis. However, contemporary researcher suggests data stationarity to avoid spurious results. Phylaktis and Ravazzolo (2005) were the first one to overcome this problem. They suggested cointegration technique to curb the non-stationarity issue and allow the investigation of stock prices and exchange rate relationship in both levels and differences. They investigated the Pacific Basin countries stock and currency markets for both short and long-term relationship. Earlier, Bahmani-Oskooee and Sohrabian (1992) used cointegration and Granger causality tests to observe causality pattern in stock prices and currency rates of advanced markets. Their findings revealed short-run bidirectional relationship between the studied variables. Similar studies were carried out in other parts of the world. However, results are inconclusive. For instance, the study of Yu (1997) shows some causal connections among East Asian markets (i.e. Tokyo Hong Kong, and Singapore). Conversely, Ajayi and Mougoue´ (1996) found significant relationship, both short-run and long-run, between stock

and currency rate of eight industrial economies. In another study, Ramasamy and Yeung (2005) studied the stock and currency rates of nine East Asian countries and testified that the casualty flow vary according to the period. For instance, in crisis period stock prices changes leads to exchange rate variations in these countries. In an extensive study Cumperayot et al. (2006) investigated the stock and currency markets of 26 countries for volatility spillover. They employed simultaneous equation probit model for their analysis purposes. These authors observed that stock market crash was followed by the sharp currency fall on the same day in crisis affected emerging economies.

Bahmani-Oskooee and Sohrabian (1992) found that the S & P 500 and the effective currency rate of the dollar are not stationary. Further they applied the Cointegration technique and recorded no long-run relationship between these two series. However, their finding highlights the cause-and-effect relationship in the short-run. Smyth and Nandha (2003) examined four South Asian economies i.e. Pakistan, India, Sri Lanka and Bangladish for linkage in their stock and currency markets. By using daily data for 11 years for the period 1995-2001 they found no significant long-run association in all the four countries. By using Granger Causality test they reported that currency rate affect equity prices in Sri Lanka and India but for the other two countries i.e. Pakistan and Bangladesh no such movement was observed. Yau and Nieh (2006) investigated the fifteen years monthly data i.e. 1991-2005, of Taiwan and Japan from for the association between the stock -prices and the currency exchange rates i.e. NTD/Yen. They used the Granger causality test and reported a bidirectional causality in the stock prices of both economies. However, no causal relationship was seen on the currency side. Furthermore, by using Johansen co-integration test they concluded that no long-run relationship exist in the studied variables. But, Yau and Nieh (2009) revisited their employing co-integration approach with threshold effect between equity and exchange rates in Taiwan and Japan and US exchange rate effect on Taiwan's financial market. But, Yau and Nieh (2009) revisited the issue by testing for cointegration with threshold effect between the stock prices and the exchange rates in Japan and Taiwan and the effect of US exchange rate on the financial market of Taiwan monthly data from 1991-2008. Results reveals different linkage this time. For instance, long-run relationship between NTD/JPY and stock prices of the two countries was seen. Moreover, the short-run causal linkage disappeared in the revised version. These findings are in line with the notion that a long-run positive association transmits from currency of either USA or Japan to the Taiwan stock market.

Ismail and Isa (2009) applied cointegration for finding the long-run association in the two markets of Malaysia by using data from 1990-2005, and found no significant evidence of long-run thereof. Pan et al. (2007) employed Cointegration and Granger Causality test to study the stock-currency bond in

seven Asian countries (i.e. Korea, Malaysia, Taiwan, Japan, Hong Kong and Thailand). The daily data was used from 1988-1998. Their findings do not provide sufficient evidence for the presence of long-run linkage between the stock prices and currency rates. They found significant causal relationship in Japan, Hong Kong, Thailand and Malaysia from currency market to stock market prior to crisis period, i.e. the 1997, in Asian Financial Markets, but amidst crisis no cause and effect relationship in Malaysian stock and currency markets.

The GARCH and EGARCH Models

Extant literature document the dynamic relationship between the exchange rate and stock prices. Many of these studies used Generalized ARCH (GARCH) model to investigate this linkage. For instance, so (2001) examined the US dollar and interest rate relationship via Multivariate Exponential Generalized Autoregressive Conditionally Heteroskedastic (EGARCH). His findings suggest the volatility spillover between dollar and interest rate. Further, the relationship between the two markets is temporary. By using the same econometric model Laopodis (1988) investigated volatility spillover among three European and three non-European monetary system. The results record existence of significant volatility spillover among these markets except the Yen. In another study, Chung (2003) studies the spot and future markets of Taiwan to diagnose the volatility flow pattern. His finding show concurrent correlations and price information spillover between the two markets. Koutmos and Booth (1995) investigated the New York, Tokyo and London stock exchange markets for volatility spillover and find asymmetric shock transmission among these markets. Considering the economies of world most advanced economies, Kanas (2000) carried out his volatility spillover enquiry in the six well-established stock and exchange markets of US, Japan, Canada, UK, France and Germany. The results support asymmetric volatility spillover from stock to exchange market for five economies, Germany is an exception. Conducting another study, Kanas and Kouretas (2002) studied the mean and variance causality via EGARCH-M and CIV methodology for four Latin American markets. Their findings reveal substantial evidence for presence of both mean and variance causality. Furthermore, the casualty in means was greatly influenced causality in variance. This model, i.e. multivariate GARCH, was also used by Caporate et al. (2002) for volatility spillover in four Asian economies. In his detail study, Assoe (2001) analyzed both developed and emerging markets. He took five advanced and eleven emerging markets for volatility spillover in their stock and exchange markets with the US markets. Moreover, Yang and Doong (2004) explored the G-7 markets for mean and volatility flow pattern. The empirical results of the study consistent with the asymmetric flow of volatility shocks from stock to

exchange market. However, Chiang and Yang (2003) found that a higher exchange rate fluctuation contributes marginally to a lower US local equity market correlation in most cases.

The policy measures instituted as a result of the crisis are likely to have affected the structure and correlation of the markets and the underlying return generating processes. Therefore, the validity of pre-crisis studies on important financial variables and relationships is suspicious. Previous evidence suggests that significant events associated with a country (Karolyi and Stulz, 1996) have an informational spillover effect on other countries. This "shift interdependence effect" of dramatic news regarding a country has also been well-documented in Arshanapalli and Doukasm (1993), Bennett and Kelleher (1988), Jeon and Van Furstenberg (1990) and Lee and Kim (1993), who found that stock market linkages change as a result of catastrophic events like the 1987 stock market crash.

Multivariate Model

Globalization and telecommunication revolution has virtually disappeared borders and distances in today world. International trade, foreign investment and foreign exchange transactions has increased many folds. Investors can now easily find, assess and buy the security or currency which best met his investment need. However, asset and currency rate of a country is also influenced by its macroeconomic indicators and fiscal and monetary policies i.e. GDP growth rate, Balance of Trade (BOT), Balance of Payment (BOP), Inflation, interest rate etc. Investors pay special attention to these factors in their investment decisions. For instance, Chen et al. (1986) used an APM model to investigate the relationship between the macroeconomic variables (i.e. Inflation, industrial production, risk premia etc.) and stock return in USA settings. They found substantial evidence that the studies macroeconomic variables have significant effect on the stock returns. Similar results were also reported by Fama and French (1993).

The proximity of the Asian-Pacific countries may lead to conclusion of a close association their markets and vulnerability to shocks spillover from adjacent economies. However, many pre-crisis studies reveal weak cross-market linkages thereof (Chowdhury, 1994; Eun and Shim, 1989; Lee, Petit, and Swankoski, 1990; Liu and Pan, 1997). The financial crisis of 1997 is provocative in this regards as it suggests a shift in the regional market linkages linkage. Furthermore, it has changed the investors' perception, domestic liquidity volatility pattern and structure of the political economy. Forbes and Rigobon (2001) suggest that a necessary condition to conclude contagion is a shift in the interdependence arrangement of regional economies. The mere presence of interdependence before and during the crisis is not in itself a sufficient and necessary condition to show contagion. The purpose

of this paper is to show that change took place in the interdependence of the economies. Two important explanations for contagion are: first, it will deteriorate the international diversification effectiveness; second, while it is difficult to judge the contagion channel, one would hope that there exists a bail-out plan to stop a process unwarranted by a country's economic fundamentals to spin out of control and take down other economies with it.

Tian and Ma (2010) examined the relationship between stock prices and macroeconomic variables (i.e. money supply, exchange rates, consumer price index and industrial production) in China setting. They used monthly data set from 1995- 2009 employed the ARDL model of cointegration for analysis purpose. Their findings show no sufficient evidence for cointegration presence before financial liberalization, i.e.2005, however, it exist in the post liberation era. Exchange rate and money supply positively affect the stock prices in Shanghai stock market. Similarly, the consumer price index of past month trigger changes in stock prices. Chortareas et al. (2011) conducted their study in oil rich Middle East region. They considered oil prices as a moderator between the stock prices and exchange markets of these economies. Their analysis was based on Johansen cointegration model. Results reveal no long-run cointegration between the currency exchange rates and stock prices when oil prices are not considered. Moreover, when the oil prices are taken into account, again no long-run co-integration was observered for full studied period, i.e. 1994-2006. However, when investigated for pre and post oil price shock period results show that after the crunch, exchange rates, stock prices and oil prices are cointegrated in Saudi Arabia, Egypt, and Oman. But for Kuwait, long-run linkage was recorded between equity and oil prices. Currency rates are positively associated with stock prices in Oman and Egypt, while in Saudi Arabia this link is inverse. Liu and Tu (2011) used daily data from 2001-2007 and take exchange rate and foreign investment as determinants of equity prices and examined the volatility spillover in Taiwan. The results show that the exchange rate and the stock prices are affected by the over buying and overselling of foreign capital. Furthermore, the three conditional means show asymmetric mean-reverting behavior. This means that negative returns revert relatively faster than the positive ones. Finally, the volatility movement of all the three markets reveal the GARCH effects.

Eun and Shim (1989) use daily (closing) index returns on nine stock (Australia, Japan, Hong Kong, United Kingdom, Switzerland, France, Germany, Canada, United States) markets to study market interdependence. Their period of study was December 1979 to December 1985. The authors used impulse response functions and variance decomposition in Vector Auto Regression (VAR) to measure the strength and inventions from one market to the others. They find surprisingly low linkage between these markets, but the US market asserts itself as the most dominant and influential market. The

estimated lag response to a shock in the US market is estimated as a day and this supports the notion of informational efficient global stock markets.

Cheung and Liu (1994) tested for the presence of a long-run connection among five Asian stock markets (i.e. Malaysia, Hong Kong, Singapore, Korea and Taiwan) during the period 1980-1990. Using a multivariate cointegration model, their findings lack evidence on the presence of cointegration. However, using the same indices in US Dollars, they unveiled evidence of cointegration and concluded that movements in the US dollar during the period of study invalidate the multivariate cointegration analysis findings.

Howe, Martin, and Wood, Jr. (1997) use classical and modified re-scaled range analysis to research long-term memory in Pacific Rim Equity Markets. Their period of study is January 1981 to May 1994. They find the presence of a long-range non-linear deterministic structure in Japan, Singapore, Korea, and Taiwan, which ranges from three to four years in duration. However, after correcting for short-range dependence using Lo's modified rescale analysis, all evidence of memory disappears.

Pan and Liu (1997) and Pan, Liu, and Roth (1997) use Johansen's Cointegration test and Modified Cointegration with GARCH to study common stochastic trends and volatility in five Asian Pacific equity markets. Their period of study is April 1988 to December 1994. They found that the five Asian markets and the USA market are highly integrated through the second moments of stock returns, but not the first moment.

Persva and Lean (2011) in their model included other variables like inflation rates, oil prices and interest rates as the important determinants of stock prices for the main oil producing countries like Oman, Iran, Egypt, Saudi Arabia, Kuwait and Jordan. The results of the study showed that all variables were cointegrated. In the case of Iran, Egypt and Oman before stock crises a bi-directional causality existed in both short and long-run between exchange rate and stock prices. In the case of Kuwait, short-run causality transmit from exchange rate to stock prices was observed. Basher et al. (2012) also included oil prices in their model. They used VAR model for the emerging markets to find the relationship among stock prices. They included an extra variable of Global economic activity in their model which affects the oil prices. After analysis of monthly data from 1998 to 2008 they found that when oil prices raises, stock prices and exchange rates decreases. Eita (2012) used quarterly data and Johnsen method for the study to find the determinants of stock prices for Namibia. The results showed that the variables like exchange rates, inflation rates money supply and interest rates affect stock prices. There found positive connection between stock prices with money supply and economic activity.

However, negative relationship was seen of stock prices with inflation and interest rate. In the same way Inegbedin (2012) using Cochran-Orcutt Autoregressive model for the Nigeria and using data from 2001 to 2009. The result showed an indirect relationship between exchange rates and stock prices. The relationship between stock prices and inflation rates, stock prices and interest rates were insignificant when observed individually but the joint effect of these variables on the stock prices was significant.

Geographical linkage is amongst the important factors that causes spillover effects. In the recent decades scholars paid more attention to the geographically connected emerging economies, especially the one located in the Asian region. Bekaert (1998) proved that there is strong positive relationship between liberalization policies, territorial connection and world market returns which indicates strong spillover effects between countries. Ng (2000) examined regional factors for spillover effect and reported significant correlation in the pacific Basin markets. Similarly, study of miykoshi (2003) investigated markets of Asian region and proved that the regional factors have stronger affect than the world markets. However, the results of some papers showed contrary findings. For instance, Chan et al. (2003) showed a strong effect from the US to the Asian markets. Likewise, Bayoumi and Swiston (2007) proved Global financial conditions the major factor of spillovers. Fujiwara Takashi (2012) showed that US paly vital role in the fluctuation of Asian financial markets, while the increase in the role of China is negligible in the Asian financial markets. Lin (2012) added foreign reserves and interest rates as an additional variable in the connection of stock and stock prices. He used monthly data from 1986 to 2010 and employed the ARDL model to examine the portfolio adjustment in the emerging markets of Asia like Thailand, Taiwan, Korea, Philippines, Indonesia and India. The results revealed that the relationship between stock prices and exchange rate became stronger in the crises period as compare to pre crises period. Spillover effect was observed from stock prices to exchange rates. Aslam and Ramzan (2013) used the variables like per capita income, CPI, real effective exchange rates Index, and discount rate as the main determinants of stock prices in Pakistan. The NLS and ARMA models were used. There is observed a negative effect of inflation and discount rate on the Karachi stock price index, however the effect of per capita income and real effective exchange rates on the Karachi stock price index was positive. This study helps that how macroeconomic variables can be used for the better performance of stock market. Groenewold and Paterson (2013) introduced an extra variable of commodity prices for the relationship between exchange rate and stock markets. Their findings suggest that when the commodity prices were not considered, exchange rates and stock prices were not cointegrated. But when commodity prices are included, significant cointegration was observed among all the three variables. Furthermore, no causality linkage in any direction was seen

between exchange rates and stock prices in the short-run. However, a bi-directional causality effects observed in the case of commodity prices and stock prices. Contagion phenomenon is another significant factor like the spillover effects. The financial contagion may be defined as the rise in the strength of linkage of financial markets in the crises period (Forbes and Rigobon, 2002; Dungey et al., 2010). The results of different studies showed different results, some studies showed that in the time of financial or Global crises there is increase in the spillover effects (Baig andGoldfajn 1999; Caporale et al., 2006; Saleem, 2008), however some studies found negligible effects of contagion (Bekaert and Ng,2005). Bekaert et al. (2012) rejected the increase in the spillover effects during the financial and global crises. This study aims to fill the gap by investigating the volatility spillover between the currency and stock markets of China.

Methodology

Several studies have documented the volatility spillover effect among the different equity and currency markets. Different researcher used different methods to find the shocks among the markets. Among these researchers, most of the researchers employed the GARCH model to find the shock spillover between the stock prices and exchange rates, for example, (Pan and Liu, 1997; Caporate et al., 2002; Liu and Tu, 2011)

This study aims to investigate the volatility spillover between the stock and currency markets of China in pre, amidst and post-financial crisis period. Daily China total market prices data were taken from the Data Source "yahoofinance.com". The Data for exchange rates RMB/USD were collected from oanda.com. The span of sample period consists of 10 years from 2004 to 2013. Financial Crisis period lays amid the centre of the study period. The total observations of the study are; 2,606, and the full time period is grouped into three sub periods like;

- Period_1 (Pre-Financial crisis): January 1, 2004 to December 31. 2007
- Period_2 (Amid- Financial crisis): January 1, 2008 to December 31, 2009
- Period_3 (Post- Financial crisis): January 1, 2010 to December 31, 2013

The following formulas are used to calculate the stock market and exchange returns:

- Ln (Pt/Pt-1)*100……..(For stock Returns)
- Ln (Et/Et-1)*100 ……..…(For exchange rate returns)

Where Pt; means the current day closing price, and Pt-1; is the previous day closing price, Et and Et-1; for exchange rate of the current day and previous day respectively.

Descriptive statistics is used to understand the nature of the time series data. Augmented Dickey Fuller (ADF) test (Dickey & Fuller, 1979) is used to find the stationarity in the stock and exchange returns. The following question was used for this purpose:

$$\Delta Yt = \alpha + \theta T + (1 - \beta) Y_{t-1} + \sum_{j=1}^{\rho} \gamma_1 \Delta Y_{t-j} + \varepsilon t$$

Where Δ is the first difference operator; Y_t represent variable, which is analysed for unit root; α, is constant; T, for time trend and finally ρ is the lag number.

For ADF test the null hypothesis isH_0: $(1 - \beta) = 0, \beta = 1$, entailing the non-stationary of Y_t The null hypothesis of ADF test is that a time series data comprises a unit root. By rejecting the null hypothesis will means that Y_t has no unit root.

To find the volatility spillover between the stock prices and the exchange rates of China for the financial crisis periods, Generalized Autoregressive Conditional Heteroskedascity (1.1) (GARCH) model was used. Jebran and Iqbal (2016) used Generalized Autoregressive

Conditional Heteroscedasticity model to examine volatility transmission between the stock and currency markets of Pakistan. The models used for this study are presented in equation (1), (2), (3), and (4). Equation (1) and (3) investigated volatility flow from currency to stock market while the equation (2) and (4) examined the inverse pattern i.e. volatility spillover from Stock foreign exchange market.

$$y_{t\,(SSE)} = C + y_{t-1(SEE)} + \delta_{t-1(RMB)} + \varepsilon_t \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (1)$$

$$y_{t\,(RMB)} = C + y_{t-1(RMB)} + \delta_{t-1(SSE)} + \varepsilon_t \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (2)$$

$$h_{t(SSE)} = \alpha_0 + \gamma_1 \varepsilon_{t-1}^2 + \gamma_2 h_{t-1} + \delta_{Residual\ of\ RMB} \quad \ldots\ldots\ldots\ldots \quad (3)$$

$$h_{t(RMB)} = \alpha_0 + \gamma_1 \varepsilon_{t-1}^2 + \gamma_2 h_{t-1} + \delta_{Residual\ of\ SSE} \quad \ldots\ldots\ldots\ldots \quad (4)$$

Equations (1) and (2) are the mean equations whereas (3) and (4) are the variance equations for stock and foreign exchange markets respectively.

Whereas;$\alpha_0 \geq 0, \gamma_{1,}\gamma_2 \geq 0$ shows ARCH term, h_t denote the variance of both the equity returns and the exchange rate returns in equation (3) and (4), respectively, $\alpha_{0,}\gamma_{1,}\gamma_{2,}$and δ are the coefficients. The information about volatility spillover from the previous period is calculated as the lag of squared residual from the mean equation (ε_{t-1}^2), previous periods forecast variance (h_{t-1}) and the squared residual of currency rate and stock prices respectively in the above two equations.

Result and Discussion

Table 1 depict the descriptive statistics of the study in three periods: pre-financial crisis, amid-financial crisis and post-financial crisis. The average stock returns of Shanghai Stock Exchange (SSE) in pre-financial crisis period were positive while amid-financial crisis are negative. For instance, the pre-financial crisis period the mean value is 0.1206 whereas amid-financial era it is -0.0909.The post-financial crises period average is -04015. The standard deviation of all the three periods is volatile. However, amid-financial crisis period volatility is relatively more than the pre and post-financial crisis periods. Moreover, negative Skewness was observed in all the three periods. The kurtosis value shows that the data is leptokurtic. Finally, the Jarque-Bera test in all the periods (Pre, amid and Post-financial crisis) indicates that the data is not normal.

Table 1. Descriptive Statistics of Stock Index (SSE)

Period	Pre-Financial Crisis	Amid-Financial Crisis	Post-Financial Crisis
Mean	0.1206	-0.0909	-0.0415
Median	0.0705	0.0187	0.0000
Max.	7.8903	9.0343	4.2332
Min.	-9.2562	-7.4910	-5.4449
Std.Dev	1.5589	2.3472	1.1638
Skewness	-0.4437	-0.0348	-0.3026
Kurtosis	6.6290	4.4886	5.2403
Jarque-Bera	605.9822	48.2988	233.7950
Obs	1042	522	1042

Table 2: Descriptive Statistics of Exchange Rate (RMB)

Period	Pre-Financial Crisis	Amid-Financial Crisis	Post-Financial Crisis
Mean	-0.0120	-0.0130	-0.0106
Median	0.0000	-0.0044	-0.0015
Max.	0.3636	0.8328	1.0438
Min.	-2.0211	-0.4453	-1.1689
Std.Dev	0.0924	0.1046	0.1591

Skewness	-10.2926	0.8544	-0.4327
Kurtosis	219.1229	12.2690	10.8936
Jarque-Bera	2046352	1932.1330	2737.7870
Obs	1042	522	1042

The descriptive statistics of the exchange rates (RMB) is shown in Table 2 for all three periods: pre, amid and post-financial crisis. The results reveal negative average exchange returns in all series. The standard deviation in all the three sub periods is highly volatile. The series are negatively skewed in pre and post-financial crisis periods, while positively skewed amid-crisis. This indicates the asymmetric pattern of the periods. The kurtosis values for all the three sub periods are positive, indicating leptokurtic character in data. Finally, the Jarque-Bera row values are highly significant which suggest abnormality in the series.

Table 3; reports data stationarity test results. The unit root technique is employed to find the stationarity in equity and currency rate returns for all the three sub periods. The Augmented Dickey Fuller test (Dickey & Fuller, 1979) was used for said purpose. The returns of stock index (SSE) and currency rate returns (RMB) were used for the unit root analysis. The findings revealed that the data is stationary at level in all the three periods.

Table 3: Stationarity Test

Period	Augmented Dickey Fuller Test (At Level)		
	Pre-Financial Crisis	Amid-Financial Crisis	Post-Financial Crisis
SSE	-31.96*	-22.89*	-32.41*
RMB	-33.98*	-23.78*	-10.66*

Notes: *significance at 1%.

Table 4; highlight the findings of mean equations i.e. equition (1) and (2). The mean equations exhibit the volatility transmission between the equity returns and the exchange returns for all the three sub-periods. In the pre-financial crisis era, the lag return affect is insignificant in exchange rate market. This means that currency market returns (RMB) do not depend on their previous return, i.e. own lag. In this period, i.e. pre-financial crisis, stock market returns are also insignificant for its first lag. This suggests that the fluctuation in the previous stock market returns has no effect on the current day equity returns. However, in post-financial crisis period the analysis of exchange returns (RMB) reveal statistically significant results at first level lag. This implies that currency market depends on their own first lag. The result tells that changes in previous currency returns brought changes in the current currency returns. Due to changes in the previous currency returns the current day returns decreased by

-0.24%. Similarly, there is unidirectional return turbulence from stock to currency market in post-financial crisis period. The fluctuation in stock returns decreased the currency market returns by -0.013%.

Table 4: Mean Equation Results

	Pre-Financial crisis		Amid-Financial crisis		Post-Financial crisis	
	RMB	**SSE**	**RMB**	**SSE**	**RMB**	**SSE**
C	-0.0185**	0.0825	-0.0206***	0.2294***	-0.0187***	-0.0337
	(0.02)	(0.05)	(0.00)	(0.00)	(0.00)	(0.35)
RMB (-1)	-0.0262	-0.5898	-0.0471	0.2208	-0.2402***	-0.1531
	(0.66)	(0.93)	(0.27)	(0.67)	(0.00)	(0.82)
SSE(-1)	-0.0054	0.0025	0.0009	0.0182	-0.0130***	0.0050
	(0.19)	(0.32)	(0.66)	(0.79)	(0.00)	(0.34)

* **, **, * indicates p <1%, 5%, and 10%

The analysis of volatility spillover effect is shown in Table 5. The volatility spillover is estimated from RMB to SSE and also from SSE to RMB. The magnitude of the volatility spillover is found to be highest (-0.88) from currency to stock market in the post-financial crisis period.

The findings lacks substantial evidence for existence of volatility spillover from currency to stock market in China setting. This helps investors in portfolio diversification. The absence of shocks transmission from foreign exchange market to stock market in the pre-financial crisis period provides more opportunities to investors. For instance, it reduces the investment risk and raise the portfolio returns.

The results show significant bidirectional volatility flow between the currency market and stocks market in other two periods, i.e. amid and post financial crisis. However, the post-financial crisis period is more vulnerable to volatility spillover than amid-financial crisis period. Moreover, shock transmission is greater from currency to stock market while low from stock to currency market in the post-financial crisis period. It means that the spillover impact of currency market is more than the stocks market of China. The bidirectional spillover of volatility suggests that the turbulence in one market leads to turbulence in other market in China. Thus, we can conclude that the China stock and currency markets are interconnected. Further it reveals more investment risk and less diversification choices for investors in China setting.

The unidirectional volatility is found only in the pre-financial crisis period from stock to currency market. Unidirectional volatility spillover provide the understanding about those shocks that are raised

in one market and are spread to the other one whereas the shocks acceptance market doesn't react to the jolt sender.

Table 5: Variance Equation Results

	Pre-Financial Crisis		Amid-Financial Crisis		Post-Financial Crisis	
DV →	**RMB**	**SSE**	**RMB**	**SSE**	**RMB**	**SSE**
α_0	0.0074***	0.0314***	0.0179***	0.2319***	0.0018***	2.2201***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
$\beta_1\varepsilon_{t-1}^2$	-0.0055***	0.0557***	0.0185	0.0603***	0.2897***	-0.0196**
	(0.00)	(0.00)	(0.31)	(0.00)	(0.00)	(0.05)
$\alpha_1 h_{t-1}$	0.5633***	0.9330***	-0.6821***	0.8905***	0.6834***	-0.6114***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
λ	0.001***	-0.0450	0.0065***	-0.2176***	-0.0009***	-0.8845***
	(0.00)	(0.90)	(0.00)	(0.00)	(0.00)	(0.00)

* **, **, * indicates p <1%, 5%, and 10%

Conclusion

The study aims to investigate the volatility spillover between the currency and stock markets of China for the period from January 01, 2004 to December 31, 2013. The full period was then divided into three sub periods, i.e. pre, amid and post-financial crisis period. Daily data were used to find the spillover between these two markets. The statistical techniques, unit root and GARCH models were employed to examine the data stationarity and volatility spillover between the currency and stock markets respectively. The empirical results show significant volatility spillover between currency and stock market of China. For all the three sub periods, i.e. pre, amid and post-financial crisis, the flow of volatility is different. For instance, the results suggest significant bidirectional volatility spread between the currency and stocks amid and in post-financial crisis periods. However, the shock transmission is more pronounced in the case of post-financial crisis period. Furthermore, the volatility spillover is more pronounced from currency market to stock market than the stock to currency setting. The unidirectional volatility is found only in the pre-financial crisis period and its flow is from equity market to foreign exchange market. Finally, the results lack substantial evidence for existence of significant volatility spillover from currency market to stock market in in pre-financial crisis period.

The study has important implications for investors and policy makers. Investors, both the institutional and individual, can get advantage by diversifying their investment in those markets which are non-correlated. Consequently their risk decline and returns increase. Furthermore, they can safeguard their investment from the market crash by making portfolio in non-integrated markets. Policy makers can use this information for the economic stability while making such policies which can protect the markets from financial shock during crisis. They can also anticipate any future financial crisis in one market on the basis of crash of the other market. Thus, the investors and policy makers should pay special attentions to the China stock and currency market linkage at the time of their strategic decision making and policy formulation.

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Contagion between World and Emerging Islamic Equity Markets: An Application of Clayton Copula Technique

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Abstract
The aim of this study is to examine the contagion between the world Islamic equity market and selected emerging Islamic equity markets including Bahrain, Bangladesh, Egypt, Indonesia, Malaysia, Pakistan, Qatar, Saudi Arabia, Turkey and UAE. We applied Clayton Copula technique using daily MSCI Islamic indices data from 1st September 2010 to 30th September 2017. The results confirm the existence of contagion between MSCI's world Islamic equity market and the selected ten Emerging Islamic Equity Markets during the period of study. Past academic discourse is mainly focused on examining the connectivity between conventional and Islamic or developed and underdeveloped markets, whereas, this study focuses on investigating transmission of spillovers from the world Islamic equity market to ten emerging Islamic equity markets. Clayton Copula has been used in this context for the first time.

***Keywords*:** Contagion, Volatility Spillover, Archimedean Copula, Islamic Equity Market

JEL Classification Codes: E44, G15 & G32.

Introduction

Different studies have been carried out to study the phenomena of mean and volatility spillover between money, commodity and equity markets. There are also a plenty of studies (Jawadi, Jawadi & Louhichi, 2014; Khan & Khan, 2018; Nagayev, Disli, Inghelbrecht & Ng, 2016; Shahzad et al., 2017; Shahzad, Ferrer, Bellester & Umar, 2017; Rajeb & Arfoui, 2019) on the connectivity of conventional and Islamic equity markets but there are only a few studies such as Majdoub and Mansour (2014) on the integration between world Islamic equity market to emerging Islamic equity markets though with a narrow focus and regional coverage.

Moreover, the econometric techniques based on normality of data cannot be relied upon when the underlying assumption of normal Gaussian distribution are not met as it become difficult to make inferences then. Copula models provide a possibility to cope with the issue of asymmetry and fat tails hence are gaining popularity. It is therefore imperative to fully explore the integration between world Islamic equity stock markets and the emerging equity stock markets in an exhaustive manner using modern econometric methodologies that enable researchers overcome the limitations associated with the old methodologies and to paint a greater picture of Islamic equity markets in a single study including often ignored Islamic equity markets.

The aim of this study is therefore to examine the contagion between the world Islamic equity market and a wider canvas of emerging Islamic equity markets based on Clayton Copula technique. This would have twofold purposes i.e., enable to make valid inferences in case the data is not normal and also to generalize the findings keeping in mind major emerging equity markets have been examined.

According to Bala and Takimoto (2017), scholars attribute the inability of the old econometric models to examine asymmetry and fat tails as the main cause of global financial crisis of 2007. Post global financial crisis, researchers introduced different models, such as construction of spillover index by Diebold and Yilmaz (2009) which was later enhanced by Greenwood-Nimmo (2016), on which we can study different types of risks typical to connected markets.

The perception of safer financial securities is gradually taking root (Alqahtani & Mayes, 2018; Cerovi´c, Nikolaj, and Maradin, 2017) as the global financial crisis has exposed the flaws in having synthetic securities ignoring the principle of asset-backing hence there has been growing concern to study Islamic equity markets in comparison to conventional stock markets to examine if the added safety features are sufficient to mitigate risks and ensure steady returns.

The phenomenon of globalization has played its due part in the correlation of risk between countries, global markets and stock market performance. A strong trend in one market is reflected in another market, which is called financial contagion.

According to Fleming, Kirby and Ostdiek (1998), not only information flows from one market to another but also the cross-market hedging would result in information spillovers. This not only changes the expectations of the investors but also strengthens the linkages amongst the markets especially during crisis (Akca & Ozturk, 2016).

Following the financial crisis of 2008 and the financial contagion as a result, investors have renewed their interest in emerging markets (Kocaarslan, Sari, & Soytas, 2017).

The market integration leads to spillovers and reduces possibilities of mitigating risks through diversification. According to Hedtrom, Zalander, Junttila and Uddin (2019) spillovers from emerging markets to the developed markets is lower but it is high at regional level opening a window for

diversification. Moreover, the impact of a financial shock which starts from the mature markets of developed countries loses its relative intensity till it reaches the emerging markets.

This market integration and market contagion play an important role in shaping the economies around the world whether developed or emerging. Lately, the researchers have focused on investigating the impact of volatility spillover effects during stable and turbulent times and how long a spillover effect remains once initial impulse causes volatility from one market to another. The impact of volatility can be harmful for the markets as the phenomenon of market contagion implies (Kenourgios, Samitas, & Paltalidis, 2011).

If shocks in markets are transferred from one market to another then it implies that there would be instances where investments are made with the perspective of diversification and hedging against risk but, due to integration the benefits of risk minimization are not fully realized (Majdoub & Mansour, 2014; Majdoub & Sassi, 2017). Hence this study is intended to be helpful for investors in taking advantage of diversification giving due consideration to the possibility of integration.

In this study market contagion between the World Islamic equity market and selected Emerging Islamic equity markets will be examined by application of an Archimedean copula technique called Clayton copula. In order to do so, Morgan Stanley Capital International's (MSCI) Islamic equity index for world and emerging markets i.e., from the entire emerging Islamic equity market spectrum a sample of selected countries including Islamic stock market indices representing Bahrain, Bangladesh, Egypt, Indonesia, Malaysia, Pakistan, Qatar, Saudia Arabia, Turkey and UAE are explored to carry-out the empirical study in a comprehensive manner.

The Islamic equity index of MSCI is used for analysis as this index is devised following stringent Shariah-based (Islamic law) criteria. Inclusion or exclusion of a company in the index is dependent on the nature of business and its capital structure (MSCI, 2017). For instance, companies directly realizing revenues from products or services that are prohibited as per Islamic law are not included in the index. These products or services include utilization of alcohol, tobacco, pork, weapons, gambling and adult entertainment etc. Furthermore, businesses deriving significant amount of revenues while relying on excessive leverage are also not included in the index.

Conceptually, it can be assumed that since the Shariah compliant markets avoid leverage and strictly adhere to the asset-backing rule, so probability of having market contagion from a market which depends heavily on leverage are remote, but this needs to be validated with the help of strong empirical evidence.

The rest of the paper is organized as follows: Section 2 summarizes a review of relevant previous literature. Research Methodology is described in Section 3 followed by Results and Discussion, Conclusion, Recommendations and Future Research Directions are presented in Sections 4 to 7 respectively.

Literature Review

World Bank introduced the term emerging markets for the first time (Agtmael, 1980), but this term gained popularity in mid 1990s. It refers to markets or economies in the process of rapid growth and industrialization with respect to social and business activities.

Due to fast growth rate and improving performance; emerging markets are a good investment option for diversification purposes. On the other hand this fast growth rate indicates a high level of riskiness associated with the investments in these markets as they carry additional risk linked to politics, economy and currency (Guégan, Bertrand, & Zhao, 2014).

Substantial diversification advantage of emerging market assists the investors to gain more while their links to global markets tends to be specific to countries depending upon the heterogeneity amongst the markets with respect to their market size and investment. This integration between global and emerging markets can be beneficial or contagion.

The field of Islamic Finance has opened a relatively new and innovative form of investment in the form of Islamic hedge funds and notably Sukuks (Majdoub & Sassi, 2016). Islamic finance is governed by restricted rules and Shariah (Islamic) law. This mode is free of interest and investment cannot be done in businesses which are prohibited in Islam.

What is allowed and what is prohibited in Islamic finance do affect the behavior and investment decisions of the investors which in turn influence the whole market. Previous studies have shown that there is considerable difference in conventional and Islamic equity markets with respect to their products and rules (El Alaoui, Dewandaru, Rosly, & Masih, 2015; Hammoudeh, Mensi, Reboredo & Nguyen, 2014; Mansour, Khoutem & Majdoub, 2015).

The conventional and Islamic equity markets may be different in terms of products, but still global Islamic equity market index is influenced by conventional equity market indices. Global Islamic equity index measured through Dow Jones Islamic Market Index exhibit great dependence on three major global conventional equity market indices i.e. Asia, Europe and United States moreover they are also influenced by the oil prices and stock markets (Hammoudeh, Mensi, Robredo & Nguyen, 2014). This clearly indicates the fact that current manifestation of Islamic Shariah principles is not sufficient to make the Islamic equity index different from conventional indices.

Islamic markets also received the setback from financial crisis 2008, but the impact was less significant as compared to conventional indices in Europe, US and the rest of the world (Jawadi, Jawadi, & Louhichi, 2014). In another study (Majdoub & Mansour, 2014) identified low integration among the selected Islamic market and the US conventional market. Moreover, the Islamic market within US is less exposed to shocks originated in the region (Rizvi, Arshad, & Alam, 2015).

Significant spillover effect was identified in another study between developed and selected emerging countries in Asia, Middle East, and North Africa region, showing the dominance of US shocks across all emerging markets (Balli, Balli, Louis, & Vo, 2015).

According to Bala and Takimoto (2017), scholars attribute the inability of the old econometric models to examine asymmetry and fat tails as the main cause of global financial crisis of 2007 as mostly the Gaussian models were used back then and when the underlying assumptions of normality are not present in the distribution it is not possible to draw inferences. Copula models provide a possibility to cope with these issues of asymmetry and fat tails, and hence are gaining popularity.

Copulas are functions that combine one-dimensional distribution functions together to form multivariate distribution functions (Sklar, 1959). Copulas provide a solution to deal with the problems of non-linear and non-elliptical data. Copulas enable researchers to explore multivariate dimensions providing a way to apply holistic approach towards considering all the risks in a go. Interestingly, in the field of financial economics we find only a few applications of Copulas before 1990s when statisticians started to pay attention to them. Before this, we only had applications of copulas in the field of mathematics (Xiao & Dhesi, 2009).

There are many studies that indicate that Archimedean copulas including Clayton and Gumbi Copulas perform better than elliptical copulas in terms of model to data fit (Melchiori et al., 2003; Chen et al., 2007, Koziol-Kunisch, 2005) hence Clayton Copula has been used in this study.

Embrechts, McNeil and Straumann (1999) and Embrechts, Lindskog and McNeil (2001) pioneered dependence modelling with copulas in the context of risk management mainly to counter a situation when the underlying assumptions of normality are not met. Jondeau and Rockinger (2006) showed how dynamism can be incorporated to analysis with the help of Copula-GARCH models. These studies can be attributed to bridging the gap between Copulas solutions and financial risk management and analysis.

Yang and Hamori (2013) used GARCH-Copula analysis to investigate the dependence structures among stock markets of developed and emerging economies and found that the emerging markets were sensitive to outside negative news and also discovered contagion between developed and emerging markets during crisis period.

Guo and Wang (2016) adopted the time-varying and static copulas to examine the dependence structures in volatility between Shanghai and Shenzhen stock markets in China based on high frequency data and identified asymmetrical dependence structure in stock market volatility. Further they noted that Gumbel copula best fitted the data distribution.

Working on the same lines, Usman, Jibran, Amir-ud-Din and Akhter (2018) also investigated the decoupling hypothesis of Islamic stocks applying Copula CoVaR approach and shown evidence consistent with decoupling hypothesis of Islamic stocks. The results also suggested that asymmetry of

downside and upside risks are not equal hence concluding that it is possible to decrease risk by adding Islamic stocks to the investment portfolio.

Using GAS-based dynamic Gaussian Copula, Yang, Ma and Hamori (2018) examined the dependence between government securities markets in Central and Eastern European countries across different maturities and found high dependence of government securities markets on long maturities and low dependence on short maturities.

While applying Vector Autoregressive (VAR)-Structural Vector Autoregressive (SVAR) Granger Causality and Student's-t Copula methodologies, Huynh (2019) studied spillover effects among cryptocurrency markets and found that Ethereum was likely to be an independent coin whereas Bitcoin was recipient of spillover effect.

Research Methodology

A market index depicts the overall sentiment of the market. Daily MCSI Share World and Emerging Markets index prices from 1st September 2010 to 21st September 2017 were used covering all the emerging equity markets separately, the emerging markets composite index and the overall world equity market index. The countries are selected keeping in view reforms implemented to implement and promote Islamic financial systems.

The period 2010 to 2017 has been selected as during this period reforms were introduced for not only recovering from the global financial crisis 2007 but also to make financial markets comply with more prudent and stringent policy regimes to avoid the occurrence of same like situation in future and most importantly focus on Islamic financial systems further increased.

According to Bala and Takimoto (2017), scholars attribute the inability of the old econometric models to examine asymmetry and fat tails as the main cause of global financial crisis of 2007 as mostly the Gaussian models were used back then and when the underlying assumptions of normality are not present in the distribution it is not possible to draw inferences. Copula models provide a possibility to cope with these issues of asymmetry and fat tails, and hence are gaining popularity.

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Descriptive statistics are used to examine the characteristics of time series data for the World, Emerging market composite and each of the Emerging Islamic equity indices.

For time-series analysis, it was ensured that data series have matching dates for valid comparison. Daily returns were calculated using the following formula:

Index Daily Return = $Ln(P_t/P_{t-1})$

Based on Sklar (1959) theorem, a copula is a function that combines a multivariate distribution function to univariate marginal distribution function. Interestingly, only by late 1990s those copulas were applied to finance to highlight market, capital and operational risks. It becomes difficult to draw inferences when the underlying assumptions of normal distribution are not satisfied. In that case copula provides a solution to researchers to confidently interpret results.

Assuming continuous distributions where F is the joint cumulative distribution function of the random vector X = *(X,Y)* and F_x and F_Y are the marginal cumulative distribution functions of *X* and *Y*. In mathematical terms, the same can be represented as under:

$$C(u,v) = F\{F^{-1}{}_x(x), F^{-1}{}_Y(y)\} \qquad (1)$$

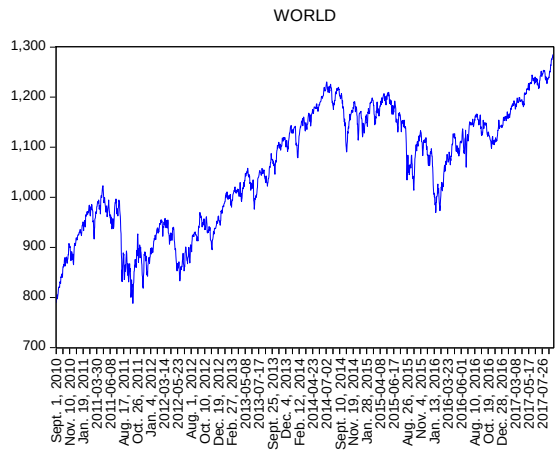
It is important to note that *X* and *Y* need not necessarily to have the same distribution, and the joint distribution may differ again i.e., a normally distributed variable can be linked to an exponentially distributed variable can be linked through a bivariate gamma function.

There are different classes of copulas used in the field of finance particularly Gaussian and Archemedian copulas are popular due to their ease of use. Three Archemedian copulas commonly used are Clayton, Frank and Gumbel. In this study Clayton copula has been used which is constructed using the following function:

$$C_\alpha(u,v) = max([u^{-\alpha} + v^{-\alpha} - 1]^{-1/\alpha},0) \qquad (2)$$

Results & Discussion

Before carrying on with tests and analysis, it is imperative to study the characteristics of data. Therefore, Islamic equity market indices and their corresponding return series are given below: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Feb. 27, 2013
2013-05-08
2013-07-17
Sept. 25, 2013
Dec. 4, 2013
Feb. 12, 2014
2014-04-23
2014-07-02
Sept. 10, 2014
Nov. 19, 2014
Jan. 28, 2015
2015-04-08
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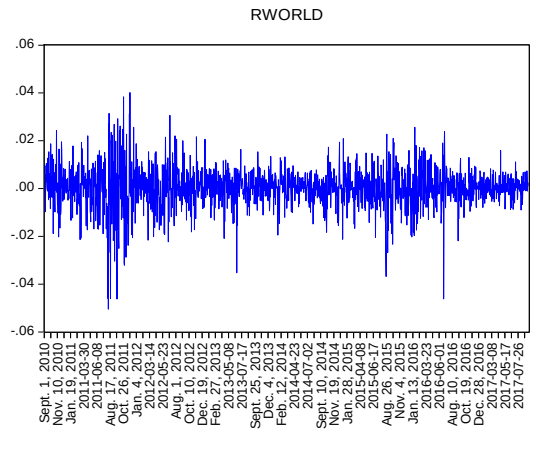
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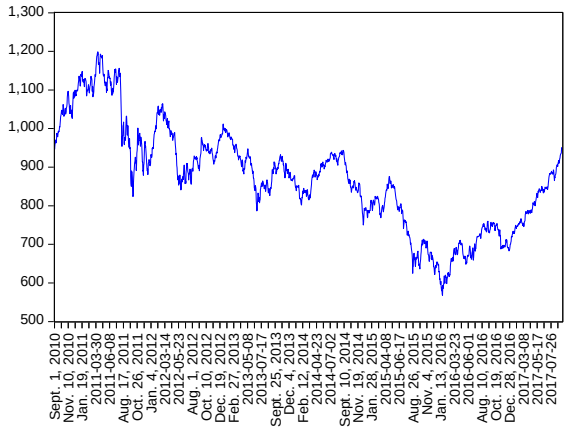
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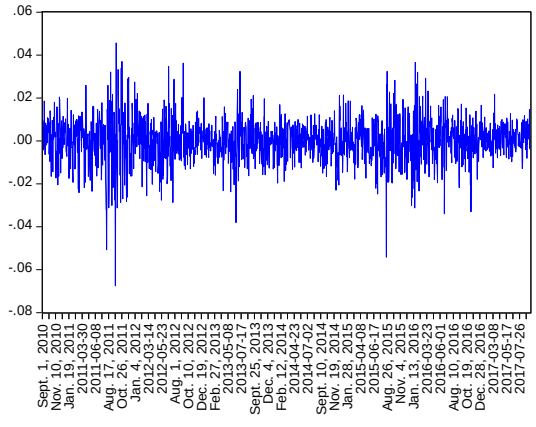
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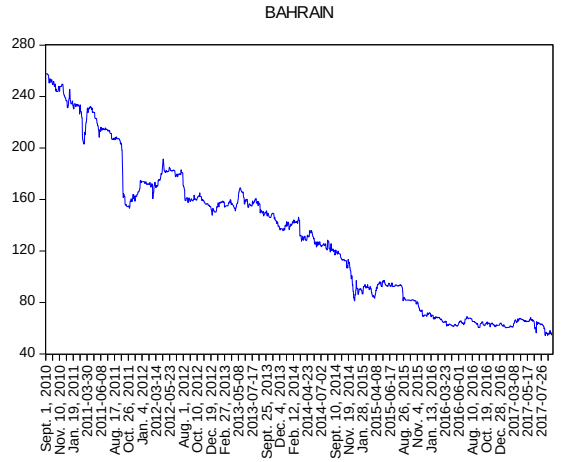
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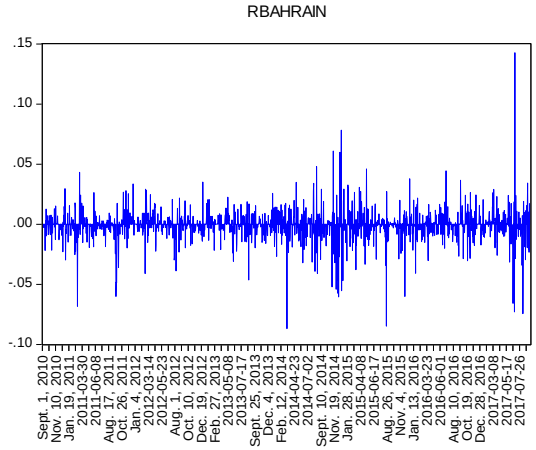
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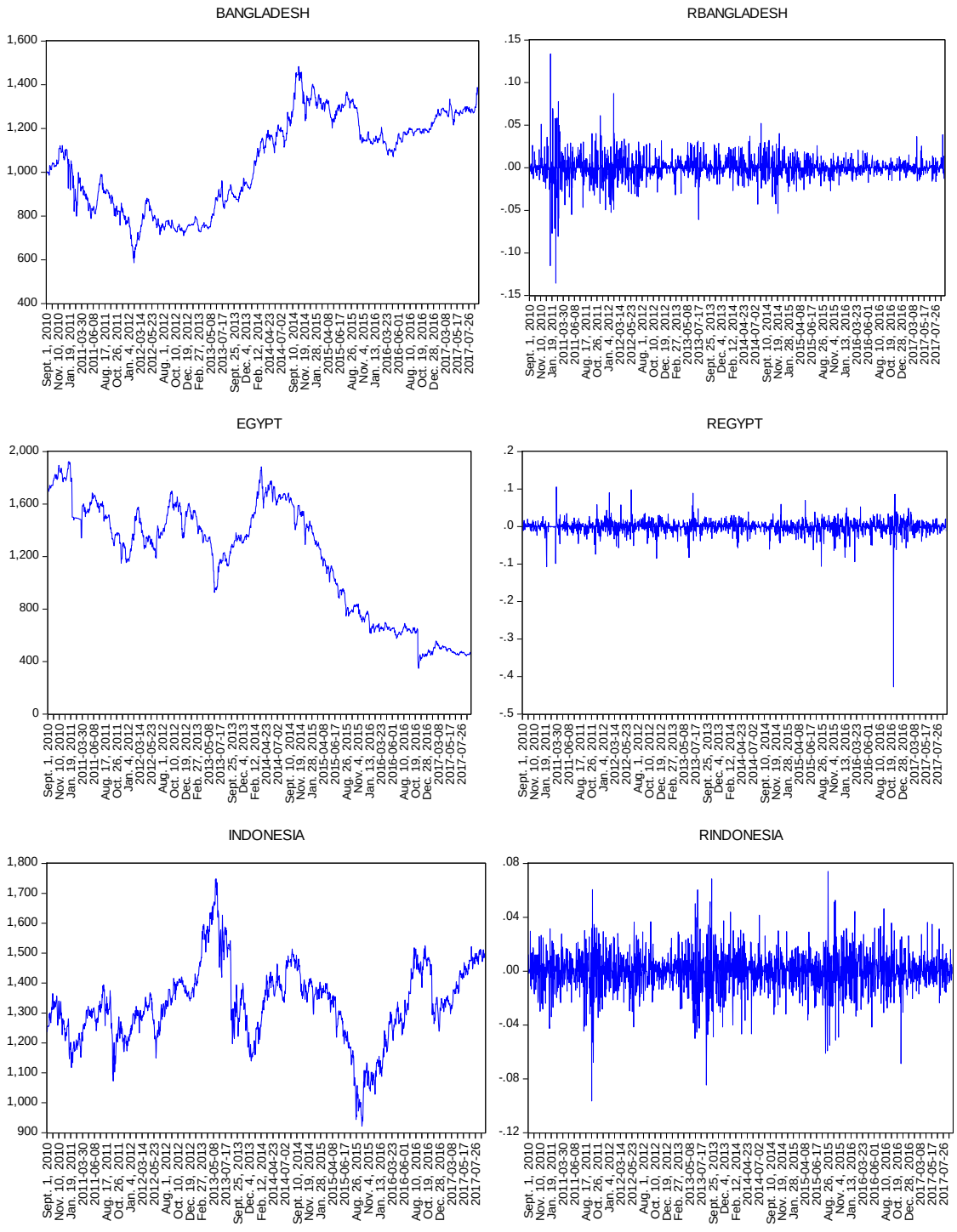
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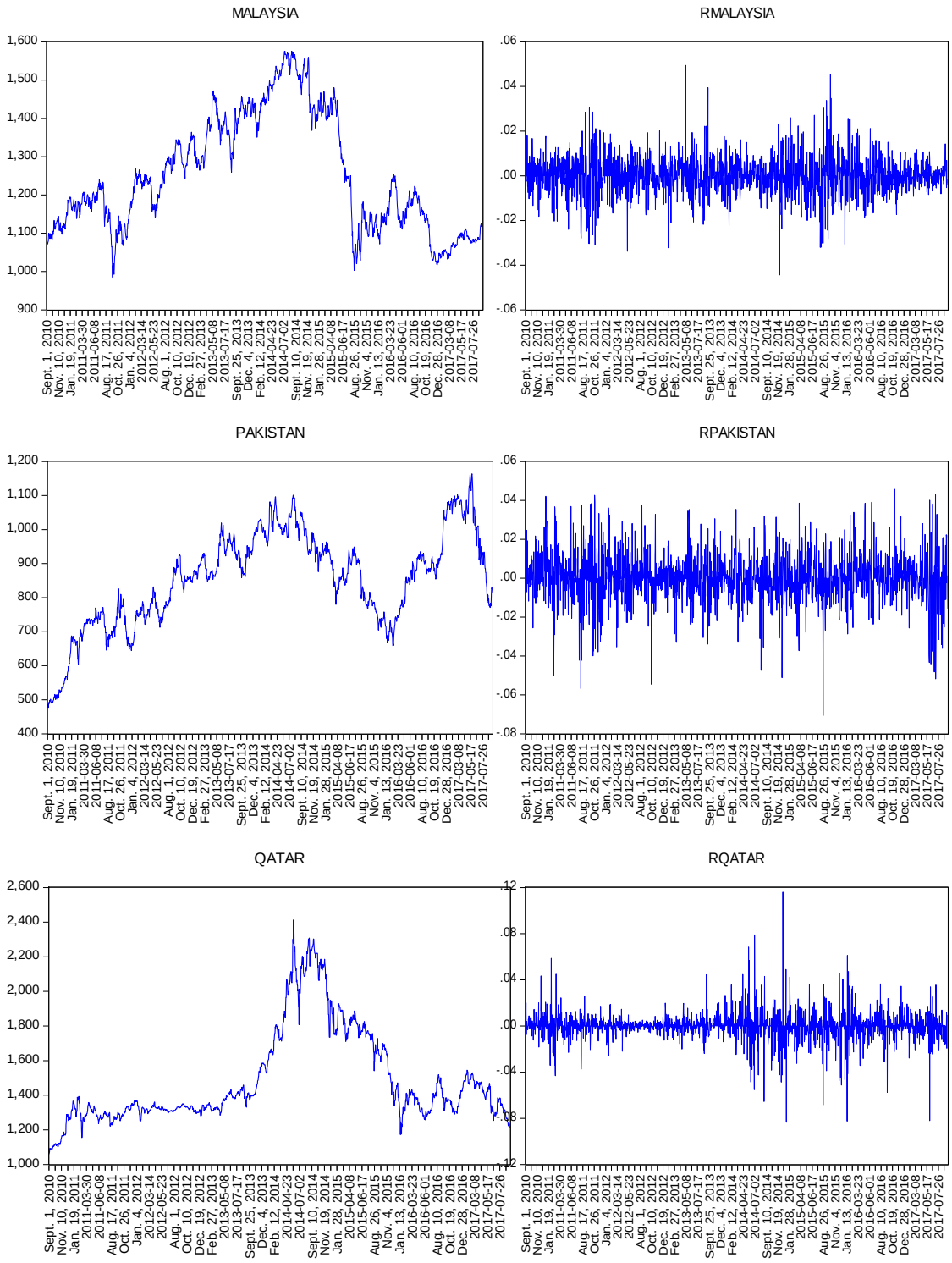
RBANGLADESH
EGYPT
REGYPT
INDONESIA
RINDONESIA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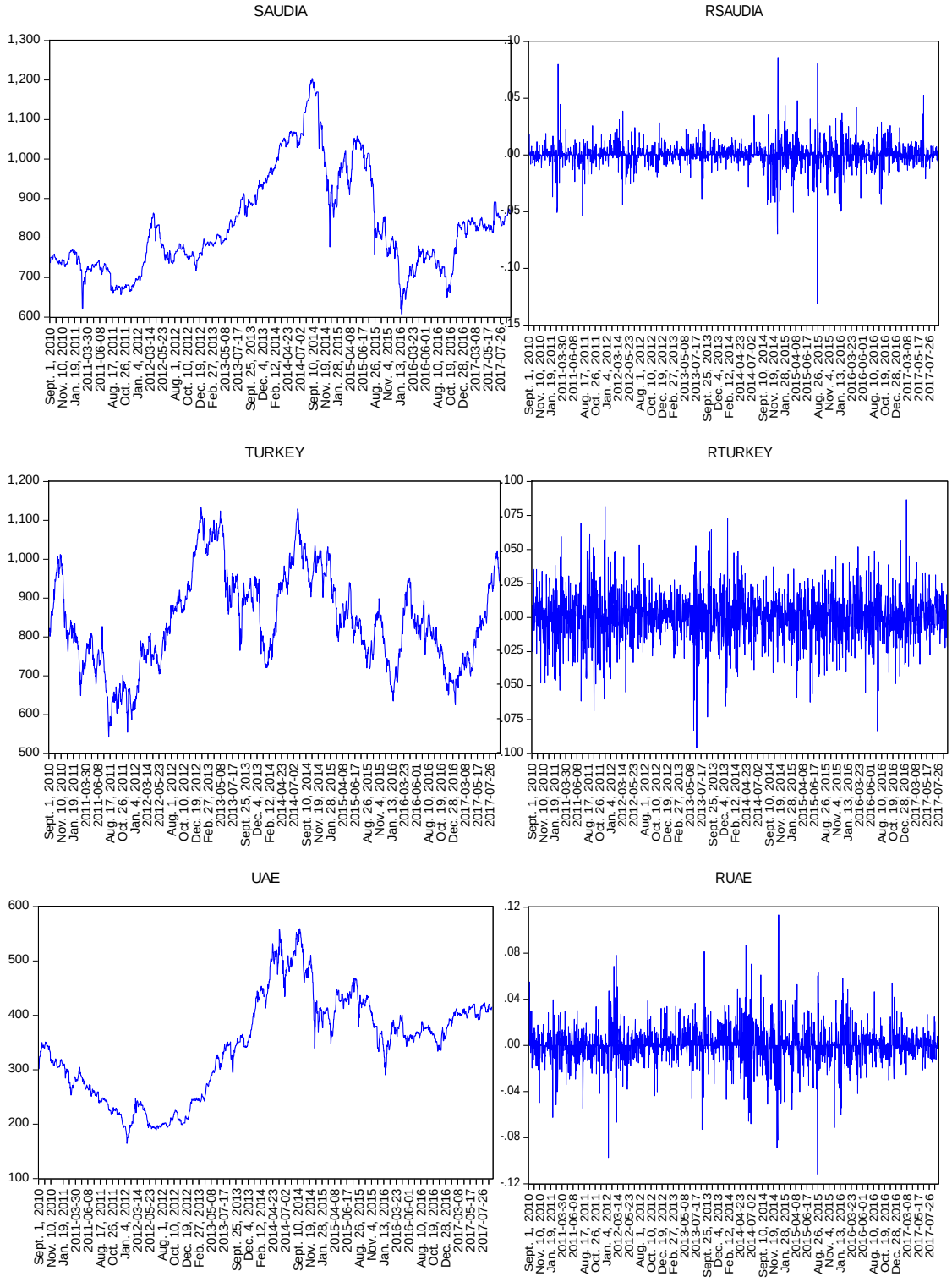


Figure-1: Plot of Islamic Equity Indices & Corresponding Return Series

We can see that all the indices depict a trend and the return chart shows that in all the cases small shocks are followed by small shocks and bigger shocks are followed by bigger shocks. There are abnormal returns but no outliers in the return series.

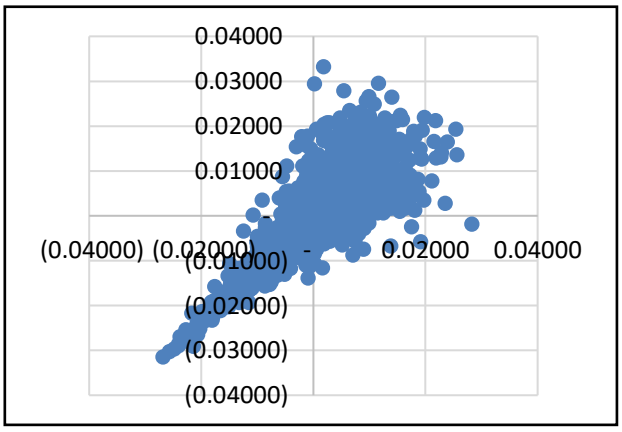
For all the indices, statistics depicting their daily mean return, standard deviation of returns from their mean, maximum and minimum daily returns, kurtosis and skewness of the return distributions are given below:

Table-1: Descriptive Statistics – 2010 to 2017

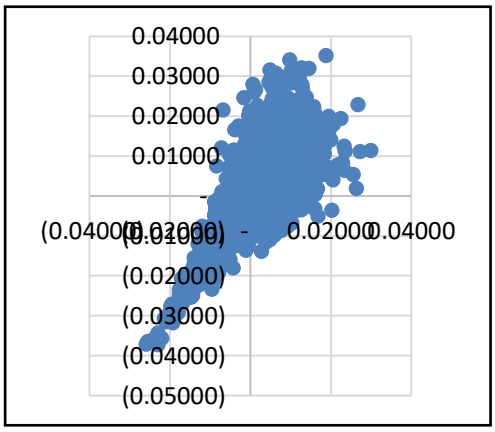
Description	Mean	St. Dev	Kurtosis	Skewness	Min	Max	CoVar
World	0.000265	0.008313	7.481463	-0.515019	-0.050465	0.040220	0.0318
Emerging	-4.89E-06	0.009838	6.160623	-0.338878	-0.067478	0.045670	-0.0005
Bahrain	-0.000833	0.011985	23.73983	-0.068017	-0.086853	0.142781	-0.0695
Bangladesh	0.000165	0.013734	20.67253	-0.186333	-0.135503	0.133825	0.0120
Egypt	-0.000710	0.019848	123.4617	-5.875652	-0.427743	0.105743	-0.0357
Indonesia	0.000103	0.014773	6.853458	-0.405949	-0.096472	0.074087	0.0069
Malaysia	1.71E-05	0.008449	6.086948	0.039463	-0.044394	0.049517	0.0020
Pakistan	0.000281	0.012343	5.797997	-0.238825	-0.070683	0.045802	0.0022
Qatar	7.76E-05	0.012083	16.65797	0.006547	-0.083467	0.116056	0.0006
Saudi	8.46E-05	0.011011	23.57703	-0.893447	-0.131000	0.085967	0.0076
Turkey	7.75E-0.5	0.018102	5.470625	-0.204836	-0.095758	0.086670	0.0042
UAE	0.000173	0.016300	10.98159	-0.096976	-0.111817	0.113208	0.0106

The above table shows that the mean returns of Emerging and Egyptian equity markets are negative whereas for the rest of indices the mean returns are positive. Egypt has the highest standard deviation of 0.019848, which indicates that Egyptian stock market is comparatively volatile. Least volatile are the Islamic World and Malaysian stock markets. Except for the Malaysian and Qatari market return distributions, rest of the distributions are negatively skewed indicating large negative returns. The values of kurtosis in all cases are greater than 3 indicating that the distributions of returns are leptokurtic in orientation. The value of Covariance in each case is less than 0.100 which shows the data is varying. This justifies the use of Copula Modelling to cope with the problem of variation in data.

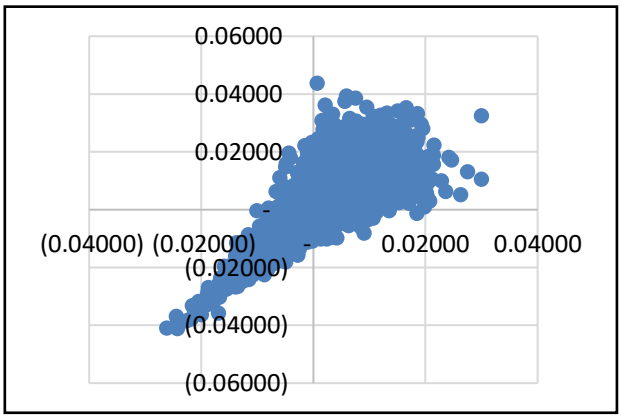
Using the Clayton copula models the relationship between world and the emerging Islamic stock markets is depicted below in Figure-2:



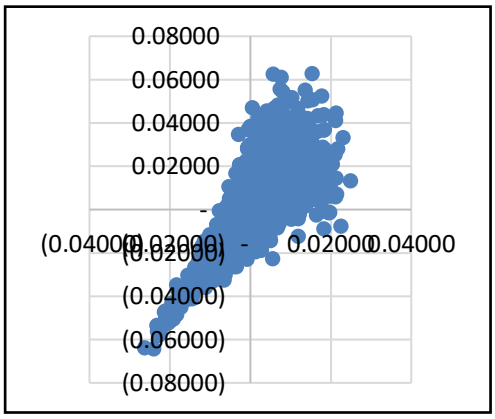
Contagion from World to Emerging



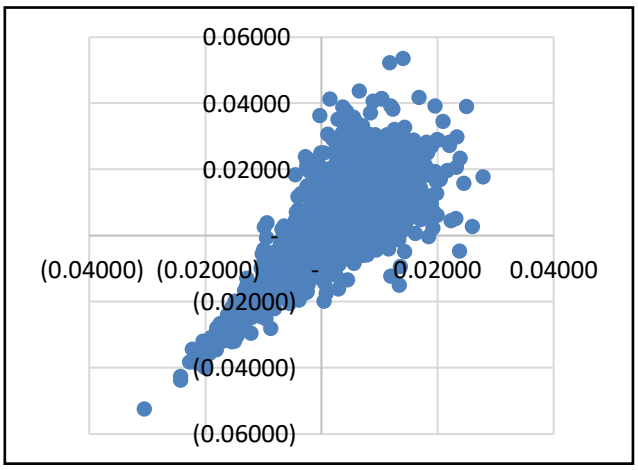
Contagion from World to Bahrain



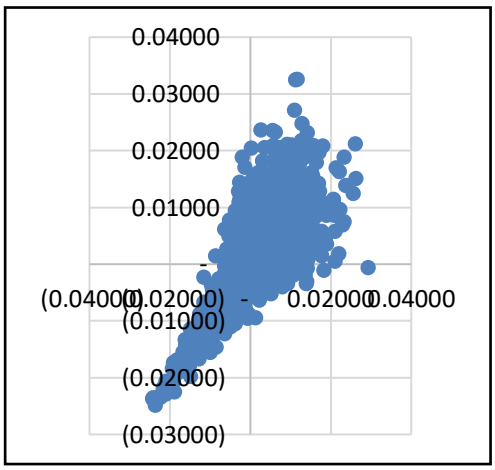
Contagion from World to Bangladesh



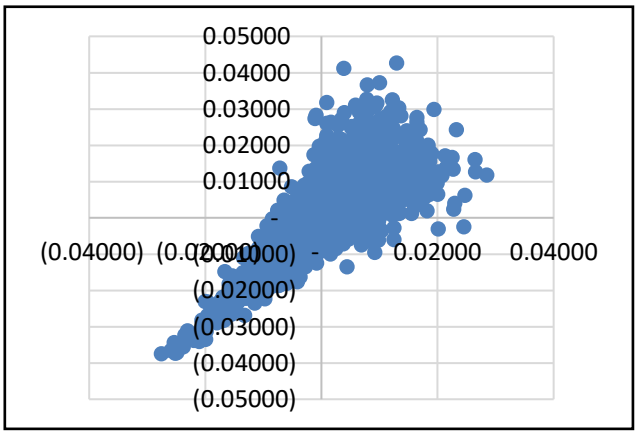
Contagion from World to Egypt



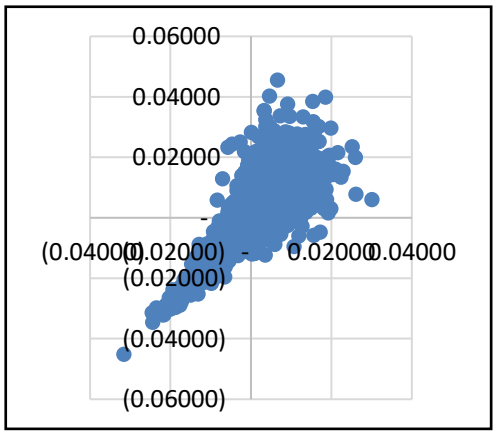
Contagion from World to Indonesia



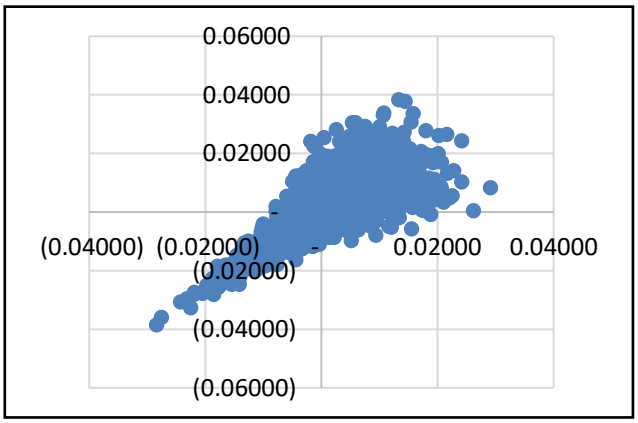
Contagion from World to Malaysia



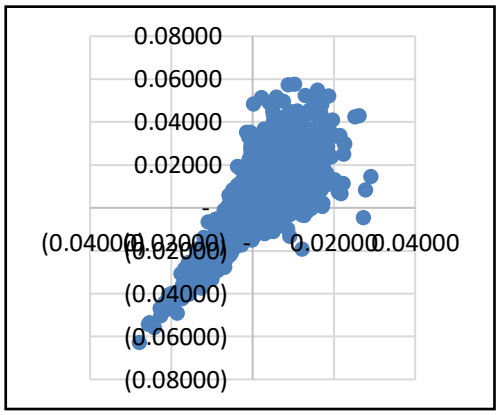
Contagion from World to Pakistan



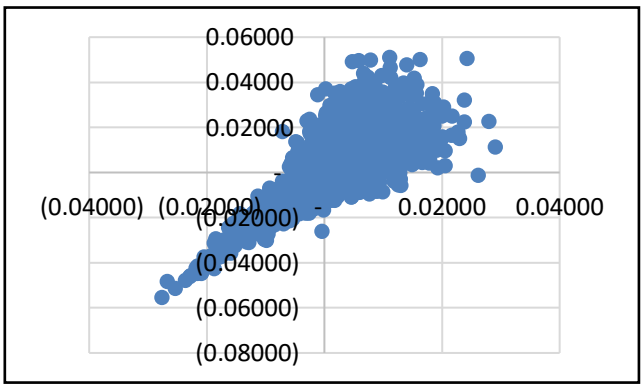
Contagion from World to Qatar



Contagion from World to Saudi Arabia



Contagion from World to Turkey



Contagion from World to Turkey

Figure-2: Copula Diagrams

Copula technique has enabled us to examine the contagion from world Islamic equity market to emerging Islamic equity market using the MSCI. The emerging Islamic countries selected for the study are Bahrain, Bangladesh, Egypt, Indonesia, Malaysia, Pakistan, Qatar, Saudia, Turkey and UAE.

The results clearly exhibit that there is a contagion between world and emerging Islamic equity markets. In all the above cases for each emerging country, there is a state of lower tail dependency. This indicates that there are strong chances of transmission of shocks from world to emerging Islamic equity markets. Previous studies have also shown that increased tail dependency is an important factor for contagion between two markets (Rajwani & Kumar, 2019).

It is also evident that there is lower tail dependency in all the cases; hence it would be dicey to test dependence of one series under the auspices of normal distribution. The results clearly show that copula framework is more insightful to examine dependence in the context of volatility spillover. The distributions are compact with data points tightly dispersed which confirms contagion between the world and emerging Islamic equity markets.

The results are in line with the findings of studies that are carried out to examine volatility spillover from conventional to Islamic equity indices such as Shahzad, Ferrer, Bellester and Umar (2017), Hammoudeh, Mensi, Robredo and Nguyen (2014) and Dewandaru, Bach, Masih and Masih (2015) etc.

Conclusion and Recommendations

The aim of this study was to investigate contagion between World Islamic equity market and emerging Islamic equity markets. The results reveal that there is integration between World Islamic equity market and the Emerging Islamic equity markets. This indicates for the need to revisit the basis for Shariah screening and improve the criteria on which these indices are constructed.

As evident from the results of this study there is a contagion between world Islamic equity market and emerging Islamic equity markets and also different other studies the Islamic equity markets are still prone to risks and there are also questions regarding stability of Islamic indices during the times of crisis. Hence it is imperative to revise the criteria on which these indices are constructed. It would not be possible to consider Islamic indices safer for investment if they exhibit the same characteristics that of conventional indices both during stable and volatile periods. The Shariah screening mechanisms need to be tighten across the globe and there should be more transparency and uniformity in this regard.

It is important to realize that Islamic indices are going through infancy stage and it would take time for them to take a mature shape. Another factor is the intent of the management as mostly stocks included in Islamic indices belong to companies where there is no deliberate attempt to follow Islamic principles in operations. Only the companies which declare their resolve to follow Islamic principles in day to day affairs need to be included in the Islamic indices. Moreover, Islamic governments and

their regulatory bodies may apply a holistic international approach towards developing national regulations and standards to make Islamic equity markets depict the true spirit of Islamic finance.

Future Research Directions

There are different regulatory frameworks for implementation of Islamic finance and banking in different countries. Notably, the systems and practices in Malaysia, Indonesia, Qatar and Egypt are comparatively at advanced stage. Interpretations of Islamic Shariah and financial systems differ in many countries hence there is a need for collecting primary data through structured and unstructured questions. In this regard, a pragmatic research paradigm would reveal more insights particularly if findings from secondary data are substantiated and supported by using primary data. There is a need to develop a scale for measurement. Apart from copula the spillover effects can also be examined through wavelets and other modern econometric tools.

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