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MARKET FORCES
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3. Illustrations/tables or figures should be numbered consecutively in Arabic numerals and should be inserted appropriately within the text.
4. The first page of the manuscript should contain the Title, the Name(s), email addresses and institutional affiliations of all the authors.
5. The manuscript must include an abstract of around 300 words.
6. All the text citations, references and tables should be in accordance with the APA format.
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We look forward to receiving your manuscripts for consideration in the upcoming issue of Market Forces through email at editorialboard@kiet.edu.pk

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Impact of Behavioral Factors on Investment Decisions and Performance: Evidence from Pakistan Stock Exchange

Muhammad Rehan[1]
Department of Social Sciences & Business Administration, Gaziosmanpaşa University, Tokat, Turkey

Jahanzaib Alvi
Department of Business Administration, Iqra University, Karachi, Pakistan

Lubna Javed
Department of Business Administration, University of Bradford, United Kingdom

Baber Saleem
Mohammad Ali Jinnah University, Karachi, Pakistan

Abstract

Market irregularities and investors' irrational behavior stimulates fluctuations in the stock market. Thus, it is important to examine the impact of behavioral factors on investment performance. However, we found a limited number of studies on the effect of behavioral factors on investors' decision-making. Therefore, we empirically tested a new model which examines the impact of herding, heuristics, market, and prospects on investor decisions at the Pakistan Stock Exchange. Based on a sample size of 155 individual investors, the study concluded that behavioral factors correlate with investment decisions and investment performance. The study found that market and herding are positively associated with investment decisions. Our results also suggest that herding, market, heuristic, prospect and investment decision are significant precursors to investment performance. We also found that investment decisions mediate (i) market and investment performance, (ii) herding and investment performance. Both individual investors and institutional investors can benefit from this study by understanding the impact of behavioral factors on investors' decisions.

Keywords: *Heuristics, prospects, market, herding, investment performance, investors decisions.*

[1]Corresponding Author: Muhammad Rehan; Email: rehan.muhammad2626@hotmail.com

Introduction

Predicting investors' behavior is always challenging. Investors' decisions depend on their psyche and perception of the market dynamics (Le-Luong & Thi–Thu-Ha, 2011). The economy of any country and the stock market have a positive correlation (Gay, 2008) which means an increase in the stock market will promote economic development (Laopodis & Papastamou, 2016). Investors' decisions and market trends are highly correlated. It is argued that investors' decisions influence both the stock market and the economy (Le-Luong & Thi-Hu-Ha, 2011). It is essential to examine how behavioral factors influence an individual investors decision-making process. Given its significance, the study examines the impact of behavioral factors on investment decisions. The findings of the paper will be helpful for both investors and securities firms. Thus, we have developed a new model with nine relationships, including two mediating relationships.

Literature Review and Hypothesis Development

The decision-making process of investors is associated with cognitive illusions. In other words, behavioral finance relates to investors' psychology and perceptions towards investment opportunities (Ritter, 2003). We now review the existing literature to analyze how behavioral factors affect investment decisions. Investors' psychology towards investment opportunities affects the financial market (De-Bondt & Thaler, 1995). If investors make rational financial decisions, the market will be less sensitive to speculation. Market factors include investor preference, price change, stock's past trend and market data (Waweru et al. 2008; Anderson, Henker & Owen, 2005). Investors under or overreact to market information, including fundamentals and stock price speculation. Many past studies have documented that market factors impact investor decision-making (Campbell, Ramadorai & Ranish, 2019; Michaely, Thaler & Womack, 1995).

Similarly, De-Bondt & Thaler (1995) and Lai, Low & Lai (2001) argue that news and speculations stimulate investors to over or under-react in the investment decision process. Many events in an economy affect the stock market and divert investors' attention. However, it is difficult to predict how these events may influence future stock performance (Barber & Odean, 2000). Investors' confidence stimulates stock trade. Their investment decisions depend on the quality of information about the market (Odean, 1998; Odean,1999). The fluctuations in stock prices also affect trade at the stock exchange. Investors often sell and buy those stocks that have changed significantly in the last two years (Coval & Shumway, 2000). Investors' preferences also affect their investment decisions. Some investors make their purchase decisions based on the performance of a stock, while other investors may sell the stocks which perform poorly in the stock market (Lin & Swanson, 2003). Also, many investment decisions are based

on the past performance of stocks and technical analysis.

H1: Market factors positively influence investment decisions.

H2: Market factors positively influence investment performance.

H3: Investment decisions mediate market factors and investment performance.

Herding Effect

When investors under the influence of others make an investment decision, it is known as the herding effect. Usually, small investors' investment decisions are based on the herding effect (Choi & Sias, 2009). On the contrary, professional investors' investment decisions are not influenced by herding (Venezia, Nashikkar & Shapira, 2011). Demirer, Kutan & Zhang (2014) and Yao, Ma & He (2014) suggest that herding behavior is often found in a few sectors. Stocks that fluctuate sharply and frequently are more attractive for herd investors. The disposition effect also affects the quantum and value of the stock market. Under this phenomenon, investors sell the stocks whose prices have increased and keep the stocks whose value has declined (Lin & Lin 2014; Tan, Chiang, Mason & Nelling, 2008). The disposition effect is not the same for all investors (Frazzini 2006). Rational investors are less affected by the disposition effect than non-rational investors (Grinblatt, Keloharju & Linnainmaa, 2012). Waweru et al. (2008) suggest that herding enhances the momentum in the stock market. However, once a share value increases abnormally, the herding effect decreases. Due to the herding effect, investors often overestimate the value of a share, which affects their investment decisions (Caparrelli et al. 2004).

H4: Herding positively affects investment decisions.

H5: Herding positively affects investment performance.

H6: Investment decisions mediates herding and investment performance.

Heuristic Theory

The heuristics theory provides guidelines to decision-makers that improve decision efficiency, especially in uncertain and difficult situations (Ritter, 2003). Besides its significance, it has certain biases (Waweru et al., 2008; Kahneman & Tversky, 1979; Ritter, 2003). Shah, Ahmad & Mahmood (2018) have found that heuristic biases negatively affect investment decisions.

Kahneman & Tversky (1979) argue that heuristics have three facets: anchoring, availability biases, and representativeness. Subsequently, Waweru et al. (2008) added two more facets to the heuristic, including overconfidence & gambler's fallacy. Rasheed, Rafique, Zahid & Akhtar (2018) suggest that heuristic factors are directly associated with investment decisions.

Representativeness

It is a bias that occurs "when the similarity of objects or events confuses people's thinking regarding the probability of an outcome." (De-Bondt & Thaler, 1995). Many investors often believe two events or similar things are closely related. This representativeness is known as processing error in behavioral finance theory. Ritter (2003) suggests that investors, while investing, ignore the average rate of return in the long term, which is an example of representativeness. Another example of representativeness biases is that investors often assume that a company's long-term growth rate increases profit for a few quarters (Shefrin & Statman, 1985). Overreaction is a phenomenon in which an investor ignores stocks that perform poorly and makes investments in stocks that perform well (De-Bondt & Thaler, 1995).

Gambler's Fallacy

Gambler's fallacy is a flawed assumption in which an investor thinks the previous series of events will give the same results. The flaw in this assumption is that it does not consider events as independent and believes that future results will be based on past events (Rabin, 2002; Statman, 1999; Barberis & Thaler, 2003). Often there is a huge variation in the market price of a stock and its real worth. Besides other factors, the gambler's fallacy contributes significantly to such variation in the stock prices (Waweru et al., 2008).

Anchoring

In anchoring, investors use irrelevant information for projecting the future value of a financial instrument (Kahneman & Tversky, 1979). Some irrelevant information could be emotional factors and other extraneous factors such as speculation and false beliefs (Kallinterakis, Munir & Radovic-Markovic, 2010). Investors often, due to anchoring, tend to hold investments that have lost their market value (Kempf & Ruenzi, 2006). This often happens when investors, while making investments ignore fundamentals. Consequently, in the long run, investors lose more by holding bad investments, hoping they will return to their original value. Due to anchoring bias, many investors make incorrect financial decisions, including buying undervalued investments or selling an overvalued investment (Waweru et al., 2008).

Overconfidence

It arises when investors are overconfident about their skills and knowledge (De-Bondt & Thaler, 1995; Hvide, 2002). Such overestimation leads to excessive buying resulting in a distorted portfolio. Overconfidence also causes investors to focus on areas in which they have the expertise and ignore other factors that affect the value of a stock (Evans, 2006; Kyle & Wang, 1997). Past studies have documented that professional performance and overconfidence are highly correlated (Oberlechner & Osler, 2012; Naik & Padhi, 2015).

Availability Biases

Investors tend to use readily available information, ignore the diversification of investment and prudent management of the portfolio (Waweru et al., 2008). Such a phenomenon is known as availability bias which impact future investment decisions (Waweru et al., 2008; Oberlechner & Osler, 2012).

H7: Heuristics positively influence investment performance.

Prospect Theory

Prospect Theory and Expected Utility Theory (EUT) help investors in their decision-making. The expected utility theory focuses on the rational expectations of investors, whereas the prospect theory helps investors in subjective decision making (Filbeck, Hatfield & Horvath, 2005). Kahneman & Tversky (1979) argue that EUT explains why investors are attracted to insurance and gambling. Investors' reactions in case of loss will be different, and in case of winning will be different (Kahneman & Tversky, 1979). Prospect theory suggests that an investment decision process depends on risk aversion, loss aversion and mental accounting (Waweru et al., 2008).

Regret Aversion

Adverse investment decisions stimulate negative emotions such as regret. Regret aversion affects holding stocks when their prices decrease and sell them when their prices are increasing (Fogel & Berry, 2006; Lehenkari & Perttunen, 2004).

Loss Aversion

Investors try to avoid loss in their investments (Barberis & Huang, 2001). Similarly, Barberis & Thaler (2003) found that investors focus on loss aversion rather than expected profit. Investors do not suffer if their investment gives profit some time and loss at another time. On the other hand, they will suffer if their investment continuously gives losses (Barberis & Huang, 2001; Lehenkari & Perttunen, 2004). Risk aversion is considered a general behavior among investors. However, excessive focus on loss

aversion can adversely affect investor wealth and investment decisions (Odean, 1998; Barber & Odean, 2000).

Mental Accounting

Mental accounting "refers to the different values a person places on the same amount of money, based on subjective criteria, often with detrimental results." (Barberis & Huang, 2001). Mental accounting assumes that individuals can make incorrect mental assessments which result in irrational decisions. Investors often make irrational decisions like investing in low-interest saving accounts and carrying large credit card debts (Ritter, 2003). Mental accounting emphasizes the "fungibility" of money (Goodfellow, Bohl & Gebka, 2009). It simply means irrespective of its origin or intended use, all money is the same (Barberis & Huang, 2001). To avoid mental accounting bias, investors should treat money the same whether they are allocated to an everyday expense account, a discretionary spending account, or a wealth account (Genesove & Mayer, 2001).

Similarly, individuals should treat a dollar the same way whether they have earned it or someone has given it to them (Ritter, 2003). Investors, while making investment decisions analyze different options on financial trading. This phenomenon is known as mental accounting (Barberis & Huang, 2001). The three prospect theory factors (i.e., regret aversion, loss aversion, and mental accounting) affect investment decisions (O'Brien, 2007). Thus we argue that

H8: Prospects positively influence investment performance.

H9: Investment decisions affect investment performance.

Conceptual Framework

The conceptual framework of the study is presented in Figure 1.
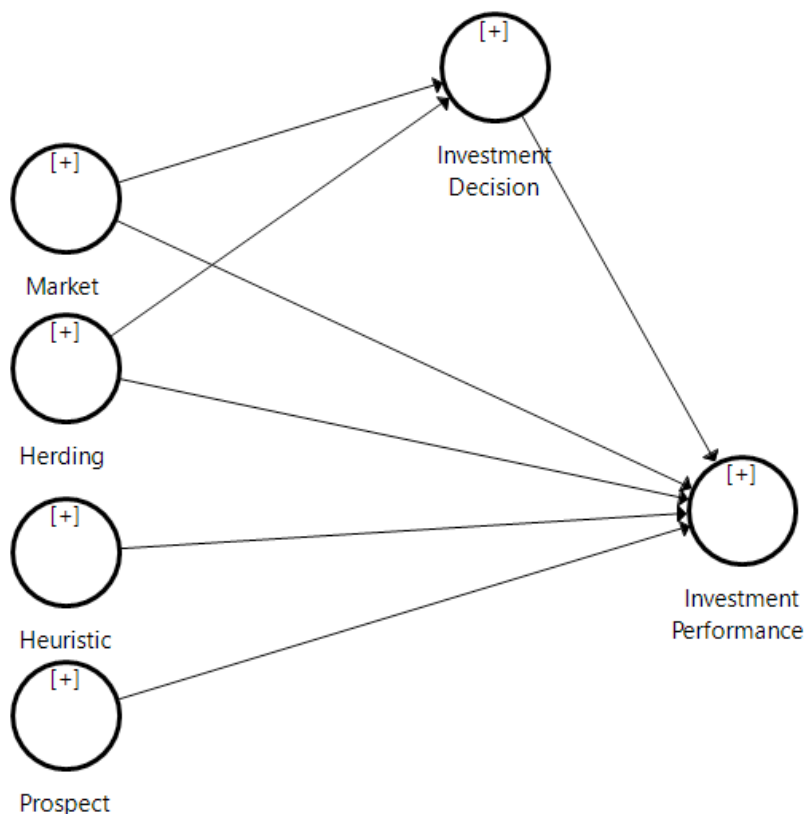
Figure 1: Conceptual Framework

Methodology

This research aims to examine the effect of behavioral factors on investment decisions and investment performance. The study has developed a new model that has seven direct and two mediating relationships. A self-administered questionnaire was used for collecting the data from the local investors in Pakistan. We distributed 300 questionnaires and received 155 responses.

Scales and Measures

We have used five constructs in the study. Three factors are related to behavioral aspects, including herding, heuristic, and prospects. The other two factors we have used

in the study are market and investment performance. All the questions in the study were based on the five-point Likert scale, where one represents strongly disagree, and five represents strongly agree (Fisher, Buglear, Lowry, Mutch & Tansley, 2010).

Table 1: Scales

Constructs	No of Items	Source
Herding	4	Alquraan, Alqisie & Al-Shorafa (2016)
Heuristic	8	Cao, Nguyen & Tran (2021)
Prospect	6	Cao, Nguyen &Tran (2021)
Market	6	De-Bondt & Thaler (1985).
Investment Performance	3	Cao, Nguyen & Tran (2021)
Invesment Decision	5	Shafi (2014)

Data Analysis

The collected data has been analyzed with the help of SPSS and Smart-PLS 3.0. Initially, we focused on importing the data in SPSS (Liu & Salvendy, 2009; Leech, Barrett & Morgan, 2005). Subsequently, data analysis was performed, including descriptive statistics and structural equation modeling (Gefen, Straub & Boudreau, 2000). SEM is a statistical technique that simultaneously tests all the casual relationships of a model (Anderson & Gerbing, 1988).

Results

Respondents

The questionnaires were distributed to individual investors at the Pakistan Stock Exchange. The valid sample size for the study was 155. The respondents' profile is discussed in the following section.

Table 2: Respondents Profile

	Frequency	%
Experience		
More than 10 years	20	13
5 to 10 years	7	5
3 to 5 years	37	24
1-3 years	45	29
Less than 1 year	46	29
Total	155	100
Age		
Above 55	6	4

46-55	3	2
36-45	25	16
26-35	99	64
18-25	22	14
Total	155	100
Gender		
Male	30	19
Female	125	81
Total	155	100
Course Attended in Stock Exchange		
Yes	47	30
No	108	70
Total	155	100

Reliability and Validity

In Table 3, we have presented the results related to the reliability and validity of the constructs.

Table 3: Reliability and Validity Analysis

	Cronbach's Alpha	**rho_A**	**Composite Reliability**	**AVE**
Herding	0.796	0.809	0.881	0.713
Heuristics	0.814	0.82	0.877	0.641
Investment Decisons	0.876	0.877	0.91	0.668
Investment Perfromance	0.872	0.878	0.908	0.665
Market	0.825	0.835	0.884	0.655
Prospect	0.843	0.849	0.894	0.68

The results show that the Cronbach's alpha values ranged from 0.796 to 0.876. Also, the composite reliability values are greater than 0.70, and AVE values are greater than 0.60. Based on these results, we have inferred that the constructs used in the study fulfill internal consistency requirements (Helms, Henze, Sass, & Mifsud, 2006) and validity (Russell, 1978; Prószyński, 1994; Chin, Marcelin & Newsted, 2003).

Discriminant Validity

We have used the Fornell & Larcker (1981) criteria for assessing the discriminant validity of the constructs. The results are illustrated in Table 4.

Table 4: Discriminant Validity

	Herding	Heuristic	Investment Decision	Investment Performance	Market	Prospect
Herding	0.845					
Heruistic	0.433	0.801				
Investment Decison	0.43	0.705	0.817			
Investment Performance	0.539	0.646	0.619	0.816		
Market	0.583	0.586	0.588	0.742	0.81	
Prospect	0.227	0.36	0.372	0.386	0.392	0.824

The results suggest that all the correlation values are lesser than the AVE squared values, suggesting that the constructs used in the study are unique and distinct (Saunders, Lewis & Thornhill, 2009; Russell, 1978; Jum, 1978).

Confirmatory Factor Analysis

We performed confirmatory factor analysis to find the association between the constructs and their respective items (Shelby, 2011). The results are presented in Table 5.

Table 5: Exploratory Factor Analysis

	Herding	Heuristic	Investment Decision	Investment Performance	Market	Prospect
HER-1	0.751					
HER-2	0.907					
HER-3	0.868					
HER-4	0.798					
HEU-1		0.858				
HEU-3		0.772				
HEU-5		0.815				
HEU-7		0.755				
HEU-8		0.765				
ID-1			0.836			
ID-2			0.838			
ID-3			0.836			
ID-4			0.786			
ID-5			0.789			
IP-1				0.761		
IP-2				0.855		

IP-3	0.878		
MK-1		0.769	
MK-3		0.771	
MK-4		0.845	
MK-5		0.85	
MK-6		0.809	
P-1			0.797
P-2			0.831
P-4			0.858
P-5			0.81
P-6			0.802

We dropped six items as their factor loadings were less than 0.60 (Harrington, 2009; Hair et al., 2014). The details of the dropped items are (i) three items from the heuristic scale, (ii) one item from market scale, (iii) one item from prospect scale (iv) one item from market scale. Thus, we have inferred that "a relationship between observed variables and their underlying latent constructs exists." (Sun, 2005; Pervez & Grønhaug, 2010).

SEM Results

This study has applied structural equation modeling (SEM) for statistical analysis. It is now commonly used in social science studies (Anderson & Gerbing, 1988; Bandalos, 2002). It allows researchers to test direct and indirect relationships in one model. The fit indices of the model are also within the prescribed limit. SRMR (Standardized Root Mean Square Residual) value is 0.0607, and NFI (Normed Fit Index) is 0.8355, which are acceptable (Hu & Bentler, 1999; Sarstedt, Ringle, Henseler & Hair, 2014). The results related to hypotheses are illustrated in Table 6 and the measurement and structural models in Figures 2 and 3, respectively.

Table 6: SEM Results

Hypotheses	Beta	T Stat.	P Values	Result
Market -> Investment Decision (H1)	0.511	14.411	0.000	Accepted
Market -> Investment Performance (H2)	0.448	15.642	0.000	Accepted
Market -> Invest. Decision -> Invest.Per(H3)	0.066	3.849	0.000	Accepted
Herding -> Investment Decision (H4)	0.132	3.576	0.000	Accepted
Herding -> Investment Performance (H5)	0.113	4.504	0.000	Accepted
Herding -> Invest. Decision -> Invest Per (H6)	0.017	2.587	0.010	Accepted
Heuristic -> Investment Performance (H7)	0.224	8.424	0.000	Accepted
Prospect -> Investment Performance (H8)	0.056	2.587	0.010	Accepted
Investment Decision -> Investment Per. (H9)	0.128	4.045	0.000	Accepted

The results show that the t-statistics of all the coefficients are greater than 1.96, and p-values at the 95% confidence level are less than 0.05. Thus, our results support all the seven direct hypotheses and two mediating hypotheses.

Figure 2: Measurement Model
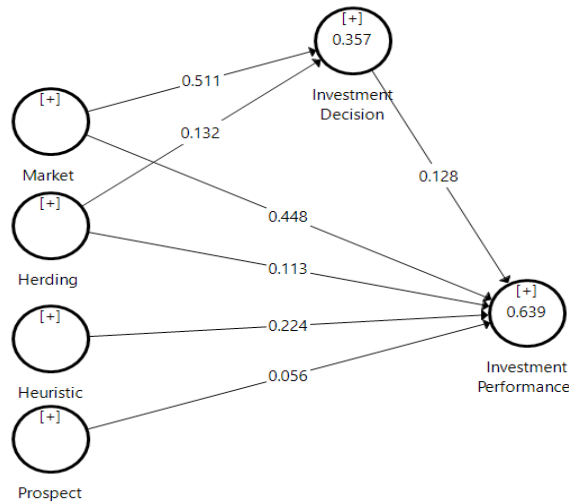
Figure 3: Structural Model
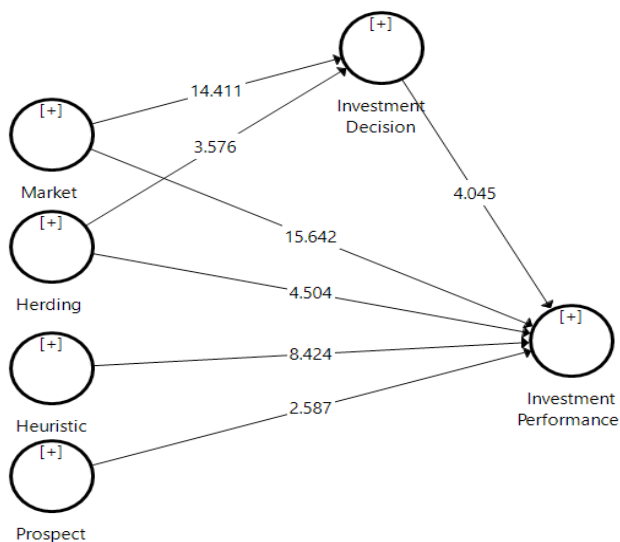
Discussion and Conclusion

This study has examined the impact of behavioral factors on investment performance and investment decisions and the mediating role of investment decisions. The study found that market and herding are positively associated with investment decisions. Our results also suggest that herding, market, heuristic, prospect investment decision are significant precursors to investment performance. We also found that investment decisions mediate (i) market and investment performance, (ii) herding and investment performance. We found all the relationships were significant and consistent with earlier studies (Kahneman & Tversky, 1979; Kengatharan & Kengatharan, 2014; Wamae, 2013). This study helps understand how behavioral factors affect the decisions related to the investments made by the individual investors of the Pakistan Stock Exchange. Most of the studies available on the Pakistan Stock Exchange have used traditional finance factors in their model. Contrarily, this study has examined the impact of behavioral finance factors on investment performance. Previous studies have used only a limited number of behavioral factors. For example, Shah, Ahmad & Mahmood (2018) and Parveen & Siddiqui (2018) mainly focus on the heuristic effect and overconfidence. The results suggest that researchers in Pakistan can understand Pakistan's stock market investment trends based on behavioral factors. Previous studies have measured investors' performance based on secondary data (Kim & Nofsinger, 2008), whereas this study has collected investors' primary data based on a five-point Likert scale questionnaire. Besides individual investors, institutional investors can also benefit from the study. The investors in Pakistan follow other investors while making stock investments. The investors in Pakistan do not have easy access to reliable information, and they are not mature. Many individual investors in Pakistan make their decisions not on fundamentals but speculation and rumors. Therefore, both professional and individual investors should educate themselves by attending workshops and seminars on behavioral finance.

The study's findings are important for individual investors, financial advisors, companies, and the government. Investors need to understand how behavioral factors affect their future investment plans. Corporations can develop their future strategies by understanding what motivates investor behavior. Financial consultants can use this study to suggest the best investment options for their clients. Thus, the study can have substantial practical benefits for individual investors, brokerage firms, and other stakeholders.

Limitations and Future Research

The sample size for the study was small, considering the objective of the study. Future studies can collect a larger sample to increase the generalizability of the results. We selected the respondents non-randomly. Future studies can select respondents

investing in different sectors of the economy. This study has collected only primary data. Other studies can base their studies on both primary and secondary data. This study was limited to the investors at the Pakistan Stock Exchange. A comparative study between investors of developed and developing countries may give further insight into the phenomenon of behavioral finance. This study has only focused on individual investors. Other studies can also focus on corporate investors.

Annexure-1

Constructs and Items used in the Questionnaire

Heuristic

You buy 'hot' stocks and avoid stocks that have performed poorly in the recent past.

You use trend analysis of some representative stocks to make investment decisions for all stocks that you invest.

You believe that your skills and knowledge of the stock market can help you to outperform the market.

You rely on your previous experiences in the market for your next investment.

You forecast the changes in stock prices in the future based on the recent stock prices.

You are normally able to anticipate the end of good or poor market returns at the Pakistan Stock Exchange.

You prefer to buy local stocks than international stocks because the information of local stocks is more available.

You consider the information from your close friends and relatives as a reliable reference for your investment decisions.

Prospect

After a prior gain, you are more risk-seeking than usual?

After a prior loss, you become more risk-averse.

You avoid selling shares that have decreased in value and readily sell shares that have increased in value.

You feel more sorrow about holding losing stocks too long than about selling winning stocks too soon.

You tend to treat each element of your investment portfolio separately.

You ignore the connection between different investment possibilities.

Market

You consider carefully the price changes of stocks that you intend to invest in.

You have the over-reaction to price changes of stocks.

Market information is important for your stock investment.

You put the past trends of stocks under your consideration for your investment.

You analyze the companies' customer preference before you invest in their stocks.

You study the market fundamentals of underlying stocks before making investment decisions.

Herding

Other investors' decisions of choosing stock types have an impact on your investment decisions.

Other investors' decisions of the stock volume have an impact on your investment decisions.

Other investors' decisions of buying and selling stocks have an impact on your investment decisions.

You usually react quickly to the changes of other investors' decisions and follow their reactions to the stock market.

Investment Performance

The return rate of your recent stock investment meets your expectation.

Your rate of return is equal to or higher than the average return rate of the market.

You feel satisfied with your investment decisions in the last year (including selling, buying, choosing stocks, and deciding the stock volume.

Investment Decisions

Your investment decisions in the stock market depends on market factors.

Your investment decisions in the stock market depends on price changes of stocks.

Your investment decisions in the stock market depends on received market information.

Your investment decisions in the stock market depends on the past stock trend.

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Critical Success Factors for Pharmaceutical Firms: The Case of Pakistan

Muhammad Wasim Jan Khan[1]
University College of Zhob, BUITEMS, Sub Campus, Zhob, Baluchistan, Pakistan

Sonia Batool
Institute of Southern Punjab, Multan, Pakistan

Usman Ahmad Qadri
Universiti Sultan Zainal Abidin, Terengganu, Malaysia

Zujaj Ahmed
Institute of Southern Punjab Multan, Pakistan

Abstract

Organizational performance is essential for the growth, sustainability, and competitive edge of a business entity. The pharmaceutical industry in Pakistan has become highly uncompetitive due to excess supply, lack of administrative control, and failure to acquire new drugs related knowledge. Thus, this study has focused on the pharmaceutical sector of Pakistan. The authors of the study have collected the data through a self-administered questionnaire distributed in Lahore, Multan, and Islamabad. The study has used Smart PLS version 3.3 for statistical analysis. The study has tested nine hypotheses, and found support for all of them. The study found that knowledge management, organizational control, and organizational performance significantly affect competitive advantage. The results also suggest that organizational performance mediates (i) knowledge management and competitive advantage, (ii) organizational control and competitive advantage, and (iii) organizational image and competitive advantage. Based on the empirical results, the study has proposed several implications for policymakers and practitioners.

Keywords: *Organizational performance, competitive advantage, knowledge management, organizational control, pharmaceutical industry, Pakistan.*

[1]Corresponding Author: Dr. Muhammad Wasim Jan Khan; Email: wasimjanpk@yahoo.com

Introduction

Organizational performance depends on identifying critical success factors and allocating appropriate resources to each factor (Ranjan & Bhatnagar, 2008). Such critical factors are indicators of organizational performance and help firms achieve a competitive advantage (Alazmi & Zairi, 2003). Bruno & Leidecker (1984) argue that critical determinants of organizational performance are administrative control, knowledge management, and corporate image. Organizational performance enhances a firm's productivity, increases its image, and enhances employee trust and loyalty (Jacks et al., 2011). In the early 1900s, researchers focused on understanding organizations for the benefit of all stakeholders (Freeman, 1984). In the early twentieth century, organizations shifted their focus to acquiring knowledge, vitality, improving quality, and delegation of power (Van-Wart, 2003). By the mid-nineteenth century, organizations started giving importance to individual qualities (e.g., motivational, individual, physical, and attitudinal) and aptitudes (e.g., capacity to impact) that are related to authority and power (Van-Wart, 2003; Ranjan & Bhatnagar, 2008; Jenkins, 1947). Administrative control is another key success factor that includes supervisors' perceived behavior. It is an essential precursor to teamwork and collaboration. Administrative control directly relates to employee behavior contributing towards improved organizational performance and sustainability (Severo et al., 2015). Many past studies have documented that neglecting administrative control affects a firm's socio-economic productivity and competitive advantage (Olowogbon et al., 2019). Also, employees shift from one department to another randomly (Haseeb et al., 2019), lose administrative control, demotivates employees, and enhances their turnover intentions (Kuik et al., 2019).

Objectives of the Study

The research examines the impact of organizational control, organizational image, and knowledge management on organizational performance. It also examines the impact of organizational control, organizational performance, and knowledge management on competitive advantage. The study also examines the mediating roles of organizational performance.

Conceptual Framework

Given the above objectives, we have developed a framework presented in Figure 1. We have discussed the theoretical support for the relationships depicted in the model in the following sections.
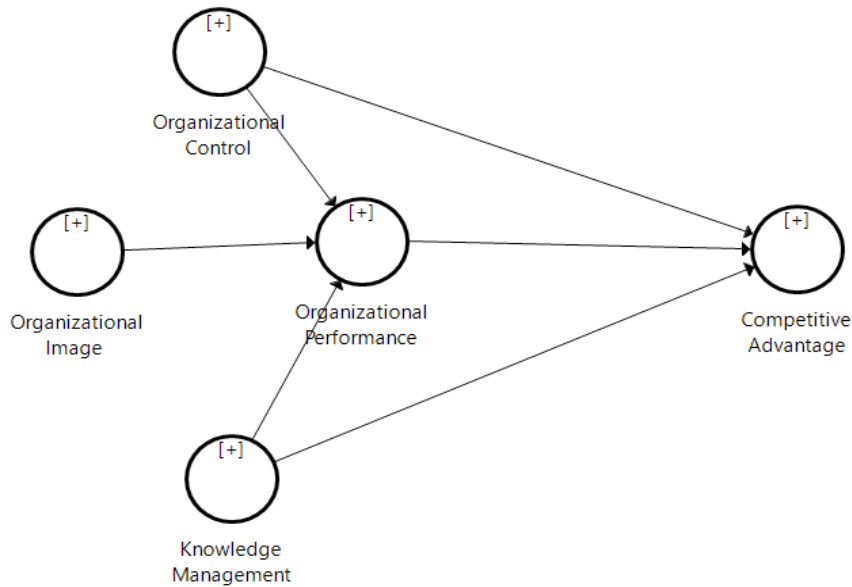
Figure 1: Conceptual Framework

Literature Review & Hypothesis Development

Knowledge Management and Competitive Advantage

Many past studies have documented that knowledge management give firms a competitive edge (Ruggles, 2000). Knowledge management develops core competencies in a firm, which is a precursor to sustainable growth. Knowledge management helps build intangible assets (i.e. human resources) necessary for increased organizational performance and satisfying customer needs (Johannessen & Olsen, 2003). Realizing its importance, leading firms create an environment of knowledge sharing and knowledge management. Thus, firms encourage their employees to acquire knowledge from internal and external sources and provide formal and informal training (Stevenson, Hojati & Cao, 2014). Employees use this acquired knowledge for relationship-building activities that provide them with a competitive advantage (Stevenson, Hojati & Cao, 2014). Strategically, firms focus on understanding what they know, what they should acquire to develop intangible core competencies, and how they can achieve them (Grant, 1991; Zack, 1999). Sallis & Jones (2002) suggest that an environment of association, partnership, and the inter-firm connection is necessary for "acquisition, leveraging or increasing new capabilities and capital" (Kogut & Chang, 1996; Hagedoorn, 1993; Mowery, et al., 1996).

Petty & Guthrie (2000) and Mouritsen (2003) argue that the government should make regulations that allow firms to declare their intellectual capital in their financial reports. Such practices of showing knowledge-based resources may positively improve a firm's image (Petty & Guthrie, 2000; Mouritsen, 2003). Knowledge acquisition in a firm falls into two broad categories, i.e., knowledge-based and non-knowledge-based. Both strategies have a different impact on an organization. Knowledge-based learning has a stronger impact on firm performance than non-knowledge-based learning (Al-Nawafah, Nigresh & Tawalbeh, 2019). Similary, Iranban (2017) believes that strategic knowledge is a precursor for sustainability and competitive advantage. Competitors can copy tangible aspects of a firm, but they cannot imitate strategic knowledge and other intangible resources (Im, Kim & Bond-111, 2020). Thus, strategic intangible assets give an edge to a firm on aspects such as "durability, impaired mobility, substitution and imitation (Amit & Schoemaker, 1993; Barney, 1991; Dierickx & Cool, 1989; Wijaya & Suasih, 2020).

H1: Knowledge management is significantly related to competitive advantage.

Knowledge Management and Organizational Performance

Kucharska & Bedford (2019) surveyed 3750 participants and 49 organizations and found that knowledge management and organizational performance are highly correlated. Similarly, a study found that organizational practices are positively associated with knowledge management and organizational performance (Hislop et al., 2018). Firms that nurture a knowledge sharing and knowledge management culture improve employee attitude towards work, leading to enhanced organizational performance (Santoro et al., 2018, Mahdi, Nassa & Almsafir, 2019).

Knowledge management promotes knowledge creation and positively affects organizational performance (Messick, 1994; De-Guimaraes, Severo & de-Vasconcelos, 2018). At the same time, knowledge management also has different facets that collectively affect employee attitude and behavior. Employees' positive attitude towards work enhances their performance (Iranban, 2017). Thus, knowledge management practices help a firm to develop protocols for managing organizational performance. Researchers argue that knowledge management is not a static phenomenon. It is dynamic and keeps changing with the changing business challenges and requirements (Al-Nawafah, Nigresh & Tawalbeh, 2019). Hence, we hypothesize that:

H2: Knowledge management is significantly related to organizational performance.

Organizational Control and Competitive Advantage

Tessier & Otley (2012) and Kaplan (2009) developed a strategy that assumes that a management control system is highly correlated and interactive, and it gives a competitive edge to a firm. Comparatively, firms whose management control system is not interactive may not create differentiation (Cardinal, Kreutzer & Miller, 2017). Many control mechanisms have a different impact on firm competitiveness (Cobbold & Lawrie, 2002). The classical Porter Five Forces Model (Porter, 1985) suggests that a firm's competitive advantage depends on developing effective strategies to deal with "the intensity of rivalry among existing competitors, the bargaining power of customers and suppliers, the threat of substitute products or services, and the threat of new entrants" (Porter, 1985). The resource-based theory assumes that "competitive advantage cannot be achieved solely through effective decision-making or strategies by managers. Further, managerial competence is a key resource for competitive advantage" (Barney, 1991).

Khandwalla (1972) examined the association between the formal accounting-based control system and competition in an industry. He concluded that increased competition motivates management to enhance control mechanisms. The study found that this relationship is not linear and varies from one type of competition to another. For example, price competition has a weak impact on the management control system. Marketing competition has a moderate impact on corporate control, and product competition has the strongest correlation with administrative control. The study also found that control system design is sensitive to the competitive strategy (Mugwe & Mose, 2020). Conservative control systems and entrepreneurial control systems have a different impact on the competitiveness of a firm. For example, Miller & Friese (1982) found that a firm with a conservative control system has a weaker competitive advantage as it focuses on "low differentiation, homogeneous markets, and a stable environment." A firm that adopts an entrepreneurial control system is more dynamic. It faces a hostile environment and has the edge over competitors (Verburg, Nienaber, Searle, Weibel, Den-Hartog & Rupp, 2018).

H3: Organizational control is significantly related to competitive advantage.

Organizational Control and Organizational Performance

Organizational control depends on the participation of all stakeholders in a firm. Employee attitude, behavior, and commitment enhance administrative control. Administrative control must empower employees and assign key duties based on their capabilities and organizational requirements (Mugwe & Mose, 2020). Thus, administrative control depends on the behavioral relationship between employees and organizations. If organizations' and workers' values are aligned, it will contribute to better administrative

control and enhance organizational performance (Feeney & Boardman, 2011). Many studies have concluded that administrative control and organizational performance significantly depend on the collaboration and participation of all stakeholders. Thus, Verburg et al. (2018) and Karabay, Akyuz & Elci (2016) argue that proactive stakeholders and their enthusiasm level are directly and indirectly associated with organizational knowledge and organizational performance.

H4: Organizational control is significantly related to organizational performance.

Organizational Image and Organizational Performance

Corporate image has several advantages. It helps in retaining existing employees and attracting a new talented workforce. Consequently, it positively affects employee attitude and behavior, leading towards better organizational performance (Mugwe & Mose, 2020). Similarly, corporate image attracts new customers and retains existing consumers leading toward increased sales and organizational performance (Mugwe & Mose, 2020; Tajfel, Turner, Austin & Worchel, 1979). Madjar et al. (2002) and Kim & Thapa (2018) suggest that corporate image and organizational performance flourish in an environment where employees are encouraged to participate in decision-making and build social interactions.

Dhir & Skula (2018) suggest that a firm's corporate image and organizational culture build a positive employee mindset. Consequently, their motivation level and performance increase. Many authors argue that the corporate image promotes employee identification and aligns their values with the organization. This increases both employee and organizational performance (Alshibani & Azam, 2021; Dutton et al., 1994).

A firm's success depends on employee participation in value-adding activities (Singh & Gupta, 2018). The social identity theory argues that a firm's image develops a sense of belonging in employees, enhances their engagement and accountability, and leads to better organizational performance (Tajfel, Turner, Austin & Worchel, 1979; Trepte, 2006). An organization's external image increases employee commitment, a precursor to organizational performance and turnover intentions (Mishra & Mishra, 2013; Muthuveloo, Shanmugam & Teoh, 2017). Thus, positive perception reduces negative outcomes such as burnout, emotional exhaustion, and turnover intentions (Alshibani & Azam, 2021).

H5: Organizational image is significantly related to organizational performance.

Organizational Performance and Competitive Advantage

A firm can enhance its competitive advantage within certain limits (Juliana & Edema, 2018). At the same time, Wijetunge (2017) suggests that organizational performance depends on the vision, culture, and organizational practices. Organizational performance has many facets, including management performance, financial performance, and marketing performance. All these facets give an edge to a firm (Baker & Sinkula, 2005; Turner & Simister, 2001). When a firm meets its stakeholders' needs and develops strategies to differentiate its products, it gives a competitive edge. Li & Zhou (2010) indicate that market orientation enhances organizational performance and contributes towards differentiation and cost advantages.

Market orientation has a direct link with organizational performance and competitive advantage (Mahmoud, 2011). Business performance orientation has several facets, including service productivity, return on assets, customer satisfaction, market share, net income, size, and firm age. All these facets affect organizational performance and competitive advantage (Tsiotsou & Vlachopoulou, 2011). Organizational performance has two perspectives which are micro and macro. Both of them are essential for organizational performance and competitive edge (Raju, Lonial & Crum, 2011). The association between organizational performance and competitive advantage is bi-directional. That is, organizational performance affects competitive advantage, and at the same time, competitive advantage stimulates organizational performance.

H6: Organizational performance is significantly related to competitive advantage.

Mediating Effects

The discussion in the preceding sections suggests that knowledge management is related to organizational performance, and organizational performance stimulates competitive advantage. Organizational control affects organizational performance while organizational performance and competitive advantage are positively related. Also, corporate image and organizational performance are correlated. Further, organizational performance is also a predictor of competitive advantage. Given this interrelationship, we argue that:

H7: Organizational performance mediates the knowledge management and competitive advantage relationship.

H8: Organizational performance mediates the organizational control and competitive advantage relationship.

H9: Organizational performance mediates the organizational image and competitive advantage relationship.

Methodology

Data Collection and Survey Instrument

We have used a quantitative approach and collected data with a self-administered Likert scale questionnaire. The target audience for the study comprises medical store managers in Multan, Lahore and Islamabad. The study used a purposive sampling technique. We distributed 175 questionnaires and received 150 valid responses. The study has adapted 11 knowledge management items from Karamitri, Kitsios & Talias (2020). Administrative control has three factors and 11 items, all adapted from Verburg et al. (2018). We adapted the corporate image scale from Bingöl, Şener & Çevik (2013). It has two factors and 11 items. The competitive advantage scale has three indicator variables adapted from Days & Nedungadi (1994). The organizational performance scale has two factors and six items (Ho, 2008).

Respondents Profile

The respondents' profile indicates that age ranged from 25 to 65 years. We found that 35% of the respondents were in the age group of 18 to 25 years; 20% were in the age bracket 25 to 35 years. In the age group 35 to 45 years, we have 20% respondents. 15% of respondents were in the age group 45 to 55 years, and the remaining respondents were over 55 years. Female respondents were 10%, and 90% were male respondents. We found that 40% of respondents were single, and 60% were married. In terms of education, we found that 38% of the respondents' had matric level education. 42% of respondents' were intermediate, and 10% had bachelor's degrees. The remaining 10% of the respondents' educational level was Master's.

Statistical Analysis

For statistical analysis, we have used Smart PLS Version 3.3. The advantage of SEM is that it simultaneously tests all the relationships of the model. Before estimating the structural model through bootstrapping, we performed descriptive analysis, reliability, and validity analysis.

Results

The purpose of descriptive analysis is to describe the basic features of the data. The descriptive analysis includes reliability, mean, standard deviation, Kurtosis, and Skewness. Table 1 illustrates the results related to descriptive analysis.

Table 1: Descriptive Analysis

	Cronbach's Alpha	Mean	St. Dev	Kurtosis	Skewness
Competitive Advantage	0.884	4.65	1.90	0.790	1.231
Knowledge Management	0.825	3.87	-0.78	1.651	-0.983
Organizational Control	0.843	3.67	2.03	-1.823	-0.787
Organizational Image	0.820	4.07	1.88	1.678	1.678
Org. Performance	0.896	4.17	1.79	0.789	2.001

The results suggest that Cronbach's Alpha value is the lowest for organizational image (Mean=4.07, SD=1.88, α=0.820) and the highest for organizational performance (Mean=4.17, SD=1.79, α=0.896), suggesting acceptable internal consistency (Henson, 2001). We also found that the Skewness (SK) values ranged from -0.787 to 2.001. It is highest for organizational performance (Mean=4.17, SD=1.79, SK=2.001) and lowest for organizational control (Mean=3.67, SD=2.03, SK=-0.787). Kurtosis values ranged from 0.790 to -1.823. It is the lowest for competitive advantage (Mean=4.65, SD=1.90, KR=0.790) and highest for organizational control (Mean=3.67, SD=2.03, KR =-1.823). The results suggest that the data has univariate normality (Mardia, 1974).

Convergent & Discriminant Validity

Convergent validity and discriminant validity help in ascertaining construct validity. Convergent validity "takes two measures that are supposed to be measuring the same construct and shows that they are related." (Cable & DeRue, 2002). Conversely, discriminant validity shows that the constructs are unique and distinct (Watson et al., 1995). Refer to Table 2 for the results.

Table 2: Convergent and Discriminant Validity

	Composite Reliability	AVE	CA	KM	OC	OI	OP
Competitive Advantage	0.884	0.885	0.796				
Knowledge Management	0.825	0.847	0.769	0.808			
Organizational Control	0.843	0.847	0.400	0.382	0.825		
Organizational Image	0.820	0.840	0.581	0.603	0.246	0.809	
Org. Performance	0.896	0.898	0.611	0.624	0.308	0.555	0.873

The results suggest that the composite reliability values range from 0.820 to 0.896, while AVE values range from 0.840 to 0.898. Thus, we infer that the constructs fulfill the convergent validity requirements (Cable & DeRue, 2002). Simultaneously, we found that AVE values' square roots are greater than the Pearson correlation values, suggesting that

the constructs are unique and distinct (Watson et al., 1995).

Confirmatory Factor Analysis

Confirmatory Factor Analysis (CFA) is a statistical technique that verifies a set of observed variables' factor structure. CFA tests the "hypothesis that a relationship between observed variables and their underlying latent constructs exists." (Brown & Moore, 2012). CFA results are illustrated in Table 3.

Table 3: Confirmatory Factor Analysis

	Competitive Advantage	Knowledge Management	Organizational Control	Organizational Image	Org. Performance
CA1	0.76				
CA2	0.762				
CA3	0.843				
KM1		0.749			
KM2		0.749			
KM6		0.864			
KM7		0.863			
KM8		0.879			
KM10		0.885			
KM11		0.789			
OC2			0.806		
OC4			0.834		
OC 6			0.856		
OC8			0.801		
OC9			0.823		
OC10					
OC11					
OI1				0.707	
OI3				0.721	
OI4				0.831	
OI7				0.885	
O18				0.738	
O19				0.768	
OI1				0.789	
OP1					0.874
OP2					0.904
OP5					0.823
OP6					0.876

Direct Hypothesis

Based on the theoretical support, we have proposed six direct and three indirect hypotheses. Table 4 illustrates the results. Figures 2 and Figure 3 show the measurement and structural models.

Table 4: PLS-SEM Results

Direct Effects	Beta	T Stat.	P Values	Results
Knowledge Man. -> Comp. Advantage (H1)	0.603	26.863	0.000	Accepted
Knowledge Man -> Org. Per. (H2)	0.427	13.697	0.000	Accepted
Org. Control -> Comp. Advantage (H3)	0.108	4.763	0.000	Accepted
Org. Control -> Org. Per.(H4)	0.077	2.824	0.005	Accepted
Org. Image -> Org. Per.(H5)	0.278	9.905	0.000	Accepted
Org. Per. -> Comp. Advantage (H6)	0.201	8.606	0.000	Accepted
Indirect Effects				
Know. Man. -> Org. Per. _ -> Comp. Advantage (H7)	0.086	7.211	0.000	Accepted
Org. Control -> Org. Per. -> Comp. Advantage (H8)	0.016	2.62	0.009	Accepted
Org. Image -> Org. Per. -> Comp. Advantage (H9)	0.056	6.31	0.000	Accepted

Our results support all six direct hypotheses. We found that the association between knowledge management and competitive advantage is strong ($\beta=0.603$, t=28.863, P<.05). Further, the association between organizational control and organizational performance is the weakest. Similarly, our results support all three indirect hypotheses.
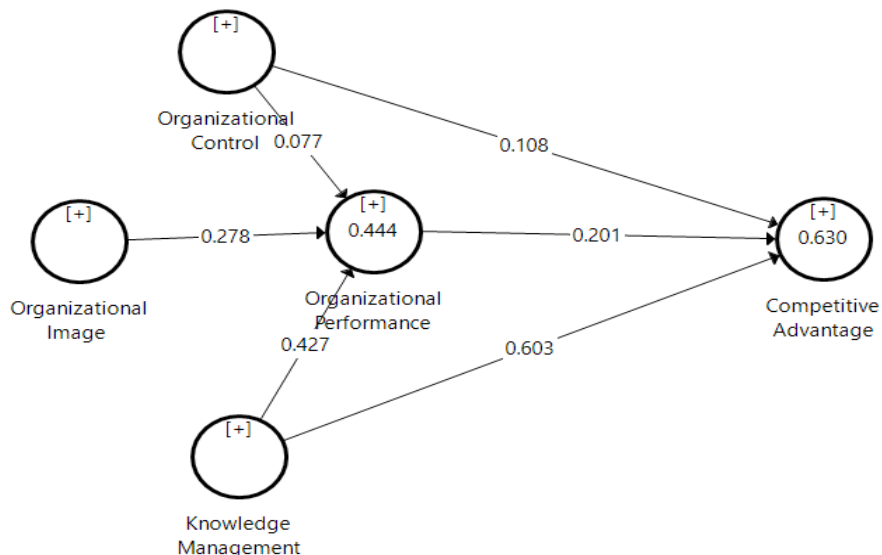
Figure 2: Measurement Model
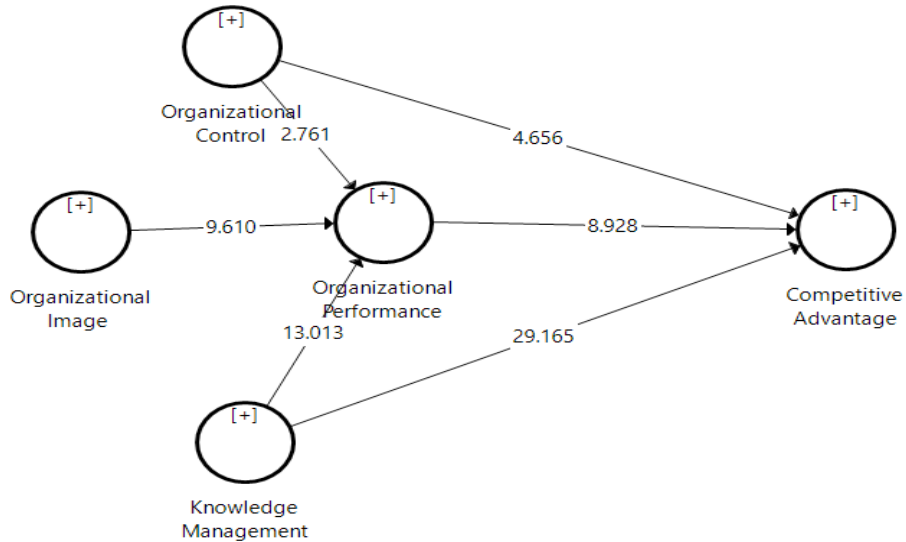
Figure 3: Structural Model

Discussion and Conclusion

The study found that knowledge management promotes competitive advantage in the pharmaceutical industry (H1). This finding validates earlier studies (Ruggles, 2000; Johannessen & Olsen, 2003). Knowledge management is an intangible asset of businesses that promotes sustainable growth and competitive advantage (Stevenson, Hojati & Cao, 2014). Given its importance, growth firms spend considerable resources on nurturing and building human resources. These firms also create an environment of knowledge sharing and knowledge management. Thus, such firms encourage their employees to acquire knowledge from internal and external sources and impart formal and informal training (Sallis & Jones, 2002). Employees use this acquired knowledge for relationship-building activities that enhance a firm's competitive advantage (Mouritsen 2003). Due to the diffusion of technology, knowledge becomes obsolete in a short period. Therefore Hislop et al. (2018) argue that a firm's sustainability and growth in the present competitive era depends on building a knowledge-based system and continuously updating it.

The study found that knowledge management promotes organizational performance (H2). This finding is consistent with many past studies (Al-Nawafah, Nigresh & Tawalbeh, 2019). Given the significance of knowledge management, Santoro et al. (2018) and Iranban (2017) recommend that firms develop and nurture a knowledge-sharing culture. Knowledge management promotes knowledge creation and positively affects different

facets of an organization (Messick, 1994). Additionally, knowledge management also has different facets that collectively affect organizational performance (Mahdi, Nassa & Almsafir, 2019). Hislop et al. (2018) argue that knowledge management is not a static phenomenon. It is dynamic and keeps evolving with business challenges and requirements.

Our results suggest that organizational control is a significant predictor of competitive advantage (H3). Organizational control and competitive advantage are highly correlated (Tessier & Otley, 2012). Many theories and models are linking administrative control with a competitive advantage. For example, the Porter Five Forces model suggests that firms can develop a competitive advantage by developing effective strategies that deal with "the intensity of rivalry among existing competitors, the bargaining power of customers and suppliers, the threat of substitute products or services, and the threat of new entrants" (Porter, 1985). Similarly, the resource-based theory suggests that "competitive advantage cannot be achieved solely through effective decision-making or strategies. Further, managerial competence is a key resource for competitive advantage (Feeney & Boardman, 2011).

The results indicate that organizational control and organizational performance are positively associated (H4). Organizational control and performance depend on employees' behavioral relationship with organizational values (Feeney and Boardman, 2011). Verburg et al. (2018) and Karabay, Akyuz & Elci (2016) argue that employee values are an essential precursor to administrative control and organizational performance. The participation and cooperation of all stakeholders are necessary for organizational control and better organizational performance (Mugwe & Mose, 2020).

The study found that corporate image is a significant precursor of organizational performance (H5). Organizations with a strong corporate image can retain and attract talented employees (Madjar et al., 2002; Mikalauskienė & Atkočiūnienė, 2019), resulting in enhanced organizational performance. Additionally, organizational image and organizational performance have a bi-directional relationship. Corporate image has a causal effect on organizational performance, while organizational performance enhances corporate image (Alshibani & Azam, 2021). Organizations with a strong corporate image can retain existing and attract new customers, thereby enhancing corporate image and performance (Trepte, 2006). Dhir & Skula (2018) suggest that a firm's corporate image and organizational culture build a positive employee mindset. Consequently, their motivation level and performance increase.

We found that organizational performance stimulates competitive advantage (H6).

Baker & Sinkula (2005) argue that precursors to organizational performance are financial, management and marketing capabilities. Thus, if a firm wants to have a competitive advantage, it should have a balanced blend of finance, management, and marketing functions (Raju, Lonial & Crum, 2011). Organizational performance has two perspectives which are micro and macro. Both of them are essential for organizational performance and competitive advantage (Li & Zhou, 2010). The association between organizational performance and competitive advantage is bi-directional. That is, organizational performance affects competitive advantage, and at the same time, competitive advantage stimulates organizational performance.

Conclusion

Based on theoretical support, we have developed a model with six variables (i.e., knowledge management, organizational control, organizational performance, organizational image, and competitive advantage). The model has proposed nine relationships, including six direct and three indirect relationships. We tested the model by collecting data from the pharmaceutical sector in Punjab. Our results support all nine hypotheses, which are also in line with earlier studies. The study found that knowledge management, organizational control, and organizational performance significantly affect competitive advantage and organizational performance. The results also suggest that organizational performance mediates (i) knowledge management and competitive advantage, (ii) organizational control and competitive advantage, and (iii) organizational image and competitive advantage.

Limitations and Future Research

The study has focused on the pharmaceutical sector of a few cities in Punjab. Future studies can extend our model in other sectors and other cities of Pakistan. We have used only five predictors in the model; future researchers may add more variables related to organizational and employee antecedents and outcomes. We have used organizational performance as a mediator in our conceptual framework. Future researchers can extend this conceptual framework by examining the mediating role of citizenship behavior and leadership style. Organizational culture, directly and indirectly, affects competitive advantage and organizational performance. New studies can use organizational culture as a mediating or moderating variable. This study is quantitative; therefore, we advise future researchers to use the mixed-methods approach.

Annexure-1

Knowledge Management

KM is essential for the performance of an organization

Knowledge acquisition helps the individual's autonomy

I feel content when I share my knowledge with others

When I share my knowledge, my colleagues respect me

I create knowledge through observation of the working environment

I often cooperate with my colleagues to face a new Situation

Knowledge is shared during group meetings.

My supervisor provides the required knowledge to solve my problem

Leadership at this hospital has not understood the Importance of KM (Reverse Coding

The hospitals' information system does not facilitate KM

Organizational Control (Verburg et al., 2018)

Output Control

In this organization, employees are clear about their roles and objectives

In this organization, the extent to which objectives are met is monitored.

In this organization, if objectives are not met employees are required to explain why.

In this organization, feedback is given to employees concerning the extent to which they achieve their objectives.

Process Control

In this organization, there are written rules concerning many organizational activities.

In this organization, written rules are strictly enforced.

In this organization, written rules and procedures are followed.

In this organization, there are clear formalized procedures for resolving conflict in this organization

Normative Control

When employees violate important norms, peer pressure is used to correct their behavior.

Violations of unwritten norms are punished.

Employees who violate important organization values/ethics are disciplined.

Organizational Image (Bingöl, Şener & Çevik, 2013)

Employee Perspective

Our employees respect other people

Our employees are customer focused

Employees feel that the firm has transparency in its decision

Employees has a strong brand image of the firm

Employees feel firm's products are reliable

Employees know that the firm focus is on R &D

Customer Perspective

Our customers respect other people

Our customers feel that the firm has transparency in its decision

Our customers feel that the firm has a strong brand image

Our customers feel that firm's products are reliable

Our customers know that the firm focus is on R &D

Competitive Advantage (Days & Nedungadi, 1994)

My firm is essentially competitor centered

My firm is essentially customer centered

My firm is both competitor and customer centered

Organizational Performance (Ho, 2008)

Financial Performance

I am satisfied with the profitability of my firm

I am satisfied with the return on investment of my firm

I am satisfied with the total sales growth of my firm

Market Performance

I am satisfied with the market share of my firm

I am satisfied with the profit ratio of my firm

Our customers are satisfied with our firm

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Impact of Financial and Non-Financial Rewards on Employee Motivation and Employee Commitment among Pharmaceutical SMEs

Sheema Matloob[1]
School of Management, Universiti Sains Malaysia, Malaysia

Saeed Abbas Shah
Sukkur IBA University, Pakistan

Muzafar Hussain Shah
College of Business, Universiti Utara Malaysia, Malaysia

Jameel Ahmed
Institute of Management Sciences, University of Balochistan, Pakistan

Abstract

SMEs in Pakistan are not performing according to their potential. Besides other factors, they do not have a well-structured rewards package, due to which the employee motivation and commitment are low. Thus, we have developed a new model to examine the effect of rewards and packages on employee commitment and motivation. We have recruited six enumerators to collect the data from the target population. The enumerators have distributed 400 questionnaires, and they received 385 filled questionnaires. The authors have used Smart PLS version 3.2 for statistical analysis. The developed model has five direct and two mediating relationships. We found support for all hypotheses. The results suggest that financial and non-financial rewards affect employee commitment and motivation. Commitment stimulates motivation. Also, employee commitment mediates (1) non-financial reward and motivation and (2) financial-reward and motivation. The findings

[1]Corresponding Author: Sheema Matloob; Email: sheemamatloob1100@outlook.com

are consistent with the past literature. SMEs in Pakistan do not have a well-structured HR department, and they make reward-related decisions arbitrarily. Thus, we recommend that SMEs develop a policy for rewards that is rational and unbiased. We also recommend that they should balance non-financial and financial rewards.

Keywords: Motivation, commitment, financial rewards, non-financial rewards, SMEs.

Introduction

Human resource management is the backbone of any organization. The human resource department develops and implements policies related to organizational values and the external business environment (Barrett & Mayson, 2007). The HR policies of an organization motivate its employees, help them achieve organizational goals, and promote sustainable growth (Basak & Khanna, 2017). An HR department's primary function is to provide financial and non-financial reward opportunities for employees. Both effective financial and non-financial rewards enhance employee commitment, motivation and contribute to sustainable growth (Andonova & Zuleta, 2007). However, policies related to rewards are effective if they are rational, unbiased, and fair. Financial (or monetary) rewards include "basic pay, fringe benefits, medical/ utility allowances, commission, and bonuses. Non-financial (or non-monetary) rewards include recognition, promotion, and flexible working hours. "The HR department of many firms in developing countries like Pakistan focuses on limited functions, including hiring new employees and maintaining existing and past employees' data.

Most SMEs in Pakistan do not have a formal HR department or have such departments with limited functions. Many SMEs in Pakistan make employees' reward decisions arbitrarily. Thus, the study has focused on SMEs in the textile sector of Karachi. We have selected the textile sector as its contribution to employment generation, and GDP is significantly higher than other sectors. The study examines the impact of financial and non-financial rewards on employees' commitment and motivation. The study also examines the mediating effect of employee commitment on (i) financial reward and employee motivation and (ii) non-financial reward and employee motivation.

Literature Review

Employee Motivation

Researchers have used motivation in an organizational setup as an antecedent, consequence, and mediator. A motivated employee gives his/her optimum effort to improve firm performance (Dessler, Cole & Chhinzer, 2015). Also, a motivated employee expects that both the financial and non-financial rewards are aligned with

their performance. Motivation includes various feelings that enable employees to consistently achieve assigned targets and goals (Baron, Rea & Daniels, 1992). Nickson (2013) defines motivation as a process that helps individuals continue with the ongoing learning process to achieve optimum performance levels. Nickson (2013) argues that human resource management practices motivate employees to give their best, which leads to job involvement and job satisfaction. Motivation refers to the inner feelings of employees due to which they happily, enthusiastically and persistently carry out the assigned tasks to achieve organizational goals.

Organizational performance depends on a motivated and talented workforce. A motivated and talented workforce can effectively deal with a difficult task and perform with zeal. The motivation level of an employee has a direct association with performance. Motivated employees have a positive attitude towards work, due to which they achieve the company objectives more efficiently compared to others. Human resource is the key asset of any organization, and it gives a competitive edge to a firm (Datta, Guthrie & Wright, 2005). Past studies have documented that financial and non-financial rewards affect employees' commitment and motivation (Newman & Sheikh, 2012). Commitment is a precursor to motivation (Johnson, Chang & Yang, 2010). At the same time, commitment mediates rewards and motivation (Meyer & Nujjoo, 2012).

Conceptual Framework
We have proposed a new model with four variables, five direct hypotheses, and two mediating relationships in Figure 1. The study has discussed the theoretical support of the proposed relationships in the subsequent sections.
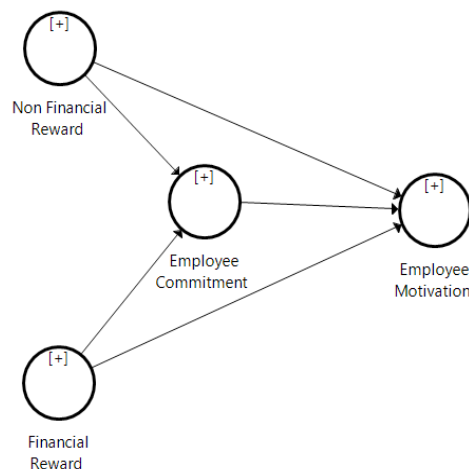
Figure 1: Conceptual Framework

Hypotheses Development

Non-Financial Rewards and Employee Commitment

Employees in many firms find a wide gap between their expectations and what they must do. This gap makes employees unsatisfied and non-committed. Besides other aspects, one of the main reasons for this is the inefficiency of management in balancing extrinsic and intrinsic rewards (Yousaf et al., 2014). Response to a reward varies from one employee to another. Some employees are more receptive to intrinsic rewards, while others are motivated by extrinsic rewards. Thus, firms need to understand the motivational aspects of all employees in an organization and offer rewards to employees based on their preference (Meyer, Becker & Vandenberghe, 2004). Ghosh et al. (2016) argue that most employees prefer extrinsic rewards such as cash; however, many employees' performance increases with intrinsic rewards such as appreciation. A firm that can balance extrinsic and intrinsic rewards would have more committed employees than firms that do not balance extrinsic and intrinsic rewards (Meyer & Nujjoo, 2012). Properly managed employees are highly motivated and can increase the sustainability of a firm. Firms that offer high-quality services for the best prices have sustainable growth. This growth is only possible if the firms learn to connect all the employees' talents and commitment. Lok & Crawford (2004) argue that employees' commitment significantly depends on a conducive organizational culture in which employees have a high level of empowerment. A committed employee has a high motivation level and an emotional attachment with a firm (Heavey et al., 2011).

Malhotra & Singh (2007) believe that intrinsic rewards (i.e., non-monetary) are stronger predictors of affective commitment than extrinsic rewards. Thus, firms that perpetually appreciate and encourage their employees verbally and non-verbally can increase their motivation and commitment level (Altindis, 2011). Also, social rewards promote employees' trust and emotional attachment, due to which they take more interest in achieving organizational goals. Organizational support also enhances employees' affective commitment. Employees who receive emotional and tangible support from an organization reciprocate by adopting positive behavior towards their work. This behavior enhances employee commitment and motivation (Chipunza & Berry, 2010). Chiang & Birtch (2012) argue that when a firm gives non-financial rewards to employees, including holidays, employees feel that the organization cares about them and is concerned about their well-being. Consequently, employees are more motivated and work efficiently. Similarly, Luthan et al. (2006) argue that when employees understand that the firm values certain behavior, they tend to adopt such behavior.

Researchers argue that when two firms offer the same tangible rewards, employees

prefer the firm that offers more intrinsic rewards (Ajila & Abiola, 2004). Kokubun (2017) argues that highly commitment managers reward their employees rationally and judicially. As a result, employees reciprocate by being more committed to the firm by increasing their "social bond." Wright, Killebrew & Pimpalapure (2002) based on empirical results, concluded that extrinsic rewards positively associate with the goal-related commitment of employees. Firms generally praise, recognize, and promote committed workers in comparison with non-committed employees. Also, studies have found that employees are more committed when a firm allows them to fulfill their psychological needs. Consequently, workers polish their skills and knowledge to contribute towards organizational goals.

H1: Financial rewards have a significant positive effect on employee commitment.

Financial Rewards and Employee Commitment

Financial incentives stimulate employee commitment and sustainable relationships (Kilimo et al., 2016). Thus, firms that offer market competitive financial rewards can enhance employees' commitment levels and organizational performance (Shalini, 2020). Many firms enhance employee commitment by rewarding them through "bonuses, profit sharing, and stock options" (Awino & Kipsang, 2020). Hadžiahmetović & Dinç (2017) suggest that employees expect their organizations to appreciate their performance through different financial rewards. When a firm meets employees' expectations, they remain committed to their work and do not think about moving to other organizations. Thus, it results in a pool of highly motivated employees necessary for sustainable growth (Whitener, 2001).

In the prevailing competitive era, the retention of talented employees has become difficult. Thus, many organizations have shifted from a conventional rewards system to a performance-based rewards system. Factors such as "performance, skills, knowledge, and competence" are essential facets of performance-based rewards (Yun, Takeuchi & Liu, 2007). Firms that adopt a performance-based rewards system benefit by having a large pool of satisfied and committed employees (Johnson, Chang & Yang, 2010; Milkovich & Newman, 2008).

Many past studies based on empirical results have concluded a positive association between "financial rewards, commitment, and loyalty (Kreisman, 2002; Urbancová & Vnoučková, 2018). While Kurdi, Alshurideh & Alnaser (2020) also found that financial rewards promote employee commitment, reduces turnover intentions, and increases employee loyalty. Employees' commitment to an organization is also directly associated with their wants and desires (Jeni, Mutsuddi, & Das, 2020). Employees rewarded at work

do not find a significant gap in their rational needs and desires. Consequently, they are more motivated and committed than others (Teo, Bentley & Nguyen, 2020). While extending Vroom's (1964) model, many studies found a "significant association between loyalty and expectation." Thus, for employees whose expectations of financial rewards are high, their commitment and motivation level would also be high (Andonova & Zuleta, 2007).

H2: Financial rewards promote employee commitment.

Non-Financial Rewards and Employee Motivation

Many past studies have examined the impact of different aspects of "financial and non-financial rewards" on employee motivation. For example, Nyandema & Were (2014) found that "career development, management and coaching/mentoring" affects employee motivation and satisfaction. Additionally, the study found that a conducive work environment is a critical intrinsic reward that stimulates a positive attitude. Kurdi, Alshurideh & Alnaser (2020) found that "self-esteem and appreciation for work" are a precursor to employee motivation. The authors also indicated that employee benefits depend on educational qualification and tenure in an organization. Promotion and growth opportunities are other non-financial rewards that enhance employee motivation (Teo, Bentley & Nguyen, 2020). However, the study suggests that a reward system is effective if based on realistic and rational standards. On the contrary, many researchers believe that all the employees do not have the same skills and capacity to learn. Therefore, a standard non-financial reward system for all the employees may not be effective.

Bari et al. (2019) found that "employee empowerment and supervisory attitude" are a critical precursor to employee motivation. When a firm provides freedom and supportive attitude, then employees' trust increases. Consequently, the trust element motivates employees and enhances their emotional attachment with the firm. Harunavamwe & Kanengoni (2013) found that the impact of non-monetary rewards on junior employees' motivation level is moderate. But "monetary rewards and motivation" have no significant association. Jeni, Mutsuddi & Das (2020) argue that demographic factors moderate the association between non-financial rewards and motivation. Thus, the study recommended that firms should focus on this aspect while developing non-financial reward policies. It is not advisable to have a uniform non-financial policy for all gender, ages, and income groups (Jamjumrus, 2019).

A study examined the impact of five non-monetary rewards, i.e., "training, recognition

for performance, opportunities for career advancement, effective communication channels, and job security." The study found that these five aspects affect employee motivation except "training and performance recognition" (Cheema & Mirza, 2013). Yousaf et al. (2014) found that non-financial rewards are important predictors of motivation in developed countries. On the other hand, it is not that important in developing countries like Pakistan. Tausif (2012) found a strong association between "non-financial rewards and motivation" in Pakistan's education sector. The study also found that non-financial rewards are not a strong predictor of motivation for all age groups. It is higher for older employees and lower for younger employees.

H3: Non-financial rewards positively affect employee motivation.

Financial Rewards and Employee Motivation

Many past studies have documented that financial rewards are a precursor to employee motivation (Fischer, Malycha & Schafmann, 2019; Shibly & Chatterjee, 2020). These studies also found that a change in reward has a corresponding impact on employee motivation and satisfaction. Nyandema & Were (2014) found that extrinsic rewards promote employee motivation, but they also observed that many organizations are not rewarding their employees appropriately, due to which they have a low motivation level.

Similarly, Lombardi et al. (2020) found that financial rewards and motivation do not directly affect all employees. Extrinsic rewards do not influence employees in the higher-income group the same way as employees belonging to lower-income groups. Ekhayemhe & Oguzie (2018) based on empirical results, have concluded that financial rewards stimulate employee motivation. That is, an increase in rewards would increase employee performance and motivation. The study also found that the association between extrinsic rewards and motivation is universal. Prasetya & Kato (2011) found that intrinsic and extrinsic rewards affect employee motivation and performance. Thus, organizations, besides offering a competitive salary package to employees, should not ignore intrinsic rewards. Robescu & Iancu (2016) argue that offering fair and adequate rewards to all employees in an organization is difficult since their expectation level is not the same. It depends on a host of cultural and demographic factors.

H4: Financial rewards positively affect employee motivation.

Employee Commitment and Employee Motivation

Commitment and motivation have some similarities. For example, both concepts are related to "energizing employees with implications for behavior." Thus, commitment

is a "force that binds an individual to a course of action" while motivation is "a set of energizing forces" (Meyer & Herscovitch, 2001). The two definitions suggest that motivation is a broader concept and commitment being a "set of energizing forces" stimulates motivation (Ajila & Abiola, 2004). Heavey et al. (2011) argue that commitment is a strong source of motivation and persists despite facing opposing forces. Therefore, both commitment and motivation influence employee behavior.

Many researchers argue that commitment is an important concept. Several studies have examined its effect on organizational outcomes, including "turnover, motivation and performance." (Meyer et al., 2004). The existing literature suggests that commitment has both a direct and indirect association with motivation. While a few studies suggest that employee commitment and motivation have a bi-directional relationship. That is, motivation affects commitment at the same time as commitment promotes motivation. Both individually and collectively enhance organizational performance (Altindis, 2011). Commitment has two broad aspects, including "organizational commitment and employee commitment." In this study, we have examined employee commitment. Many researchers suggest that employee commitment is a precursor to organizational commitment and employee motivation. Johnson, Chang & Yang (2010) suggest that factors such as financial and non-financial rewards moderate employee commitment and motivation (Chipunza & Berry, 2010). A few studies have examined the effect of "normative commitment, affective commitment, and continuous commitment" on organizational consequences (Kreisman, 2002; Hadžiahmetović & Dinç, 2017). These studies found that all the facets of commitment that are "normative, affective, and continuous "stimulate employee motivation. The studies also found that the affective commitment effect size is greater than normative and continuous commitment (Awino & Kipsang, 2020; Pregnolato, 2010). Thus, firms that can promote "affective commitment" in their employees would have sustained growth.

H5: Employee commitment positively impacts employee motivation.

Mediating Effects

The above discussion suggests that both financial and non-financial rewards affect employee commitment. It also indicates that employee commitment promotes employee motivation. Given the relationship of financial and non-financial rewards with employee commitment and employee motivation, we have proposed mediating relationships.

H6: Employee commitment mediates financial rewards and employee motivation.
H7: Employee commitment mediates non-financial rewards and employee motivation.

Methodology

Population and Sampling

The study focuses on SMEs in the textile sector of Karachi. We have targeted this sector because its contribution towards employment generation and GDP is significantly higher than other sectors. The data was collected from the target population through six recruited enumerators. The enumerators visited the target SMEs and distributed 400 blank questionnaires. A total of 385 filled questionnaires were received. The data was collected through quota sampling.

Respondents Profile

The respondents' profile is as follows. Of the total respondents, 68% are males, and 32% are females. About 35% of respondents are married, and 65% are single. In terms of age, 24% of the respondents are in the age bracket 18-28 years; 21% in the age bracket 29-40 years; 30% between 41-50 years; 20% are 51-60 years and 5% are more than 60 years old. The education background shows that 55% of the respondents have an intermediate level of education, 30% have a bachelor level of education and 15% have a master level of education.

Scale and Measures

The study has measured respondents' opinions using a five-point Likert scale, where 1 = strongly disagree and 5 = strongly agree. The questionnaire has four latent variables and 24 indicator variables. Table 1 shows a summary of the constructs used in the study.

Table 1: Scale and Measures

Constructs	Sources	No. of items
Non-Financial rewards	Bustamam et al. (2014)	5
Financial rewards	Pregnolato (2010)	5
Employee motivation	Musinguzi et al. (2018)	6
Commitment	Mayer, Allen & Smith (1993)	8

Data Analysis

The study has used the Smart PLS software version 3.2 for data analysis. It is inclusive of reliability and validity analysis and generating measurement and structural models.

Descriptive Analysis

The study has examined the constructs' internal consistency based on Cronbach's alpha values. Further, univariate normality was assessed based on skewness and kurtosis values. Table 2 shows a summary of the descriptive analysis.

Table 2: Descriptive Analysis

	Cronbach's Alpha	Mean	SD	Skewness	Kurtosis
Employee Commitment	0.802	4.25	1.25	-1.116	1.320
Employee Motivation	0.874	4.14	1.35	1.204	1.376
Financial Reward	0.835	3.98	0.87	-0.987	-1.555
Non-Financial Rewards	0.884	3.77	1.10	-1.001	0.987

The results suggest that Cronbach's alpha values ranged from 0.802 to 0.884. The Cronbach's alpha value is the highest for non-financial rewards (Mean= 3.77, SD=1.10, α= 0.884) and the lowest for employee commitment (Mean=4.25, SD=1.25, α=0.802). Thus, we have concluded that the latent variables used in the study have good internal consistency. The Skewness (SK) values of the study's constructs are as high as 1.204 and as low as -1.116. Moreover, the Kurtosis (KR) values are as high as 1.376 and as low as -1.555. Therefore, we have inferred that the latent variables do not violate the requirement of univariate normality.

Composite Reliability and Discriminant Validity
Table 3 shows the results related to composite reliability and discriminant validity.

Table 3: Composite Reliability and Discriminant Validity

	Composite Reliability	AVE	EC	EM	FR	NFR
Employee Commitment	0.802	0.629	0.793			
Employee Motivation	0.874	0.666	0.592	0.816		
Financial Reward	0.835	0.668	0.397	0.487	0.817	
Non-Financial Reward	0.884	0.689	0.459	0.631	0.574	0.830

The results show that the values of composite reliability (CR) range from 0.802 to 0.884. It also shows that all AVE values are at least 0.60, suggesting an acceptable value of convergent validity. The discriminant validity results show that the AVE square root is as low as 0.793 and as high as 0.830. The AVE square values are greater than the Pearson correlation values. Thus, we have inferred that the constructs used in the study are "unique and distinct."

Confirmatory Factor Analysis
We have carried out confirmatory factor analysis to examine the relationship of indicator variables with the corresponding latent variable. Table 4 shows the results related to confirmatory factor analysis.

Table 4: Confirmatory Factory Analysis

	Employee Commitment	Employee Motivation	Financial Reward	Non-Financial Reward
EC1	0.72			
EC2	0.75			
EC3	0.87			
EC4	0.82			
EC5	0.79			
EC6	0.77			
EC7	0.78			
EM1		0.75		
EM2		0.86		
EM3		0.87		
EM4		0.85		
EM5		0.74		
EM6		0.89		
EM7		0.77		
EM8		0.77		
FR1			0.68	
FR2			0.88	
FR3			0.90	
FR4			0.86	
FR5			0.81	
FR6			0.77	
NFR1				0.79
NFR2				0.81
NFR3				0.81
NFR4				0.86
NFR5				0.89

The above results show that the factor loadings of all the indicators variables are greater than 0.60, suggesting that indicator variables are theoretically related to the respective latent variables.

Results

Results of Direct Hypotheses

We in the study have proposed five direct hypotheses, which we empirically tested

by bootstrapping. The results related to direct hypotheses are illustrated in Table 5. The measurement model and structural models are illustrated in Figures 2 and 3, respectively.

Table 5: Results Related to Direct Hypotheses

	Beta	T Statistics	P Values	Results
Non-Financial Reward -> Emp. Comm.(H1)	0.345	10.052	0.000	Accepted
Financial Reward -> Emp. Comm.(H2)	0.199	5.788	0.000	Accepted
Non Fin. Reward -> Emp. Mot. (H3)	0.399	12.739	0.000	Accepted
Financial Reward -> Emp. Mot. (H4)	0.114	4.472	0.000	Accepted
Emp. Com. -> Emp. Mot. (H5)	0.364	14.702	0.000	Accepted

The results support all the hypotheses as all the p-values are lesser than 0.05. The results also suggest that the effect size for the association between non-reward and employee motivation is the highest ($\beta = 0.399$), and the lowest is for the relationship between financial rewards and employee motivation ($\beta = 0.114$).

Results of Indirect Hypothesis

We have proposed two indirect hypotheses, which were tested by bootstrapping. The results are illustrated in Table 6. The results support both the mediating hypotheses as the p-value is less than 0.05.

Table 6: Results Related to Indirect Hypotheses

	Beta	T Stat.	P Values	Results
Non Fin. Reward -> Emp. Com. -> Emp. Mot.(H6)	0.1256	8.7931	0.000	Accepted
Fin. Reward -> Emp. Com -> Emp. Mot.(H7)	0.0723	5.1847	0.000	Accepted
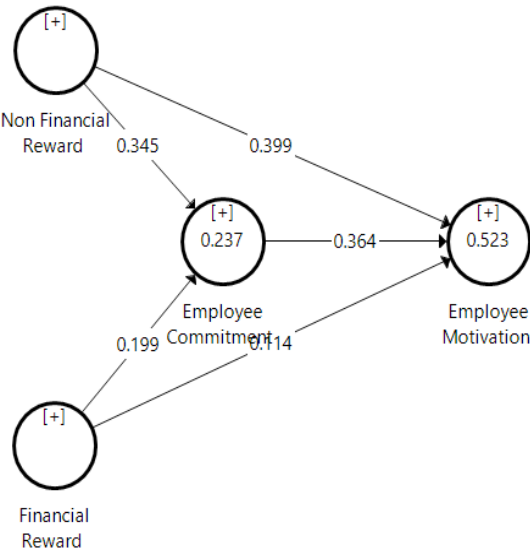
Figure 2: Measurement Model
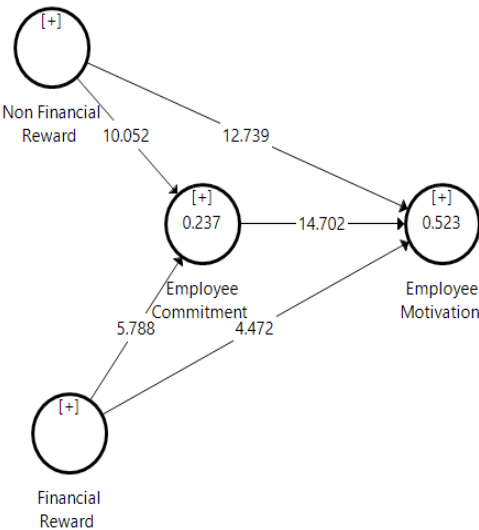
Figure 3: Structural Model

Discussion and Conclusion

Discussion

The study has proposed five direct and two mediating hypotheses. Our results support all the hypotheses. We have discussed each hypothesis and its relevance to earlier studies in the following section.

Hypothesis 1 states that "non-financial reward has a positive effect on employee commitment." Our results are in line with this hypothesis and earlier literature. Both financial and non-financial rewards promote employee commitment (Shalini, 2020). The existing literature suggests that non-financial rewards influence employees in developed countries, and financial rewards are more important in developing countries (Kilimo et al., 2016; Kokubun, 2017). The literature suggests that non-financial rewards have not the same impact on all employees (Lok & Crawford, 2004). Generally, it affects the commitment level of old-age employees and employees with a higher income (Meyer & Nujjoo, 2012).

Hypothesis 2 postulates that "financial reward has a positive effect on employee commitment." Meyer, Becker & Vandenberghe (2004) suggest that a firm can enhance employee commitment by offering market-competitive financial packages. As a result, employees would be content, have a positive attitude towards work, and develop a sustainable relationship with the firm. Firms can also make their financial package more lucrative by including "bonuses, profit sharing, and stock ownership" in the financial package (Ghosh et al., 2016; Yousaf et al., 2014). Offering stock ownership options in the financial package makes employees the shareholders, due to which their commitment and dedication increase significantly. The stock ownership option to the employees is common in developed countries compared to developing countries (Yun, Takeuchi, & Liu, 2007).

Hypothesis 3 suggests that "non-financial rewards have a positive effect on employee motivation." Our results support this hypothesis. Many past studies found that financial and non-financial rewards impact employee motivation. However, the studies also suggest that the impact of financial awards is significantly stronger than non-financial rewards. Employees in labor-intensive domains are less motivated with non-financial rewards than other sectors (Urbancová & Vnoučková, 2018; Whitener, 2001). The association between non-financial rewards and motivation also varies according to age and income group. Non-financial rewards and motivation relationships are more relevant for employees in the higher-income and old-age groups (Jeni, Mutsuddi, & Das, 2020; Jamjumrus, 2019).

Hypothesis 4 assumes that "financial reward has a positive effect on employee motivation." Many past studies have documented that financial rewards enhance employee motivation, due to which employees develop a positive attitude towards their work. This positive attitude enhances employee and organizational performance (Fischer, Malycha & Schafmann, 2019; Yun, Takeuchi & Liu, 2007). Offering appropriate financial packages to employees also enhances their trust, due to which they develop a sustainable association with an organization. A large pool of talented employees gives a competitive edge to a firm resulting in sustainable growth (Lombardi et al., 2020; Ekhayemhe & Oguzie, 2018). Shibly & Chatterjee (2020) argue that a firm should not ignore the non-financial rewards while focusing on financial rewards. An adequate balance between the two is necessary for enhancing employee motivation and loyalty (Robescu & Iancu, 2016).

Hypothesis 5 states that "employee commitment has a positive effect on employee motivation." Commitment has three facets "normative commitment, affective commitment, and continuous commitment" (Hadžiahmetović & Dinç, 2017; Chipunza & Berry, 2010). All three facets of commitment individually and collectively stimulate employee motivation. Most researchers suggest that affective commitment's impact on motivation is higher than normative and continuous commitment (Awino & Kipsang, 2020; Kilimo et al., 2016).

Hypothesis 6 and 7 states that employee commitment mediates (i) non-financial reward and motivation and (ii) financial rewards and motivation. We found support for both mediating relationships, consistent with earlier studies (Lok & Crawford, 2004; Yun, Takeuchi & Liu, 2007; Jeni, Mutsuddi & Das, 2020).

Conclusion and Implications

We have developed a model that has five direct and two mediating relationships. We found that "financial and non-financial rewards" affect commitment and motivation. Commitment is also a precursor of motivation. The results also suggest that commitment mediates (i) Non-financial rewards and motivation; (ii) financial rewards and motivation.

The current study would help academicians, researchers, and practitioners to make strategic plans and HR policies. We found that both financial and non-financial rewards affect employee commitment and motivation. Thus, SMEs in Pakistan must keep a balance between "financial and non-financial rewards while developing their reward package." Ignoring one or the other will not be effective in enhancing employee commitment and motivation. Committed and motivated employees in SMEs will give

them an edge over others. As a result, SME performance may increase and lead to sustainable growth.

Limitations and Future Research

This research study has many limitations. We have focused on the SMEs in the textile sector of Karachi. Future studies can target other sectors, including large scale manufacturing sector and the services industry. The effect of financial and non-financial rewards is not the same on employees from different age and income groups. Other studies may explore these aspects. Pakistan is a culturally rich country. Cultural values also affect motivation and commitment. Therefore, we recommend researchers to explore this aspect.

Annexure 1

Constructs and Items used in the Questionnaire

Employee Commitment

I feel emotionally attached to my current employer.

I feel a strong sense of belonging to my current employer.

I feel like a part of the family with my current employer.

I would be very happy to spend the rest of my career with my current employer.

I really feel as if my current employer's problems are my own.

My current employer has a great deal of personal meaning to me.

Too much of my life would be disrupted if I decided to stop working for my current employer.

I believe I have too few options to consider no longer working for my current employer.

Employee Motivation

These days I feel motivated toward work

I do this job as it gives long term security to me

I am punctual about coming to work

It's not a problem if sometimes I come late

I always relied on my colleagues at work

I always complete my task efficiently and on time.

Non-Financial Rewards

I prefer to receive appropriate recognition for my contribution.

I like to receive continuous fed back and recognition

I like to hear informal praise (well done, thank you)

The feedback from employer is actually shows the true picture of my hard work.

I prefer to receive formal recognition (certificate)

Financial Rewards

I enjoy extra income coming in mid-year

I financially stable due to monetary rewards on my achievements

Financial rewards give more motivation toward work than non-financial rewards.

When I am financially stable I become more committed toward my organization.

I is more attractive and motivating to get the amount of your hard work.

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Corporate Social Responsibility and Customer Loyalty: Exploring the Role of Satisfaction and Corporate Image in the Banking Industry

Munawar Javed Ahmad[1]
Iqra University, Karachi, Pakistan

Arif Jawaid
Lahore Garrison University, Lahore, Pakistan

Muhammad Zulqalnain Arshad
Lahore Garrison University, Lahore, Pakistan

Sumaira Habib Paracha
Iqra University, Karachi, Pakistan

Abstract

This study aims to determine the impact of corporate social responsibility on customer loyalty and satisfaction with the mediating effect of customer satisfaction and the moderating effect of corporate image in Pakistan's banking sector. The study collected 302 responses from the target population. We used a self-administered questionnaire for collecting the data of banking customers in Pakistan by employing the convenience sampling technique. The study has used the PLS-SEM technique for statistical analysis. The results reveal that corporate social responsibility positively influences customer satisfaction. The results also suggest that CSR positively affects customer satisfaction. At the same time, CSR has an insignificant association with customer loyalty. We also found that CS stimulates customer loyalty, and corporate image promotes CL. The results suggest that customer satisfaction mediates CSR and CL. We also found that corporate image does not moderate customer loyalty. Given the importance of CSR, we suggest that banks should allocate considerable resources for CSR activities. CSR is necessary for firms' growth and sustainability. It also, directly and indirectly, affects the brand image, loyalty, and customer satisfaction. Due to

[1]Corresponding Author: Munawar Javed Ahmed; Email: munawar.javed@iqra.edu.pk

strict regulations, banks have difficulty creating product differentiation; therefore, they rely on strategies such as CSR.

Keywords: *Corporate image, corporate social responsibility, customer loyalty, customer satisfaction, banking, Karachi.*

Introduction

Firms' concern for corporate social responsibility (CSR) has increased significantly in the era of social awareness. Thus, consumers expect that firms spend their resources on CSR activities (Shah & Khan 2019). Many past studies suggest that CSR positively affects consumers' attitudes and behavior (Sen & Bhattacharya, 2001). Kotler & Lee (2005) argue that investing in CSR activities helps companies achieve a sustainable competitive edge. The tangible resources of service-sector and manufacturing firms are similar, which has made it difficult for them to create differentiation. Thus, firms are forced to incorporate intangible features in their marketing strategies, such as focusing on brand image and CSR (Shah & Khan 2019). CSR activities help firms develop sustainable relationships with customers and a competitive edge (Rajaobelina, Brun, Tep & Arcand, 2018; Arrive, Feng, Yan & Chege, 2019).

Many past studies have documented that CSR activities stimulate customer satisfaction and help build sustainable relationships with customers, especially in the service sector (Rajaobelina et al., 2018; Gustafsson, Johnson & Roos, 2005). CSR, directly and indirectly, affects customers' loyalty. Both satisfaction and loyalty are important constituents of relationship marketing. For example, Iglesias, Markovic, Bagherzadeh & Singh (2020) claim that CSR affects consumer satisfaction. While Pérez & del-Bosque (2015) report that CSR promotes loyalty and purchase intentions. Marketers use CSR to position their products for sustainable growth. Gustafsson, Johnson & Roos (2005) and Abbas, Gao & Shah (2018) suggest that firms that can connect themselves with customers would have a sustainable competitive advantage. Although there are abundant studies on the association between customer satisfaction, loyalty, CSR, and corporate image in the manufacturing sector, a few studies on these aspects are available in the service sector.

Therefore, our research aims to contribute to the existing literature by examining CSR's influence on customer satisfaction and customer loyalty. It also analyzes the moderating role of corporate image and the mediating role of customer satisfaction in Karachi's banking sectors.

Literature Review

Corporate Social Responsibility

Marketers and academicians have examined the effects of CSR in both the service and manufacturing sectors. The service industry is highly competitive, with limited opportunities for creating differentiation (Hsu, 2012). Therefore, the service sector is spending significant resources on CSR. Many firms use CSR as a strategic marketing tool for sustainable growth and competitive advantage. A firm can also use CSR to develop a positive attitude towards its product (Sen & Bhattacharya, 2001). CSR is a business's commitment to contribute towards economic development while working with employees, their families, the local community, and the society to improve the quality of life (Chung, Yu, Choi, & Shin, 2015). Previously firms' were concerned with only profit maximization. But now, most firms contribute to society along with pursuing their profit-making activities. Firms now realize that CSR has a positive effect on consumers' attitudes and behavior. Therefore, they spend considerable resources on it (Carroll & Shabana, 2010). CSR has four social objectives: "economic, legal, ethical, and philanthropic." A brief discussion of these is provided in the following sections:

Economic Activities focus on increasing a firm's income and contribute to the society's economic development (Kim, Song, Lee & Lee, 2017). Firms play a key role in supplying products and services that customers want while making a reasonable profit. Other responsibilities of businesses are secondary to their economic objectives (Shabbir, Aslam, Irshad, Bilal, Aziz, Abbasi & Zia, 2020).

Legal Activities are related to compliance with the laws, rules, and regulations of society. Thus, a firm performs its economic activities by staying within the legal framework of society. It is a kind of a "social contract" between society and businesses (Schwartz & Carroll, 2003).

Ethical Activities are related to the norms and values of a society. It is about fairness, moral rights, and security of all the firm's stakeholders, including customers, workers, shareholders, and the community (Sen & Bhattacharya, 2001). Many researchers believe that ethical activities are beyond compliance with law and regulations (Abd-Rahim, Jalaludin & Tajuddin, 2011).

Philanthropic responsibilities are the actions and policies towards humanity and charity. A firm that fulfills philanthropic responsibilities voluntarily shares its profit with the society by investing in educational and social development programs (Pinkston & Carroll, 1996).

Hypothesis Development

CSR and Customer Satisfaction

Customer satisfaction is an essential constituent of corporate strategy and a firms' value proposition. A firm's profitability and sustainability depend on customer satisfaction (Phillips, Thai & Halim, 2019). Successful firms tend to create "generalized customers." Generalized customers, besides purchasing goods and services of a firm, also participate in various stakeholder activities (Irshad, Rahim, Khan & Khan, 2017). Customers' concern for environmental decay has increased significantly in recent years; therefore, they are more satisfied with firms involved in CSR activities (Latif, Pérez & Sahibzada, 2020). High-performance firms realizing CSR's importance spend considerable resources on it (Ashraf, Ilyas, Imtiaz & Tahir, 2017). Mohammed & Rashid (2018) argue that CSR activities enhance brand identity and image resulting in customer satisfaction. Chang & Yeh (2017) argue that besides the conventional drivers of satisfaction, responsible social activity has become an important driver of customer satisfaction. For example, when consumers see that a firm gives employment to disabled people, they develop a positive attitude towards it and support the firm by purchasing its goods and services (Abbas, Gao & Shah, 2018; Ishaq, 2012). Many past studies have examined CSR's impact on financial performance, and only a few of them have examined its impact on factors such as customer satisfaction and loyalty (Goyal & Chanda, 2017). Thus, examining CSR's effect on satisfaction may also contribute towards the body of knowledge (Xie, Jia, Meng & Li, 2017; Zhang, Cao, Zhang, Liu & Li, 2020).

H1: CSR positively stimulates customer satisfaction.

CSR and Customer Loyalty

Customer loyalty is their desire to develop a sustainable relationship with a firm (Townend, Hay, Jung & Smith, 2021). Mesquita, Luiz, Herrero & Fernando (2020) refers to loyalty as "a deep commitment to the product/services thereby encouraging the purchase of the same brand again and again, despite situational influences and marketing efforts having the potential to cause switching behavior." A firm's growth and survival significantly depend on customer loyalty (Irshad, Rahim, Khan & Khan, 2017).

Many studies have documented that CSR and brand loyalty are positively correlated. For example, Adebayo & Ogunshola (2017) found that CSR stimulates customer loyalty and retention. Choi, Chang, Jessica-Li & Jang (2016) imply that CSR activities motivate consumers to develop a sustainable relationship with the organization. Therefore, they suggest that the firm should allocate adequate resources for CSR activities. Many past studies found that customers appreciate a firm that spends resources on marketing

environment-friendly products and contributes to society's betterment (Al-Ghamdi & Badawi, 2019). Consequently, customers develop sustainable relationships with such firms and encourage their peers to purchase from them (Dabor, 2019). CSR has many attributes, and all of them, directly and indirectly, affect customer loyalty.

H2: CSR positively stimulates customer loyalty.

CSR, Customer Satisfaction and Customer Loyalty

Customer satisfaction and loyalty are positively associated. Customer satisfaction depends on the variation between their expectations of a product and its actual value (Chung, Yu, Choi & Shin, 2015). If the actual value is more than the customers' expectations, they would be satisfied and develop a sustainable relationship with the brand (Kim, Song, Lee & Lee, 2017). Adebayo & Ogunshola (2017) also found that satisfied customers have a strong willingness to repurchase products and services. They also recommend others to purchase the products (Afsar, Rehman & Shahjehan, 2010). Customer satisfaction helps build a sustainable relationship between a firm and its customers and enhances a firm's profitability and market share. Many previous studies have documented that CSR and brand loyalty are positively correlated. For example, Adebayo & Ogunshola (2017) found that CSR stimulates customer loyalty and retention. Al-Ghamdi & Badawi (2019) suggest that CSR activities motivate consumers to develop a sustainable relationship with the organization. Therefore, they suggest that the firm should allocate adequate resources for CSR activities. Many past studies found that customers appreciate a firm that spends resources on marketing environment-friendly products and contributes to society's betterment.

H3: Customer satisfaction positively stimulates customer loyalty.

H4: Customer satisfaction mediates CSR and customer loyalty.

CSR, Corporate Image and Customer Loyalty

Many past studies have documented that corporate image and reputation are significantly associated with customer buying behavior (Ball, Coelho & Vilares, 2006; Nguyen & Leblanc, 2001). Consumers' perception about an organization remains in their memory which triggers a response when consumers buy a product (Kotler & Lee, 2008). Similarly, Gupta, Raj & Wilemon (1985) suggest that corporate image has two diverse effects on customer buying behavior. It directly affects customers' loyalty. Further, it may enhance or reduce the association between CSR and customer loyalty. The attitude theory postulates that corporate image influences customers in their evaluation process (Herr, Farquhar & Fazio, 1990). Many studies have extended the

signaling theory to understand the association between corporate image and customer loyalty and document that they are positively associated (Chen & Dubinsky, 2003). Lee, Hsiao, Chen & Guo (2020) argue that corporate image, directly and indirectly, affects customer loyalty.

H5: *Corporate image positively stimulates customer loyalty.*

H6: *Corporate image moderates CSR and customer loyalty.*

Conceptual Framework
Based on the above theoretical discussion, we have formulated a conceptual framework with four variables and six relationships, including one mediating and one moderating. The model is presented in Figure 1.
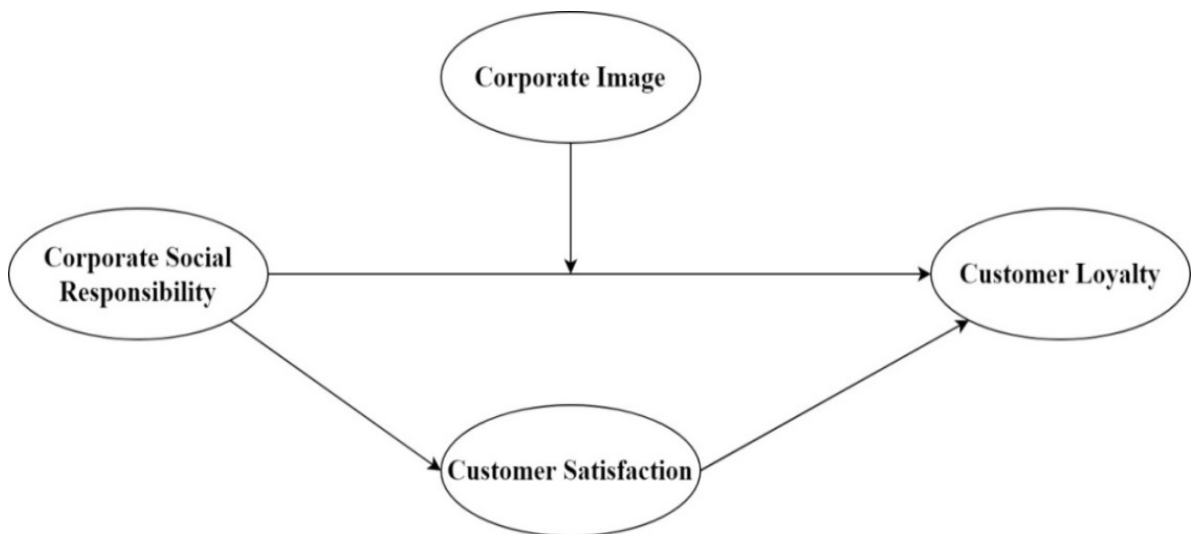
Figure 1: Conceptual Framework

Methodology
This study adopts a quantitative approach with a cross-sectional data collection technique. The population of the study comprises the customers of conventional banks operating in Pakistan. We collected data from 302 respondents using the convenience sampling technique as the sampling frame of bank customers was not available. The study has used a self-administered questionnaire adapted from earlier studies for collecting the data.

The instrument used in the study has two parts. Part one relates to demographics.

The second part is related to the main study. It has four constructs and 15 indicator variables based on the five-point Likert Scale, i.e., one indicates highly disagree, and five indicates highly agree. We adapted the CSR scale with four items from Carroll & Shabana (2010). The brand loyalty scale with four items is adopted from Ishaq (2012). The customer satisfaction scale with four items is adopted from Kaur & Soch (2012). Further, the brand image scale was adopted from Lassar, Mittal & Sharma (1995).

Analysis and Results

We used IBM-SPSS to check the accuracy of the data and any missing values. Subsequently, we plotted the data to identify the outliers. We found eight outliers which were adjusted by dropping the relevant observations. Further, we also performed reliability and validity analyses. The Smart PLS software was used for estimation and testing the derived hypotheses.

Demographic Profile of Respondents

We have collected the data from bank customers of Pakistan. Their profile is illustrated in Table 1.

Table 1: Demographics

		Frequency	Percent
Gender	Male	222	73.5
	Female	80	26.5
Age Group	Less than 25 years	17	5.6
	26-30 years	236	78.1
	31-35 years	43	14.2
	Above 35 years	6	2
Education	Undergraduate	13	4.3
	Graduate	57	18.9
	Post-Graduate	222	73.5
	Others	10	3.3
Bank Title	Muslim Commercial Bank	12	4
	United Bank Limited	29	9.6
	Habib Bank Limited	36	11.9
	Bank Al-Falah	21	7
	Meezan Bank	187	61.9
	Others	17	5.6
Account Tenure	1 - 3 Years	205	67.9
	3 - 5 Years	44	14.6
	5 - 7 Years	37	12.3

	More than 7 Years	16	5.3
Account Type	Current	245	81.1
	Savings	57	18.9

Measurement Model

The measurement model effectively examines the data and identifies its reliability and validity. The measurement model generates results related to validity and reliability, discussed in the following section.

Reliability Analysis

The results related to reliability (via Cronbach's alpha) and composite reliability analyses are presented in Table 2.

Table 2: Reliability Analysis

Variables	Items	Loadings	Cronbach's-Alpha	Composite Reliability	(AVE)
CI	CI2	0.930	0.835	0.924	0.858
	CI4	0.923			
CL	CL1	0.920	0.918	0.948	0.859
	CL3	0.924			
	CL5	0.936			
CS	CS1	0.966	0.928	0.965	0.933
	CS3	0.965			
ELA	EA1	0.881	0.753	0.890	0.801
	EA2	0.909			
EA	EA2	0.914	0.741	0.884	0.792
	EA3	0.866			
PA	PA2	0.720	0.754	0.782	0.644
	PA3	0.877			

The results suggest that Cronbach's alpha values of all the indicator variables are greater than 0.70, suggesting that the constructs have acceptable internal consistency (Hair, Ringle & Sarstedt, 2011). The constructs' composite reliability is at least 0.70, and the AVE values are at least 0.60. These values suggest that the constructs meet the convergent validity requirements (Hair, Ringle & Sarstedt, 2011).

Discriminant Validity

We have assessed the discriminant validity based on the Cross-Loadings, Fornell & Larcker (1981) criterion, and Heterotrait-Monotrait ratio of correlations (HTMT). The

following sections describe this analysis.

Cross-Loadings

Table 3 shows the cross-loadings of the latent constructs. The results suggest that all the cross-loading values are within the prescribed range (Lucas, Diener & Suh, 1996), implying that the constructs are distinct and unique.

Table 3: Cross-Loadings

	CI	CL	CS	EA	ETA	PA
CI2	0.930	0.716	0.644	0.090	0.248	0.022
CI4	0.923	0.682	0.660	0.050	0.215	-0.015
CL1	0.684	0.920	0.530	0.082	0.193	0.027
CL3	0.715	0.924	0.593	0.100	0.214	0.056
CL5	0.699	0.936	0.580	0.116	0.163	0.056
CS1	0.686	0.609	0.966	0.116	0.229	0.038
CS3	0.672	0.575	0.965	0.162	0.316	0.082
EA1	0.176	0.181	0.212	0.881	0.507	0.384
EA2	-0.027	0.022	0.055	0.909	0.600	0.557
ETA2	0.267	0.223	0.285	0.597	0.914	0.461
ETA3	0.170	0.134	0.211	0.502	0.866	0.183
PA2	0.128	0.172	0.162	0.253	0.270	0.720
PA3	-0.083	-0.050	-0.027	0.556	0.332	0.877

Note: CI = Corporate Image; CL = Customer Loyalty; CS = Customer Satisfaction; EA = Economic and Legal Activities of CSR; ETA = Ethical Activities of CSR; PA = Philanthropic Activities of CSR

Fornell & Larcker Approach

The results related to the discriminant validity analysis using the Fornell & Larcker (1981) approach are illustrated in Table 4.

Table 4: Discriminant Validity

	CI	CL	CS	EA	ELA	PA
CI	0.927					
CL	0.755	0.927				
CS	0.703	0.613	0.966			
EA	0.250	0.205	0.282	0.890		
ELA	0.076	0.108	0.144	0.621	0.895	
PA	0.004	0.050	0.062	0.377	0.531	0.803

Note: CI = Corporate Image; CL = Customer Loyalty; CS = Customer Satisfaction; EA = Economic and Legal Activities of CSR; ETA = Ethical Activities of CSR; PA = Philanthropic Activities of CSR

The results show that the square root of AVE values is lesser than correlation values suggesting that the constructs are unique and distinct.

Heterotrait-Monotrait Ratio (HTMT)

Table 5 contains the HTMT ratios. The results show that all the HTMT values are less than 0.90, meeting the discriminant validity requirement proposed by Henseler, Hubona & Ray (2016).

Table 5: Heterotrait-Monotrait Ratio (HTMT)

	CI	CL	CS	EA	ELA	PA
CI						
CL	0.862					
CS	0.799	0.664				
EA	0.311	0.243	0.335			
ELA	0.143	0.136	0.179	0.821		
PA	0.211	0.212	0.180	0.611	0.844	

Note: CI= Corporate Image, CL= Customer loyalty, CS= Customer satisfaction, EA= economic and legal activities of CSR, ETA= ethical activities of CRS, PA = philanthropic activities

Predictive Power

The study has used the Smart-PLS version 3.2.9 for generating the R-squared values. The results presented in Table 6 suggest that customer loyalty has substantial predictive power while customer satisfaction has weak predictive power (Hair, Hollingsworth, Randolph & Chong, 2017).

Table 6: R-Square of Endogenous Constructs

Constructs	R-Squared	Result
Customer Loyalty	0.587	Substantial
Customer Satisfaction	0.044	Weak

PLS-SEM Results

The study has empirically tested six hypotheses using the bootstrapping technique with 500 subsamples. Of all the hypotheses, our results support four hypotheses and do not support two hypotheses. Table 7 shows the summary of results.

Table 7: PLS-SEM Results

	Type of hypothesis	Beta	T.stat.	Prob	Result
CSR -> CS (H1)	Direct	0.210	4.481	0.000	Supported
CSR -> CL (H2)	Direct	0.011	0.248	0.402	Not supported
CS -> CL (H3)	Direct	0.169	2.055	0.020	Supported
CSR -> CS -> CL(H4)	Mediating	0.035	1.828	0.034	Supported
CI -> CL(H5)	Direct	0.639	8.425	0.00	Supported
CSR x CI -> CL (H6)	Moderating	0.068	0.953	0.170	Not Supported

Discussion and Conclusion

The study examines CSR's effect on customer satisfaction and loyalty and the mediating effect of customer satisfaction, and the moderating effect of corporate image in Pakistan's banking sector. The PLS-SEM technique was used for analysis. We used a self-administered questionnaire for collecting the data. The target population of this study comprises banking sector customers.

The results support all the hypotheses except (i) the association between corporate social responsibility and customer loyalty (H2) and (ii) the moderating role of corporate image on customer social responsibility and customer loyalty (H6). The results suggest that CSR positively affects customer satisfaction. Further, CSR has an insignificant association with customer loyalty. We also found that CS stimulates customer loyalty, and corporate image promotes CL. The results also suggest that customer satisfaction mediates CSR and CL. On the contrary, we found that corporate image does not moderate customer loyalty.

Managerial Implications

The findings of the study have implications for banks. For example, we find that CSR positively impacts customer satisfaction and loyalty. Therefore, banks and financial institutions should spend considerable resources on CSR. Additionally, CSR activities allow banks and financial institutions to develop a sustainable relationship with customers, which leads to increased market share and improved organizational performance. CSR activities also give an edge to a firm which is necessary for sustainable growth. Banks and financial institutions have little room for product variation. Thus, banks rely on brand image, corporate image, and CSR for creating differentiation.

Limitations and Future Research

The study finds that customer satisfaction and loyalty are essential for a bank's growth and sustainability. However, the study has several limitations. For instance, the sample size was relatively small when compared to the target population. Therefore, future research should include a larger sample. Similarly, future research can also adopt a longitudinal research design. A qualitative or mixed approach may also help in understanding the importance of CSR. The study's focus was on the banking sector. Other studies may extend our conceptual framework in other sectors. The cultural values of private and public sector banks are different. Therefore, we suggest a comparative study of private and public sector banks.

Annexure 1

Constructs and Items used in the Questionnaire

Corporate Image
This firm has an overall clean reputation
This firm is open to consumers
This firm has good transparency
The employees of the firm are also concerned about its image
Customer Satisfaction Scale
The policy of CSR of this firm meets my expectation
Overall, I am satisfied with CSR activities of this firm
Overall, I am satisfied with product and service of this firm.
I am satisfied how the firm response to complains
Customer Loyalty
I have a positive repurchase intention for purchasing the product of this firm
I would like to positively speak to surrounding people about this firm.
I would like to patronize this firm.
I would like to recommend this firm to colleagues who seek my advice
Corporate Social Responsibility
This firm fulfills its Philanthropic Responsibility
This firm fulfills its Ethical responsibility
This firm fulfills its Legal responsibility
This firm fulfills its Economic   responsibility
Brand Image
This brand fits my personality
In its status and style, this brand matches my personality
I would be proud to own this brand
This brand will be well regarded

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Does Organizational Politics in Public Sector Mediate the Impact of Recruitment and Selection on Employee Performance?

Munaza Bibi
Bahria Business School, Bahria University, Karachi, Pakistan.

Rafique Ahmed Khan
Bahria Business School, Bahria University, Karachi, Pakistan.

Amir Manzoor[1]
Bahria Business School, Bahria University, Karachi, Pakistan.

Abstract

The presence of nepotism and favoritism during recruitment and selection has become a major concern for developed and developing countries. Based on the social exchange theory, a framework was developed to evaluate contextual performance, adaptive performance, and task performance due to recruitment and selection practices in an organization. The study also investigated nepotism and favoritism as mediating variables between recruitment and selection, contextual performance, adaptive performance, and task performance. Moreover, data from 384 respondents working in tertiary care hospitals in Pakistan was collected and analyzed using confirmatory factor analysis and structural equation modeling. The study found that recruitment and selection substantially impact contextual performance, adaptive performance, and task performance. The study also found that nepotism and favoritism have a mediating effect on job performance. Furthermore, the current study is of significance for hospital managers to formulate strategies to overcome this phenomenon, particularly in the recruitment and selection process, which affects the healthcare employee's performance.

Keywords: *Organizational politics, nepotism, favoritism, recruitment and selection, contextual performance, adaptive performance, task performance.*

[1]Corresponding Author: Dr. Amir Manzoor; Email: amirmanzoor.bukc@bahria.edu.pk

Technological Antecedents of Organizational Agility: PLS-SEM Based Analysis Using IT Infrastructure, ERP Assimilation, and Business Intelligence

Muhammad Yasir[1]
Institute of Business Management, Karachi, Pakistan

Muhammad Adnan Bashir
Institute of Business Management, Karachi, Pakistan

Junaid Ansari
Institute of Business Management, Karachi, Pakistan

Abstract

Business intelligence, ERP assimilation, and IT infrastructure flexibility are components that can enhance organizational agility. At the same time, business intelligence (BI) usage improves management decisions. However, there are a few empirical studies on ERP assimilation and business intelligence. To fill this gap, we have proposed a new model with five direct and two mediating relationships. We have distributed 265 questionnaires and received 253 complete questionnaires. We collected the data through self-administered questionnaires adapted from earlier studies. The study has used the Smart PLS software to analyze the data using the partial least square structural equation modeling technique. Since the study measures second-order constructs, therefore, we believe that PLS-SEM is an appropriate software. The results indicate that IT infrastructure flexibility affects organizational agility, business intelligence use, and ERP assimilation. The results also support the association between business intelligence use and organizational agility and ERP assimilation and organization agility. Further, we find that business intelligence use and ERP assimilation have a mediating effect on organizational agility .

[1]Corresponding Author: Muhammad Yasir; Email: std_17690@iobm.edu.pk

Introduction

Information technology has completely changed organizational operations by providing advanced hardware and software infrastructure support. Organizations prefer to use the Enterprise Resource Planning (ERP) and Business Intelligence (BI) tools to manage their data. Organizations take management decisions using BI; therefore, organizations' focus on BI skills has increased significantly (Luftman & Ben-Zvi, 2010). Many organizations still ignore the importance of ERP as they lack the required technological infrastructure support resulting in poor organizational agility.

Organizational agility is how responsive an organization is towards its strengths, weaknesses, opportunities, and threats. Agility strengthens the decision-making process in organizations and industries, using business intelligence to face daily challenges. By assimilation of IT Infrastructure, business intelligence (BI), and ERP, organizations can convert raw organizational data into a presentable and understandable form of dashboards, reports, and charts.

Business intelligence can save costs and increase the revenue of organizations. Business intelligence is continuously improving with ERP assimilation technologies. That is why sufficient empirical studies are not available on business intelligence and organizational agility (Watson et al., 2006). Organizations that lack IT infrastructure support are unable to fulfill the requirements of BI and ERP assimilation. If organizations use outdated equipment, they may not benefit from BI. Many organizations ignore investing in IT infrastructure, not realizing that such investments may decrease costs in the long run (Chung, Rainer & Lewis, 2003).

Al-Mashari (2003) argues that IT infrastructure flexibility helps organizations to incorporate large-scale software like ERP (Enterprise Resource Planning) and CRM (Customer Relationship Management), leading to interaction with customers and organizational success. ERP is a complex software that integrates and records financial/non-financial transactions, customers' and employees' queries, complaints, and other feedback. Management can retrieve all such data with a single click. Integration of different departments' data is expensive and time-consuming (Appelbaum et al., 2017). Such software is essential for an organization that generates huge data daily, and management takes decisions based on that generated data. Such software will enhance organizational performance and give an edge to a firm over others (Shao, Feng & Hu,

2017; Gessner & Volonino, 2005; Lönnqvist & Pirttimäki 2009).

Research Objectives

The literature lacks empirical evidence on the relationship between organizational agility, ERP assimilation, and business intelligence use. Past studies found inconsistent results on BI impact on business performance (Fink, Yogev & Even, 2017). This study aims to build a theoretical model and test the hypotheses while measuring the effect of different organizational agility factors. The model developed in this study will help organizations to understand the significance of using BI, IT infrastructure flexibility, and ERP assimilation. Specifically, the objective of the study are as follows:

1. To identify the effect of IT infrastructure flexibility on organizational agility.
2. To identify the mediating effect of business intelligence use between organizational agility and IT infrastructure flexibility.
3. To identify the mediating effect of ERP assimilation between organizational agility and IT infrastructure flexibility.

Literature Review

Industrial organizations have extensively discussed business intelligence, but empirical evidence is insufficient (Jourdan et al., 2008). This section discusses the constructs of organizational agility, business intelligence use, ERP assimilation, and IT infrastructure flexibility for the theoretical underpinnings.

Conceptual Model

The contingency theory of organizations that emerged in the 1970s is a dominant theoretical model for understanding organizations and technology-related issues (Betts, 2003; Scott, 1991). The theory elaborates the relationship between the organizational environment and the technology that an organization uses. The theory emphasized that the decision-making process in an organization is contingent upon the internal and external situation. Based on the theory, this study has developed a new conceptual model presented in Figure 1. The conceptual framework has four variables: "business intelligence use, IT infrastructure flexibility, ERP assimilation, and organizational agility." We have briefly discussed these variables in the following sections:
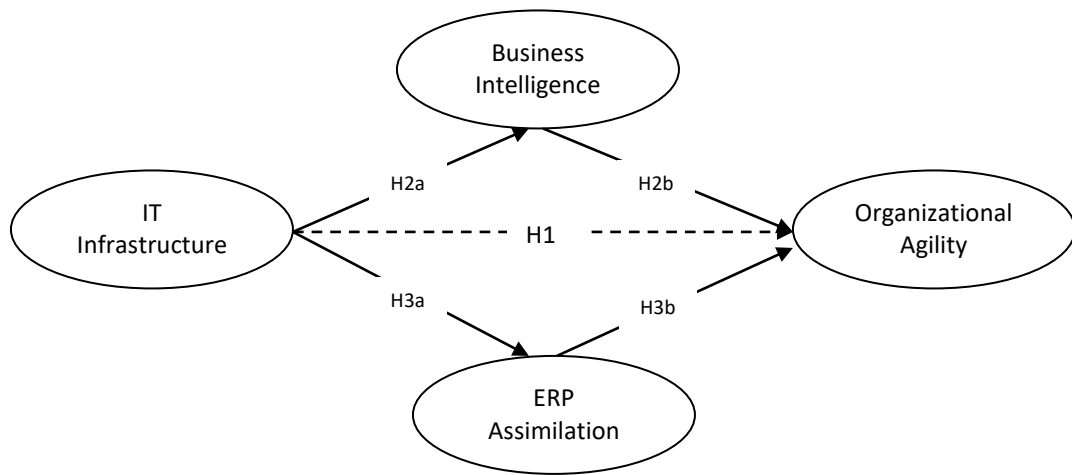
Figure 1: Conceptual Model

Organizational Agility

The study based on the literature review has categorized organizational agility as a dependent variable. Agility refers to an organization's agility to respond and meet the challenges based on its available resources (Li, Chung, Goldsby & Holsapple, 2008). Agility can be taken as the organization's capabilities to survive in a competitive environment by adopting innovative opportunities (Goldman, 1994). Another definition of organizational agility is an organization's ability to sense the changes across the market and take required actions (Chen & Siau, 2012).

Organizational agility has three interconnected capabilities: (i) customer agility, (ii) partnering agility, and (iii) operational agility (Sambamurthy, Bharadwaj & Grover, 2003). Customer agility is the interaction with customers using innovative opportunities of an organization. Partnering agility is leveraging partners like suppliers, distributors, and manufacturers through partnerships, mergers, or joint ventures. Operational agility is an organizations' operational capabilities to improve business processes by incorporating innovative opportunities (Tallon & Pinsonneault, 2011; Sambamurthy et al., 2003).

IT Infrastructure Flexibility and Organizational Agility

The extent to which a firm can survive without IT resources depends on IT infrastructure flexibility. IT infrastructure flexibility refers to an organization's ability to support technology advancement in hardware, software, communication, and network services. IT infrastructure flexibility comprises four key components: (i) connectivity, (ii) compatibility, (iii) modularity, and (iv) IT support competency (Duncan, 1995; Byrd & Turner, 2001). Literature also suggests that IT infrastructure flexibility relates to IT-

related resource usability to support the communications and business applications throughout the organization.

Firms need to efficiently use IT resources for the current environment and future technology advancements (Chen & Siau, 2012). IT infrastructure has become an essential part of organizational business processes, as it's the only source through which the organization can streamline business processes. From the systems theory perspective, an organization is a system whose communication process supports organizational agility (Byrd & Turner, 2001). Many past studies have used IT infrastructure flexibility as an independent variable (Byrd & Turner, 2001; Tiwana & Konsynski, 2010). However, limited literature is available that supports the direct relationship between IT infrastructure flexibility and organizational agility. However, many studies have studied how IT infrastructure supports the business functional line process agility. They found that IT infrastructure flexibility can improve an organization's ability to meet the competitive environment's challenges. A change in stakeholders, including partners, customers, supply chain, employees, and operations in an organization, promotes environmental challenges (El Sawy & Pavlou, 2008; Bush et al., 2010). Moreover, Sambamurthy et al. (2003) argue that IT infrastructure flexibility has a positive relationship with organizational agility, or agility in general (Sharifi & Zhang, 2000; Tiwana & Konsynski, 2010). Therefore, we postulate the following hypothesis.

H1: IT Infrastructure flexibility significantly affects organizational agility.

Direct and Indirect Effect of Business Intelligence Use

Business intelligence is a broader term that encapsulates the processes, technologies, and applications to collect, store, and access the data to provide better decision-making (Wixom & Watson, 2010). Business intelligence also refers to the procedures and systems, which can help managers make better decisions by transforming the raw data into useful information (Watson, 2009). BI is an information system comprising of three elements, i.e., (i) technology, (ii) human competencies, and (iii) knowledge for increasing business values. BI systems depend on IT infrastructure, including hardware and shared services like network services, database services, and security services (Laursen & Thorlund, 2010).

Although the literature supports BI's issues with the new technology, Jourdan et al. (2018) suggest that empirical studies on this association are not available. Prior studies focused on the emergence of IT fashions, but they did not explore the organizational consequences of using IT (Wang, 2010). Based on systems theory, organizations are considered systems, and organizational agility can accept these organizations' creative

challenges. Previous studies have examined the association between intelligence and organizational agility in the information system domain (Mithas et al., 2011). Organizational agility depends on three factors, i.e., partner agility, customer agility, and operation agility (Sambamurthy et al., 2003; Chen & Siau, 2012). Studies have also examined the direct and indirect effects of BI utilization in the context of business performance (Lönnqvist & Pirttimäki 2009). Moreover, a recent study on organizational agility found that business intelligence significantly affects organizational agility (Cheng et al., 2020).

Therefore, we believe that business intelligence use can help organizations to enhance their agility. Thus, we postulate the following hypotheses:

H2: Infrastructure flexibility promotes business intelligence use.

H3: Business intelligence use promote organizational agility.

H4: There is a mediating effect of business intelligence use between IT infrastructure flexibility and organizational agility.

Direct and Indirect Effects of ERP Assimilation

Assimilation refers to the degree to which technology adaptation can diffuse across the organizational work processes. Enterprise resource planning software is an important tool used in medium and large-scale organizations. This software supports large-scale data storage and transaction processing to automate organizational processes,. In this study, ERP assimilation refers to the best practices that the organization has adapted by using the ERP software. Organizations usually developed/outsourced ERP software to get better analytics, data processing, automation, and real-time reports to improve decision-making processes. ERP assimilation enhances the organizational ability to meet competitive challenges through innovative and automated processes (Appelbaum, Kogan, Vasarhelyi & Yan, 2017).

Past studies have used ERP with dimensions, including knowledge-based, resource-based, capabilities-based, and risk-based (Hwang & Min, 2013; Eisenhardt & Martin, 2000; Spender, 1996). Due to the limited literature support, it is still a preliminary stage to claim that ERP assimilation will positively or negatively affect organizational agility. However, many past studies have documented the association between ERP and organizational agility. Many researchers argue that ERP assimilation and organizational agility have an association with the organizational process (Armstrong & Sambamurthy, 1999).

Innovation assimilation across the organization, automates, and regularizes business processes (Purvis et al., 2001). ERP systems regularizes the business processes and increases the complexity affecting organizational agility (Rettig, 2007). ERP has been discussed as the mediating variable in previous research, specifically with suppliers' performance (Hwang & Min, 2013). Moreover, ERP systems' mediating role has also been discussed as IT-enabled capabilities. Thus, this study postulates the following hypothesis:

H5: IT infrastructure flexibility stimulates ERP assimilation.

H6: ERP assimilation promotes organizational agility.

H7: There is a mediating effect of ERP assimilation between IT infrastructure flexibility and organizational agility.

Methodology

This study has used the quantitative research design to provide empirical evidence related to BI and other related factors affecting organizational agility. Primary data was collected using the survey method (Yin, 1993) through questionnaires distributed among managers/executives working in Pakistani organizations' decision-making process. The sample is a subset of the population that represents the characteristics of the selected population. Different researchers have different views on the minimum sample size. Sekaran (2006) suggests using 30 respondents for each variable for calculating the minimum sample size. Hair-Jr., Black, Babin, & Anderson (2010) suggest that a sample size of 253 is enough for multivariate analysis. Based on these opinions, we had distributed 265 questionnaires and received 253 complete questionnaires. Convenience sampling is a technique that helps researchers to collect data from relevant respondents quickly. Convenient sampling is a non-probability sampling technique often used to save time and expenditure in collecting data (Sekaran, 2006; Kline, 2011). The study has used the Partial Least Square Structural Equation Modeling by using Smart PLS 3.0. Since the study measures second-order constructs, we believe that PLS-SEM is appropriate (Hair, Ringle & Sarstedt, 2011).

Instrument

Business-intelligence-use has 13 items taken from Chen & Siau (2012). IT infrastructure flexibility 14-items scale was adapted from Chen & Siau (2012), ERP Assimilation 9-items scale was taken from Kharabe & Lyytinen (2012). The organizational agility 8-items scale was adopted from Chen & Siau (2012). We measured the respondents' opinions on a scale of 1 to 7. One being "strongly disagree," and

seven beings "strongly agree." All instruments adopted had established reliabilities in previous studies, i.e., Cronbach's Alpha was greater than 0.7. However, the constructs' reliabilities were re-established to ensure internal consistency, as the demographics characteristics in Pakistan are different from the Western countries.

Results

Respondents' Profile
We distributed 265 questionnaires to organizations' managers and executives because they are the key decision-makers. After discarding the incomplete questionnaires, we retained 253 cases. The respondents' profile are as follows. In terms of gender, we found that 53% of the respondents were males, and 47% were females. The respondents' marital status shows 48% were single, and the rest were married. The age segmentation shows that 45% of the respondents belong to the age group of 20 to 30 years, 20% respondents were in the age group of 31 to 40 years, 20% respondents were in the age group of 41-50 years, and the remaining 15% were more than 50 years old.

Descriptive Statistics, Reliability & Convergent Validity
The study has used descriptive statistics for measuring means, standard deviation, Skewness, and Kurtosis. It is also inclusive of measuring composite reliability and AVE. Descriptive analysis is a prerequisite for multiple regression analysis (Saunders et al., 2009). Table 1 illustrates the result of descriptive analysis for the constructs used in the study.

Table 1: Descriptive Statistics & Reliability of the Constructs

Construct	M	SD	SK	KT	CA	CR	AVE
Business Intelligence use	4.54	1.58	-0.66	-0.05	0.97	0.97	0.73
IT Infrastructure flexibility	4.61	1.17	1.11	1.64	0.91	0.92	0.80
Organizational Agility	4.52	1.38	-0.56	0.42	0.90	0.92	0.52
ERP Assimilation	4.70	1.23	-0.53	-0.42	0.79	0.84	0.72

Note: M=Mean, SD=Standard Deviation, SK=Skewness, KT=Kurtosis, CA=Cronbach's Alpha, and CR= Composite Reliability.

The results of the descriptive analysis show that business intelligence use (Mean = 4.54, SD=1.58) has the lowest value of skewness (SK = -0.66), and IT infrastructure flexibility (Mean = 4.61, SD=1.17) has the highest value of skewness (SK= 1.11). The lowest value of kurtosis (KT=-0.05) is for business intelligence use (Mean = 4.54, SD=1.58), and the highest value of kurtosis (KT = 1.64) is for IT infrastructure flexibility

(Mean = 4.61, SD=1.17). Since all the Skewness and Kurtosis values are within the range of ±3.5, the data fulfills the requirement of univariate normality. The study has checked the internal consistency based on Cronbach Alpha and Composite Reliability tests. All the Cronbach's Alpha values are greater than 0.7, confirming the construct's reliability (Sekaran, 2006). The results show that AVE values are greater than 0.40, and composite reliability values are greater than 0.70, meeting the convergent validity requirements (Hsieh & Hiang, 2004; Shammout, 2007).

Exploratory Factor Analysis

The study has used Exploratory Factor Analysis (EFA) to find the relationship between the latent variables and constructs. We have also used it to validate the items in a construct. In EFA, we dropped the items from the constructs with a factor loading of less than 0.4 (Hair Jr., Black, Babin & Anderson, 2010). The results suggest that Kaiser-Meyer-Olkin (KMO) for all the constructs are greater than 0.6. We also found that Bartlett's test was significant (Sekaran, 2006). Based on EFA, we dropped four items from ERP assimilation. Table 2 contains the summarized results.

Table 2: EFA Statistics

Construct	OA	KMO	BT	AVE	IR	BI	ITIF	ERPA	OA
Business Intelligence use	13	0.88	842.53	0.73	13	0.85			
IT Infrastructure flexibility	14	0.77	567.16	0.80	14	0.64	0.90		
ERP Assimilation	9	0.69	85.27	0.52	5	0.44	0.79	0.73	
Organizational Agility	8	0.81	277.89	0.72	8	0.80	0.87	0.81	0.66

Note: OA = Original Items, KMO = Kaiser-Meyer-Olkin Measure of Sampling Adequacy, BT = Bartlett's Test of Sphericity, TVE= Total Variance Explained, IR = Items Retained

Correlation Analysis and Discriminant Validity

Table 2 shows that the correlation of IT infrastructure flexibility with organizational agility is the strongest (R=0.87), and the weakest is for business intelligence use and organizational agility (R=0.44). Table 2 also shows the results related to discriminant validity. The results show that the square root of variance explained is greater than the Pearson correlation values, confirming that the constructs are unique and distinct (Fornell & Larcker, 1981).

Validation of Second Order Constructs

In the developed model, organizational agility and IT infrastructure were second-order constructs. Smart PLS was used to validate these second-order constructs by executing the consistent PLS algorithm, a covariance-based SEM approach. We used

a repeated indicator approach to ascertain that the items' outer loading is 0.5 and the t-statistics values are significant (Duarte & Amaro, 2018; Garson, 2016; Hair et al., 2011). After meeting the required condition, we tested the structural model (Cronbach & Meehl, 1995).
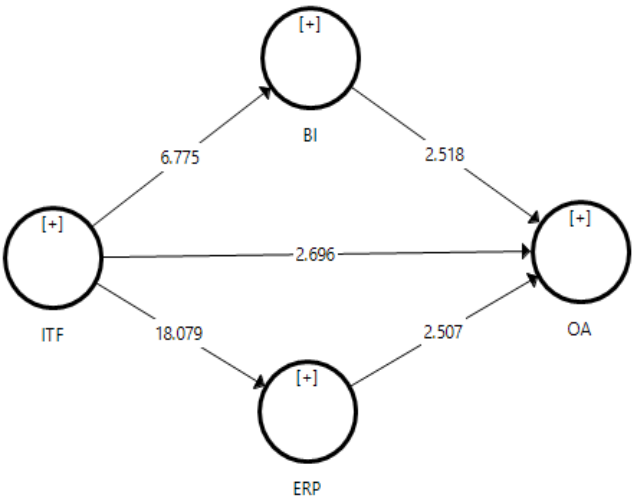
Figure 2: Structural Model

PLS-SEM Results

Tested the structural model using Smart PLS. Latent variables business intelligence use (BI), IT Infrastructure flexibility, ERP assimilation, and organizational agility were used in the model to test the hypotheses. We checked the model's significance and the mediating effect of the variables, using the Bootstrapping test with 2000 subsamples. Table 3 depicts a summary of the results.

Table 3: PLS-SEM Results

	B	T	Sig
Direct Effects			
H1: IT Infrastructure Flexibility ⟶ Organizational Agility	0.47	2.65	0.01
H2a: IT Infrastructure Flexibility ⟶ Business Intelligence Use	0.66	7.11	0.00
H2b: Business Intelligence Use ⟶ Organizational Agility	0.45	2.49	0.01
H3a: IT Infrastructure Flexibility ⟶ ERP Assimilation	0.86	19.15	0.00
H3b: ERP Assimilation ⟶ Organizational Agility	0.69	2.49	0.01
Indirect Effects			
H2: IT Infrastructure Flexibility ⟶ Business Intelligence Use ⟶ Organizational Agility	0.29	2.28	0.02
H3: IT Infrastructure Flexibility ⟶ ERP Assimilation ⟶ Organizational Agility	0.59	2.37	0.02

The results indicate that all three variables, i.e., business intelligence use ($\beta=0.45$, $p<.05$), IT infrastructure flexibility ($\beta=0.47$, $p<.05$), and ERP assimilation ($\beta=0.69$, $p<.05$), significantly affect organizational agility. Moreover, it is also evident from the results that Business intelligence use ($\beta=0.29$, $p<.05$) and ERP assimilation ($\beta=0.59$, $p<.05$) play a significant mediating role between IT infrastructure flexibility and organizational agility.

Discussion and Conclusion

The developed model has seven hypotheses, and our results support all the hypotheses. The results are also consistent with earlier studies. We have discussed all seven hypotheses and their relevance with earlier studies in the following sections.

The first hypothesis assesses the effect of IT infrastructure flexibility on organizational agility. Our results support this hypothesis, and it is consistent with the previous literature. Extant literature has discussed IT infrastructure flexibility ignoring its impact on organizational agility (Sambamurthy et al., 2003; Tiwana & Konsynski, 2010). This study fills this gap in the literature.

The results indicate that an organization's success and its agility depend on IT infrastructure flexibility. The cost of IT infrastructure flexibility is comparatively higher, so organizations are reluctant to invest in this sector. However, this investment has long-term benefits. When an organization can step ahead for ERP or BI, these factors will play a key role in meeting its requirement (Kumar & Hillegersberg, 2000). The flexibility of IT infrastructure will help the organization provide the latest IT equipment/software/algorithms.

An organization can buy IT infrastructure, but it cannot buy IT culture. Organizations cultivate such a culture for streamlining the work processes and enhancing business values. IT infrastructure flexibility is not restricted to office equipment only. It helps the organization to maintain compatibility, modularity, connectivity and improves human resource skills. The IT personnel are the assets of an organization, as they are the ones who manage the IT infrastructure.

The study found that business intelligence mediates IT infrastructure flexibility and organizational agility. Our results also suggest that infrastructure flexibility promotes business intelligence use, and business intelligence use stimulates organizational agility. A substantial literature on business intelligence in various research areas is available (Arnott et al., 2017; Khurana & Goje, 2016; Pankaj et al., 2006). However, limited empirical evidence is available on BI use with organizational agility (Fink, Yogev & Even, 2017). This study contributes to the body of knowledge by providing empirical evidence on the

association of BI and organizational agility. Business intelligence is a critical component in any organization. Technically sound people should handle it. Otherwise, it may affect the organization's overall work processes.

Our result suggests that ERP assimilation mediates IT infrastructure flexibility and organizational agility. We also found that IT infrastructure affects ERP assimilation, and ERP assimilation stimulates organizational agility. Thus, organizations using an ERP software should focus on technology innovation to face the competitive challenges with the best practices. However, ERP assimilation is not an easy process due to the huge cost incurred in ERP development and installation. These issues are challenging for the management. For instance, organizations may face resistance from the employees to adapt to new technology. Simultaneously, they may require complete training for operating this kind of software, which is time-consuming and costly. Therefore, firms should focus on change management and directing resources on acquiring the technology. Organizations also need strong IT infrastructure flexibility to support ERP assimilation that positively affects organizational agility.

Conclusion

This research is one of the few empirical studies that has examined the association between BI use, IT infrastructure flexibility, and ERP assimilation and organizational agility. The study found that investment in IT infrastructure, ERP assimilation, and business intelligence is beneficial for a firm and its sustainability. BI is a new trend, and many organizations are adopting it without having prior evidence about its effect on organizational agility. This study fills this gap by providing empirical evidence on BI's association, IT infrastructure flexibility, and ERP assimilation. These factors will improve an organization's operational business processes and help managers in making timely decisions. Organizations spend time, money, and other resources to adopt the BI-process. Sometimes the entire organizational structure is changed in this process. Adopting the BI process will not immediately benefit the organization as it usually takes time. BI is becoming popular in the industry, but still considered an emerging technology. It is unlikely to be extensively adopted until the academic literature provides sufficient evidence of its benefits (Lahrmann et al., 2011).

Implications for Managers and Policymakers

This study validates the relationship between all the three constructs and guides managers to focus on the latest trends of using business intelligence and spending on IT infrastructure. The IT infrastructure flexibility has a significant positive effect on organizational agility. IT infrastructure flexibility is a costly process for maintaining compatibility, modularity, and connectivity. Small scale or even medium scale

organizations should be more focused and careful while investing in IT infrastructure flexibility, although the result shows that it positively affects organizational agility. Similarly, the result shows that business intelligence plays a significant mediating role between IT infrastructure flexibility and organizational agility. Managers should focus on BI to improve their decision-making efficiency (Fink, Yogev & Even, 2017).

All three components of BI, i.e., technology, human competence, and knowledge, should be considered while adopting BI. Adopting BI may not be a feasible option for all firms. Small-scale organizations at a start-up stage may not need the BI process. ERP systems and BI processes need the support of IT infrastructure flexibility. ERP is large-scale software, which requires huge costs, time, and resources. Usually, large-scale organizations use the ERP software with business intelligence. The result shows that ERP assimilation positively affects organizational agility. Therefore, managers should adopt ERP to improve efficiency, cost, and decision-making. Adopting ERP saves variable costs and is beneficial for the organization.

Limitations and Future Research

For this study, we have collected cross-sectional data. However, future studies may adopt a longitudinal research approach. Another limitation of this study is that all the respondents gave their opinions on the dependent and independent variables, due to which the results may suffer from common method bias. Although we followed all the protocols to avoid common method bias, future studies may collect data from different respondents. The model we have developed and tested is generic. Future studies may test this model in different domains to increase its generalizability in other contexts.

Constructs and Items used in the questionnaire

Business Intelligence

My organization uses business intelligence systems to extract values of key performance indicators (KPI).

My organization uses business intelligence systems to get operational reporting.

My organization uses business intelligence systems to get tactical reporting.

My organization uses business intelligence systems to get strategic reporting.

My organization uses features of business intelligence systems to compare and contrast different aspects of the data.

My organization uses features of business intelligence systems to test different assumptions against data.

My organization uses features of business intelligence systems to derive insightful conclusions from data.

My organization uses features of business intelligence systems to get regular, standardized reports on key performance indicators.

My organization uses features of business intelligence systems to drill down into data to understand the root causes of exceptions.

My organization uses features of business intelligence systems for on-the-fly analysis of current and past data.

My organization uses features of business intelligence systems for querying

My organization uses features of business intelligence systems for statistical analysis.

My organization uses features of business intelligence systems to share insights based on data within the organization.

IT Infrastructure Flexibility

Connectivity

My organization has a high degree of information systems inter-connectivity.

Information systems in my organization are sufficiently flexible to incorporate electronic connections to external parties

Remote users can seamlessly access centralized data in our information systems. Data is captured and made available to everyone in my organization in real time using information systems.

Hardware Compatibility

Software applications can be easily transported and used across multiple information systems platforms in my organization.

Our information systems user interfaces provide transparent access to all platforms and applications.

My organization offers multiple information systems interfaces or entry points (e.g., web access) to external users.

My organization makes extensive use of information systems middleware (systems that help connect heterogeneous information systems platforms) to integrate key enterprise applications.

Modularity

Our information technology components are highly interoperable in my organization.

The inter-dependencies of software/hardware components are well-understood in my organization.

Software/hardware components are loosely coupled in my organization.

Information technology standards are well established at the enterprise-wide level in my organization.

Information technology polices are well established and implemented at the enterprise-wide level in my organization.

Information technology architecture is well established at the enterprise-wide level in my organization.

Compliance guidelines for information technology applications are well established at the enterprise-wide level in my organization.

Compliance guidelines for information technology infrastructure are well established at the enterprise-wide level in my organization.

Functionality can be quickly added to critical applications based on end-user requests.

My organization can easily handle variations in data formats and standards.

Organizational Agility

Customer Agility

My organization can easily and quickly respond to changes in aggregate consumer demand.

My organization can easily and quickly customize a product or service to suit an individual customer.

My organization can easily and quickly react to new products or services launched by competitors.

Operation Agility

My organization can easily and quickly introduce new pricing schedules in response to changes in competitors' prices.

My organization can easily and quickly expand into new markets.

My organization can easily and quickly change (i.e., expand or reduce) the variety of products/services available for sale.

Partner Agility

My organization can easily and quickly adopt new technologies to produce better, faster and cheaper products and services.

My organization can easily and quickly switch suppliers to take advantage of lower costs, better quality or improved delivery times.

ERP Assimilation

We expect the ERP system will provide future opportunities for improving the way we do business.

We see the ERP system as providing additional opportunities for improving the unit's effectiveness.

We see the ERP system not just as a replacement for our old systems but also as a new platform that can provide valuable new capabilities.

We actively look for new ways of using the ERP system to improve our effectiveness.

We encourage our people to further explore and learn the ERP system so that new ways of utilizing it can be found.

We devote resources to exploring the ERP system to find new ways to leverage its power.

We continue to find new ways of taking advantage of the ERP system to improve the way we do business.

We are still discovering new ways of using the ERP system to get business benefits.

The ERP continues to gives us new opportunities to improve our effectiveness.

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Revisiting the Environmental Kuznets Curve Hypothesis in Pakistan

Muhammad Zaheer Khan[1]
Department of Economics, Balochistan University of Information Technology, Engineering and Management Science (BUITEMS), Quetta, Pakistan

Abstract

Several studies have already determined an inverted U-shaped Environment Kuznets Curve (EKC) in Pakistan. The existing literature has not considered structural breaks (SBs) in EKC-related studies in Pakistan. This study aims to understand whether SBs explain the EKC hypothesis in Pakistan from 1980-2016. The variables used include total energy consumption (TEC), real GDP per capita, foreign direct investment (FDI), and trade openness (TO). The current study has used conventional time series econometric methods to analyze the issue. A structural break (SB) can significantly impact the forecasting performance of a model. Therefore, we have used the Zivot-Andrews unit root test (ZAURT) with one structural break (SB) and the Gregory-Hansen cointegration test approach for empirical analysis. The Gregory-Hansen cointegration test also suggests that the long-run equilibrium relationship is affected by structural breaks (SBs). Historical data suggests that Pakistan has gone through some structural changes during the period 2000-2004, which includes implementing the structural adjustment program of IMF and liberalization of trade and investment policies to attract foreign investors. The 9/11 tragedy also played an important role as Pakistan remained on the front lines in the war against terrorism. Thus, the study concludes that structural breaks (SBs) have important implications for the EKC hypothesis in Pakistan.

Keywords: *Foreign direct investment, trade openness, environmental degradation, economic growth.*

Introduction

Foreign direct investment (FDI) is essential for capital inflows and economic development. FDI is equally important for both under-developed and developed countries (Solarin & Al-Mulali, 2018). Developing countries generally have a shortage of capital; therefore, their development process depends on capital inflows. On the

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[1]Corresponding Author: Muhammad Zaheer Khan; Email: zaheer.onnet@gmail.com

other hand, developed countries expect a high return on their capital. FDI increases employment, productivity, exports, and technology transfer in a country (Zafar, Zaidi, Khan, Mirza, Hou & Kirmani, 2019; Buckley et al., 2018). The major advantages of FDI for the economy are that it increases domestic raw material use, brings the latest technology, and reduces the current account deficit (Paul & Feliciano-Cestero, 2021). FDI inflows also increase the quality and quantity of human capital (HC) by providing on-the-job training. Although FDI positively affects an economy's growth prospects (EGP), it also adversely affects a country's environmental quality (EQ) (Sapkota & Bastola, 2017; Alvarado, Iñiguez & Ponce, 2017), especially when a country lacks necessary regulations to protect the environment (Hundie & Daksa, 2019; Fan & Hao, 2020). Although many developing countries do not enforce environmental regulations as they are more interested in attracting FDI. Many researchers call it the "pollution haven hypothesis (PHH)." (Xing & Kolstad, 2002).

The existing literature suggests that developed countries have strict rules and regulations about environmental decay (ED) (Gerhardter, Prieler, Mayr, Landfahrer, Mühlböck, Tomazic & Hochenauer, 2018). Therefore, they move their industrial operations to "less developed countries (LDC) with less strict environmental regulations (ER)," leading to a phenomenon of industrial flight (Hundie & Daksa, 2019; Sjöman, Autiosalo, Juhanko, Kuosmanen & Steinert, 2018). Unlike the common belief that FDI also contributes to pollution, several researchers believe that foreign companies do not contribute towards environmental decay (ED). Developed countries (DC) use advanced technology and have better management, which causes foreign manufacturing companies to generate less pollution than local firms (Cetin, Ecevit & Yucel, 2018; Jeon, Ali & Lee, 2019). Past literature suggests that a firm's location is influenced by environmental considerations and project viability (Cheng, Hong & Yang, 2018). Likewise, there are inconsistent results related to the industrial flight hypothesis (IFH) (Blackman & Wu, 1998; Salehnia, Alavijeh & Salehnia, 2020).

Pakistan's economic reforms (ER) and trade liberalization policies (TLP) have contributed to increased FDI inflows, economic growth (EG), and environmental decay (ED) (Ahmad, Ahmed & Atiq, 2018). For instance, FDI in the period 1986-1990 was USD175m, which increased to USD440m in the period 2000 to 2005 (Malik & Malik, 2013). FDI reached its all-time high of USD1.3 billion in June 2008, which significantly decreased by June 2018. The average GDP growth per year also increased from 5.71% to 7.38% during 2000-2005 (Mehmood & Hassan, 2015). However, the GDP growth also declined to 5.8 % in the year 2018. Economic growth also contributed to environmental decay (Shahzad, Mithani, Al-Swidi & Fadzil, 2012). For example, average annual CO_2 emissions in 1998 were 58097.11 kt, which increased to 136,635 kt by 2005. Despite the

decline in FDI and fluctuations in GDP growth, CO2 emissions reached approximately 166,300 kt by 2014-2015 (Sengupta & Puri, 2020). Many researchers think that an increase in economic development (ED) deteriorates the environmental condition (EC) of a country (Siping, et al., 2019; Aung, Saboori & Rasoulinezhad, 2017). Past studies also suggest that economic development (ED) initially promotes environment decay (ED). It reaches the highest possible level in the next few years, and subsequently, it declines as the economy develops further (Selden & Song, 1994; Grossman & Krueger, 1991; Rothman & de Bruyn, 1998).

The study aims to revalidate the EKC hypothesis for Pakistan. The EKC suggests that economic growth (EG) and development initially contribute towards environmental decay (ED), but in the long run, it reduces environmental decay (ED) (Rothman & de Bruyn, 1998). Past literature suggests that energy consumption (EC) in a country and environment quality (EQ) are highly associated. Therefore, this study has taken "Co2 emission and energy consumption (EC) in the model" (Ali, Ashraf, Bashir & Cui, 2017). Many studies have examined EKC in Pakistan, but they have not investigated the significance of structural breaks (SBs) for Pakistan's environment-growth nexus (EGN) (Zhang, Wang & Wang, 2017; Gokmenoglu & Taspinar, 2018). The current research contributes to the existing literature on the EKC hypothesis as we have incorporated one endogenous structural break (SB) in the model for the period 1980-2016. We have also included "FDI and trade openness (TO)" in the model to determine their relevance with Pakistan's environmental degradation (ED).

Literature Review

Researchers argue that when a host country receives more investment, its environmental protection policies and implementation become strict (Perman & Stern, 2003). Many studies in developing countries have documented that sulfur emissions (SE) and economic growth (EG) are highly associated. (Kim & Baek, 2011; Abdo, Li, Zhang, Lu & Rasheed, 2020). Similarly, Liddle & Messinis (2018) also validated the same results. Stern (2004) found "empirical evidence in support of the EKC." Boyd & Smith (1992) also found an association between "environmental degradation (ED) and economic growth (EG)." Demena & Afesorgbor (2020) also found that environmental degradation (ED) declines "after a certain level of economic growth (EG)." A similar study using a data set of countries belonging to different income groups found a negative but insignificant growth-environment nexus in high-income countries (Porter & Van-der-Linde, 1995). Other studies also found support for the EKC in high-income countries (Ulucak & Bilgili, 2018). Dogan & Inglesi-Lotz (2020) found evidence of EKC in "middle and low-income countries." At the same time, Choi & Han (2018) also found that it promotes environmental degradation as the income level increases. Similarly, Chen, Fan & Guo

(2020) suggest that a country's economic prosperity promotes environmental decay and pollution. However, this relationship is not linear. It varies from developed countries (DC) to developing countries (Norbutas & Corten, 2018).

Boyd & Smith (1992) suggest that FDI is not effective in countries with liberalization and deregulation policies. The literature also suggests that growth and development in a country promote environmental degradation and adversely affect human well-being (Kim & Baek, 2011). Similary, Nováková, Šujanová & Nováková (2019) suggest that the "association between economic prosperity (EP) and environmental decay (ED) do not increase at the same rate." It depends on the GDP of a country. For example, countries whose GDP is low may adversely suffer due to economic growth. However, countries with a higher GDP contribute less to environmental degradation (Grossman & Kureger 1995; Ghebrihiwet & Motchenkova, 2017). At the same time, FDI helps in technology transfer to the host country, contributing to its overall growth (Romer, 1993). Alfaro, et. al., (2004) and Šušteršič & Kejžar (2020) found that FDI does not linearly affect all sectors of an economy. It significantly promotes the manufacturing sector and has an insignificant effect on the service sector (Herlitah, Fawaiq & Herlindah, 2020). Similarly, Herzer & Klasen (2008) based on the data set of twenty-eight developing countries, also found similar results. A few researchers investigating the growth-environment nexus found that a country at the initial rapid growth phase promotes environmental decay (Pandey, Dogan & Taskin, 2020). However, the environmental conditions improve after growth, and per capita income reached a certain level (Liddle & Messinis, 2018; Grimes & Kentor, 2003). Many researchers have also found that foreign investors prefer investing in economies with moderate environmental protection policies (Copeland & Taylor, 2005; Kurniawan, Sugiawan & Managi, 2021) or where the governments don't focus on environmental quality to attract foreign investment (Wei & Smarzynska, 1999).

Beak & Koo (2011) examined the EKC hypothesis in India and China. The study found that in India, FDI contribution towards energy emission is insignificant in the short run and significant in the long run. Comparatively, in China, "FDI has significantly increased energy consumption (EC), economic growth (EG), and CO_2 emissions" (Salim, Yao, Chen & Zhang, 2017). Kim & Beak (2011), using an ARDL bounds approach, found that in advanced countries, economic growth (EG) increases energy emission (EE). Similarly, other studies also concluded that energy demand promotes energy emission while FDI insignificantly affects environmental decay (Khan, Hussain, Bano & Chenggang, 2020; Rafindadi, Muye & Kaita, 2018).

Liddle & Messinis (2018) argue that FDI contributes towards industries with extensive energy requirements resulting in increased CO_2 emission levels. Ahmed & Long (2012)

also found that the association between FDI and CO2 "emission level depends on the countries' income levels." FDI contribution towards CO2 emission is high in middle-income countries and insignificant in high-income countries (Muhammad & Khan, 2019; Pazienza, 2019). Based on empirical evidence, Ugur & Gultekin (2018) concluded that FDI in a country promotes CO2-related pollution, although its intensity may be on the lower side.

Pao & Tsai (2011) also found support for the EKC hypothesis in BRIC countries. The study also found that FDI inflow causes environmental degradation (ED). On the contrary, many researchers believe that the conventional econometric methods lack the power to validate the EKC hypothesis (Pata, 2019; Stern, 2004; Herzer & Klasen, 2008; Xing & Kolstad, 2002). Given this constraint, researchers have focused "on structural breaks (SBs) while validating the EKC hypothesis." Tiwari (2012) examined the association between GDP, energy consumption (EC), and pollution in India. The study used the static and dynamic frameworks and found the "structural breaks (SBs) in the model."

At the same time, Jaunky (2011) did not find support for the "EKC hypothesis in the presence of structural breaks (SBs). The results were based on the panel data of 36 countries. Mahmood & Chaudhary (2012) based on the Zivot-Andrews test (Zivot & Andrews, (2002) found "structural breaks (SBs)" in the model. The study also found that "FDI, CO2, and population density (PD) are associated in the long-term only. In the short term, these variables have no association. Yousaf et al. (2016), in a study of Pakistan over the period 1972-2013, found that foreign loans and aid promote CO2 emissions. Ahmed & Long (2010) examined the validity of the EKC hypothesis in Pakistan over 1971-2008 by using the ARDL approach. The study found "evidence of both long run and short run EKC in Pakistan."

Ur-Rehman et al. (2019) used the nonlinear ARDL method to confirm the population haven hypothesis in Pakistan. The study also found evidence for the EKC hypothesis with the nonlinear specification in Pakistan. Cetin et al. (2018), based on data from 1960-2014, found the "presence of EKC with one structural break (SB)." Pata (2019) adopted the "bootstrapped autoregressive distributed lag (ARDL) model to validate the EKC hypothesis and the presence of structural breaks (SBs)" in Turkey from 1969-2017. The results suggest a long-term association between "trade openness (TO), per capita income, per capita real income, and CO2 emissions, and the presence of one structural break." Salahuddin et al. (2019), in a study in South Africa, used the Zivot-Andrews unit root test and found a strong association between "CO2 emissions, globalization, and urbanization."

Ugur & Gultekin (2018) reinvestigated the association between "environmental degradation (ED) and economic growth (EG) in Turkey for the period 1960-2011. The study used the Zivot-Andrews unit root test (ZAURT) and Gregory-Hansen cointegration (GHC) method. The study also found evidence of the EKC hypothesis in Turkey with one structural break in 1992. Alvarado & Toledo (2017), based on empirical evidence, concluded that it is possible to reduce environmental degradation, which is also a sign of developed economies. Hundie & Daksa (2019) found that there exists an "inverted U-Shaped Curve for Environment-growth nexus." Felix-Fofana (2018) suggests that the industrialization and environment quality relationship is nonlinear. At the initial stage of industrialization, a country's environmental quality is adversely affected. But at the later stage of industrialization, environmental decay decreases. Thus, countries need to align development, growth, and energy consumption (Ozcan, Tzeremes & Tzeremes, 2020).

Perman & Stern (2003) analyzed the EKC hypothesis for 23 OECD countries using carbon emission data and GDP per capita. The study used a model that incorporated multiple endogenous structural breaks (SBs). The study found support for the EKC hypothesis in only 4 out of 23 countries. For another 15 countries, the authors found insignificant effects of income on CO2 emissions due to positive but declining energy emission elasticity. The study concluded that the presence of the EKC hypothesis is country-specific and time-varying.

Methodology

This paper aims to analyze the EKC hypothesis in Pakistan. The data for the period 1980 to 2016 was obtained from secondary sources. The variables used in the model are inclusive of "FDI, real-GDP per capita, CO2 emission and trade openness (TO)." The validity of EKC hypothesis with structural breaks (SBs) was tested by extending the work of Mahmood & Chaudhary (2012) and Jalil & Feridun (2010). The model is as follows:

$$ENV = F\ (GDP, FDI, GDP^2, TOP, ECM)\ldots\ldots (1)$$

While the empirical equation takes the following form:

$$lnCO2 = \alpha + \beta_1\ lnGDP + \beta_2\ lnFDI + \beta_3\ lnGDP^2 + \beta_4\ lnTOP + \beta_5\ lnECM + \mu_i \ldots\ldots (2)$$

Where,
CO2 = Carbon Emissions
FDI = Foreign Direct Investment
TOP = Trade Openness
ECM = Primary Energy Consumption

GDP = Real GDP Per Capita
μ_i = Error Term

The EKC hypothesis suggests that economic growth (EG) increases energy consumption (EC) proportionally in the short run (SR). However, in the "long run (LR), economic growth (EG) increases energy consumption (EC) at a slower rate." Thus, we expect β_1 to have a positive sign. β_3, in the long run, may have a negative sign showing a declining trend of energy consumption (EC). Per capita, energy consumption (EC) may contribute towards pollution. Thus, the expected sign of β_5 will also be positive. We have also added two other important variables in the model, i.e., trade openness (TOP) and FDI. We expect that trade openness will negatively affect energy emission, and FDI will increase environmental degradation. FDI influences the production capacity, and higher production "increases energy consumption (EC) and carbon emissions." Before performing time series analysis (TSA), we checked the order of integration of the variables. Subsequently, we examined their long-term relationship.

Results and Discussion

The study aims to identify if structural breaks (SBs) significantly affect "FDI, CO2 emissions and Pakistan's economy (PE)" for the period 1980-2016. The study has ascertained the "order of integration based on unit-roots." We have used "both the conventional unit root tests, i.e., Augmented Dickey-Fuller and the Phillips-Perron unit root test." Table 1 "suggests that all the variables are non-stationary at level," suggesting that a unit root is present among all data series. However, all the 'variables become stationary when tested at the first difference."The results confirm that all individual data series were of order I(1). The Zivot-Andrews unit root test with one structural break also confirms the results of conventional unit root tests in Table 2.

Table 1: Conventional Unit Root Tests

	ADF				PP			
	Level		First Difference		Level		First Difference	
	τ_μ	τ_τ	τ_μ	τ_τ	$Z(t_{b1}*)$	$Z(t_b)$	$Z(t_{b1}*)$	$Z(t_b)$
GDP	0.82	-3.17*	-1.21	-5.59*	-1.75	-5.40	-1.28	-5.66*
TOP	-1.76	-4.89*	-1.812	-4.90*	-2.03	-4.89*	-2.03	-4.90*
GDP2	-1.2	-3.58*	0.83	4.32*	0.82	-3.58*	-1.2	-5.37*
FDI	2.3	-5.67*	0.78	5.32*	-1.24	4.56*	1.23	3.76*
CO2	1.51	-7.95*	-1.78	6.88*	0.98	2.12	5.67*	-5.56*
ECM	0.89	3.56*	0.24	3.21*	-2.32	5.67*	-1.34	4.76*

Table 2: Zivot-Andrews Unit Root Test

	H_0: The Series has a Unit Root With Structural Break					
	H_1: The Series is Stationery With Structural Break					
Variable	Break-in intercept	Breakpoint	Break-in trend	Breakpoint	Break-in both	Breakpoint
CO2	-0.98	2004	-5.19	2003	-4.58	2002
FDI	-4.98	2006	-6.37	2005	-6.65	2004
GDPGR	-5.41	2001	-4.31	1996	-5.80	2002
GDPGR2	-4.76	2002	-3.94	2005	-6.60	2003
TOP	-4.28	1998	-3.01	1991	-4.19	1998
EC	-2.85	1990	-2.72	1992	-2.34	2003
	Critical values		Critical values		Critical values	
	1	-5.34	1%	-4.80	1%	-5.57
	5%	-4.93	5%	-4.42	5%	-5.08
	10	-4.58	10	-4.11	10	-4.82

After determining the "non-stationary variables and the order of integration, we determined the long-run equilibrium relationship in the model using the Johansen cointegration test." The optimal lag length was determined using the Akaike Information Criteria (AIC). The Johansen cointegration test results in Table 3 "confirms the presence of a long-run association between the variables in the model" as the trace statistics show that 4 co-integrating equations and Eigenvalue statistics indicate 3 co-integrating equations, thus confirms the presence of cointegration in the model. Table 4 showed a "positive relationship between FDI and GDP with CO2 emission." GDP^2 was found to have a negative sign as expected. Interestingly TOP "also seems to have a positive relationship with CO2 emissions," which indicates that trade openness also hampers the environmental condition in Pakistan.

To confirm the conventional cointegration test results and "determine the possible significance of structural breaks (SBs) in the model, we used the Gregory-Hansen cointegration test. In the model, we also incorporated one endogenous structural break (SB). The Gregory-Hansen cointegration test in Table 5 further confirms the co-integrating relationship "in the model in the presence of one structural break" at the 1% level of significance. The coefficient of GDP^2 reported in Table 4 shows an expected negative sign thus, "confirming the presence of EKC in Pakistan." The study found support for the long-term relationship in the model both with and without a structural break. Subsequently, the study determined the error-correction terms in the model. The error correction model results in Table 6 show the error correction term for energy consumption (EC), CO2 emission, and GDP^2. However, our results suggest that FDI, GDP,

and TOP have no short-run impact on the model. The study "also found a positive sign for GDP and a negative sign" for GDP^2 in the error correction model.

Table 3: Johansen Cointegration Test Results

No. of CE(s)	Trace Stat	No. of CE(s)	Max-Eigen Stat	
None *	232.35 (107.34)	None *	81.67	(43.41)
At most 1 *	150.67 (79.34)	At most 1 *	64.61	(37.16)
At most 2 *	86.06 (55.24)	At most 2 *	37.39	(30.81)
At most 3 *	48.67 (35.01)	At most 3	34.67	(48.25)
At most 4	14.03 (18.39)	At most 4	13.95	(17.14)
At most 5	0.04 (3.84)	At most 5	0.04	(3.84)

Table 4: Normalized Cointegrating Coefficients

LNCO2	LNGDP	LNFDI	LNECM	LNGDP2	LNTOP
1.000000	-11.24	-7.26	-34.29	31.01	23.81
	(12.16)	(0.498)	(76.67)	(62.69)	(10.62)

Table 5: Gregory-Hansen Cointegration Test Results (with One Structural Break)

Tests	Level Shift with Constant	Level Shift with Trend	Regime Shift
ADF	-6.41 (2002)	-5.99(2002)	-7.23(2002)
Zivot-Andrews	-1.12 (2002)	-34.28 (2002)	-34.29 (2002)
Zivot-Andrews	-1.03(2002)	-4.66(2002)	-4.99 (2002)

We used the Wald test of causality within the error correction framework to conclude the "direction of the causal relationship between the variables." The results of Granger causality in Table 7 indicate that unidirectional causality exists "between FDI and CO2 emissions, and the direction of causality runs from FDI to CO2 emissions." A "bidirectional causal relationship exists between GDP growth and CO2 emissions." The results also "show a bidirectional causal relationship between energy consumption (EC) and CO2 emission." The results suggest that as the "foreign direct investment inflow increases in

the economy, environmental degradation also increases."

Table 6: Error Correction Model

Error Correction:	D(LNCO2)	D(LNGDP)	D(LNECM)	D(LNFDI)	D(LNGDP2)	D(LNTOP)
CointEq1	-0.04	0.03	- 0.07	0.05	-0.01	0.06
	(0.08)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)
	[-1.44825]	[1.76227]	[- 3.13150]	[5.29072]	[-3.99336]	[1.97109]
D(LNCO2(-1))	0.19	-0.00	0.00	-0.09	-0.00	-0.00
	(0.26)	(0.00)	(0.00)	(0.03)	(0.00)	(0.00)
	[0.72239]	[-0.07717]	[1.22256]	[-3.32814]	[-4.01348]	[-1.01530]
D(LNGDP(-1))	700.24	2.30	-0.14	-1403.91	0.37	-3.64
	(2316.25)	(1.51)	(0.04)	(249.34)	(0.40)	(1.64)
	[0.30232]	[1.52117]	[-3.40227]	[-5.63044]	[0.91849]	[-2.21841]
D(LNECM(-1))	12129.23	-9.51	0.36	3311.47	2.09	2.83
	(18170.53)	(11.88)	(0.32)	(1956.05)	(3.16)	(12.87)
	[0.66752]	[-0.80033]	[1.10598]	[1.69294]	[0.66036]	[0.21995]
D(LNFDI(-1))	-1.45	-0.00	0.00	1.33	0.00	0.00
	(2.10)	(0.00)	(0.00)	(0.23)	(0.00)	(0.00)
	[-0.69146]	[-1.16849]	[1.14313]	[5.89390]	[4.70477]	[1.31415]
D(LNGDP2(-1))	215.97	-0.16	-0.00	3.33	-0.01	-0.22
	(167.22)	(0.11)	(0.00)	(18.00)	(0.03)	(0.12)
	[1.29151]	[-1.47937]	[-0.67401]	[0.18479]	[-0.41875]	[-1.82193]
D(LNTOP(-1))	700.57	-0.10	-0.01	1.87	-0.14	-0.42
	(375.47)	(0.25)	(0.01)	(40.42)	(0.07)	(0.27)
	[1.86584]	[-0.39434]	[-0.95565]	[0.04627]	[-2.09157]	[-1.58067]
C	3753.71	0.99	0.01	61.93	0.21	0.19
	(1548.57)	(1.01)	(0.03)	(166.70)	(0.27)	(1.10)
	[2.42398]	[0.98128]	[0.34303]	[0.37148]	[0.77771]	[0.17003]

The results also indicate bidirectional causality between TOP and CO2 emissions, suggesting an increase in trade volume due to trade openness would increase air pollution. The increased production will also affect the environment. FDI and GDP also have a bidirectional causal relationship. The results also indicate bidirectional causality between TOP and FDI, suggesting trade liberalization and FDI are interrelated and

essential for each other.

Table 7: Causality Test Results Based On Error Correction Model

Dependent	Independent					
	LNCO2	**LNFDI**	**LNECM**	**LNGDP**	**LNTOP**	**LNGDP²**
LNCO2	--	2.57*	1.96*	3.10*	2.86*	1.66*
LNFDI	0.45*	--	0.34	2.15*	1.02*	0.45
LNECM	3.24*	2.63*	--	0.27	2.27*	0.23
LNGDP	1.13*	1.57*	0.66	--	0.33	2.35*
LNTOP	5.32*	2.86*	3.21*	4.34*	--	0.98
LNGDP2	4.45*	3.00	2.56*	0.00	4.67*	--

Conclusion

The study determines the presence of the EKC hypothesis in Pakistan for the period 1980-2016. The study documents some important findings. The results support the EKC hypothesis in Pakistan. The coefficients of trade openness and FDI also have important policy implications as it is evident that FDI and trade openness positively affect CO2 emissions in Pakistan. Many researchers believe that Pakistan has not properly implemented environment protection policies in manufacturing sectors such as textile and chemicals. The Gregory-Hansen cointegration test also suggests that the long-run equilibrium relationship is affected by structural breaks (SBs). Historical data suggests that Pakistan has gone through some structural changes during the period 2000-2004, which includes implementing the structural adjustment program of IMF and liberalization of trade and investment policies to attract foreign investors. The 9/11 tragedy also played an important role as Pakistan remained on the front lines in the war against terrorism. Thus, the study concludes that structural breaks (SBs) have important implications for the EKC hypothesis in Pakistan.

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The Equity Risk Premium Puzzle in Pakistan

Ali Sajid[1]
Karachi Institute of Economics and Technology, Pakistan

Mohammad Arsalan
Faculty of Business and Law, University of Newcastle, Australia

Muhammad Tahir Khan
Department of Economics & Business Administration, University of Education, Lahore, Pakistan

Muhammad Sufyan Ramish
Institute of Business Management, Karachi, Pakistan

Abstract

Our study uses the consumption-based asset-pricing power utility model to test the Equity Risk Premium (ERP) puzzle in Pakistan. The study has collected monthly stock price data from July 1997 to December 2017 from the PSX data portal. We extracted information about macroeconomic factors such as inflation and risk-free interest rate from the State Bank of Pakistan. Moreover, the study used private consumption and population data from the Pakistan Bureau of Statistics. The results suggest that the ERP puzzle has a strong occurrence in Pakistan, a phenomenon previously associated with only developed markets. One disadvantage of the present investigation is the small sample size. A longer time duration could have reduced short-term biases. Past researchers have suggested different approaches for solving the equity premium puzzle. For instance, some studies used improvised structural models to justify the equity risk premium puzzle using macroeconomic factors.

Keywords: *Equity risk premium, inflation, risk-free interest rate, abnormal stock returns.*

Introduction

The Capital Asset Pricing Model (CAPM) gives insight into the trade-off between risk and return. The theory assumes that a higher systematic risk gives investors a higher return (Hollstein, Prokopczuk, & Wese-Simen, 2020). Mehra & Prescott (1985) examined the stock returns trend for 110 years in the US equity market. The study found that the average annual return in the US equity market over 110 years was 8.06%, while the average annual returns, over a similar period, on short-term risk-free debt securities,

[1]Corresponding Author: Ali Sajid; Email: ali.sajid@kiet.edu.pk

was just 1.14%. The study also found a discrepancy of 6.92% between equity returns and risk-free debt returns, which it called the equity premium. Mehra & Prescott (1985) developed an ERP puzzle to explain the disparity of returns between shares and short-term debts. Mehra & Prescott (1985) indicate that the return on shares is significantly higher as equity instruments are riskier than short-term debts.

Risk aversion is also a factor that explains the disparity between equity market returns and risk-free debt returns (Conine, McDonald & Tamarkin, 2017). Risk aversion postulates that investors tend to avoid risk. Therefore, they invest where both returns and risk are low (Camba-Méndez & Mongelli, 2021). Risk-averse investors avoid ventures with high returns and high risk (O'Donoghue & Somerville, 2018). However, if the magnitude of equity return is very high, the investor may disregard the risk aversion tendency and invest in riskier ventures (Robiyanto, 2017; Yoon, 2017).

After Mehra & Prescott (1985) paper on the ERP puzzle, many researchers presented their opinions on how to solve the ERP puzzle, including myopic loss aversion (Thaler & Benartzi, 1995), habit formation of investors (Campbell & Cochrane, 1999; Campbell, 1999) market segmentation theory (Mankiw & Zeldes, 1991), survival bias (Brown & Goetzmann, 1995), and disappointment aversion (Ang, Bekaert & Liu, 2005). Although there is substantial literature on the equity premium puzzle, only a few papers have examined it in emerging economies, but not in Pakistan (Shirvani, Stoyanov, Fabozzi & Rachev, 2020; Kim, 2021; DaSilva, Farka & Giannikos, 2019). Individual investors in emerging markets do not have the same expertise as developed economies (Claus & Thomas, 2001; Bonizzi, 2017). Additionally, stock markets are less developed or non-existent in several emerging economies (Fernald & Rogers, 2002). Many investors in emerging markets do not consider equity instruments a sensible investment but a type of gambling (Haroon & Rizvi, 2020; Indārs, Savin & Lublóy, 2019). One of the main reasons for this is that most investors in emerging stock markets make investment decisions on speculation rather than fundamentals (Hadhri & Ftiti, 2019; He, He & Wen, 2019). Thus, our research uses macroeconomic variables to investigate the ERP puzzle in the Pakistan Stock Exchange.

Pakistan Stock Market

The Pakistan stock market faces extreme volatility due to political instability and unfavorable macroeconomic performance (Arby, 2004). The Karachi Stock Exchange (now called the Pakistan Stock Exchange – PSX) was established on September 18, 1948. It is now considered an emerging stock market of the world (Ayub, 2002). Despite having two other stock markets in Lahore and Islamabad, which started in 1970 and 1992, KSE remained the center of financial activity until 2016. In 2016 all the three markets were

integrated via Stock Exchanges Corporatization, Demutualization, and Integration Act (2012) to form PSX (Honey, Tashfeen, Farid & Sadiq, 2019). With the liberalization of the financial sector during the 1990s, foreign investors were allowed to make portfolio investments in PSX, which significantly increased market capitalization and performance. PSX has been ranked third in the emerging equity market of the world ranking. The SECP during the 2000s introduced and implemented various regulations and policies that gave stability to the market and increased investor confidence. However, due to political uncertainty, the PSX in 2017 suffered adversely, and the benchmark KSE-100 index dropped 1900 points. (Honey, Tashfeen, Farid & Sadiq, 2019). PSX, since its inception, has transformed itself into a dynamic and highly volatile market.

Consumption-Based Asset-Pricing Power Utility Model

Our study uses the consumption-based asset-pricing power utility model to test the ERP puzzle in the Pakistani stock market. The model postulates that assets with high return-consumption covariance tend to deliver low return when consumption is low, i.e., when the marginal utility of consumption is high and vice versa (Liang, Yang, Zhang & Cai, 2017). Such assets are considered risky, and investors require a large risk premium to invest or hold such assets.

Every market in the world is affected by economic cycles (Mian & Sufi, 2018). These economic cycles affect the return structure of various assets and affect investors' attitudes towards these assets (Bräuning & Ivashina, 2020). In a recession, consumption is low, and investors expect a high return on their investment (Ballard-Rosa, Mosley & Wellhausen, 2021). Thus, assets that offer low returns in a recession are not attractive for investors (Menounos, Alexiou & Vogiazas, 2019). On the other hand, an asset performing poorly in a booming period is considered good as consumption is high and investor feels wealthy (James, Abu-Mostafa & Qiao, 2019). Thus, to invest in or hold previously mentioned assets, an investor requires a large risk premium to compensate for the assets' poor performance in recessionary periods (Caballero, Farhi & Gourinchas, 2017). According to the consumption-based asset-pricing power utility model, the equity risk premium is determined by the covariance of consumption growth with stock and debt returns and relative risk aversion coefficient (Caballer, Farhi & Gourinchas, 2017). A risk-averse investor prefers investing in bonds over stocks (Adrian, Crump & Vogt, 2019). However, if the return on stocks exceeds the bonds return substantially, it makes no sense for an investor to opt for low-return securities over highly rewarding bonds unless the risk aversion coefficient is very high (Umar, Shehzad & Samitas, 2019).

Scope of Research

Based on the equities listed on the PSX, this research paper aims to evaluate the

following for the period 1997-2017:

1. Real-returns to risk ratio comparison of stock and debt – to assess the equity premium in Pakistan Capital Markets.
2. Optimal holding horizons of equities in terms of risk-adjusted real returns (RARR), i.e. the investment horizon where the RARR peaks?
3. Coefficient of risk aversion that justifies the equity risk premium in Pakistan, i.e. to characterize investor behavior in Pakistan?

Literature Review

Mehra and Prescott (1985) first examined the ERP puzzle in US equity markets. They inferred that in the US stock market from 1889 to 1978, the real annual yield was seven percent while the normal yield on short-term debt was less than one percent. They also noted that a standard rational model could not explain the equity risk premium. From that point onward, justification of the ERP puzzle has been a cause of concern in the academic literature (Morawakage, Nimal & Kuruppuarachchi, 2019; Yao, Qin, Hu, Dong, Vega & Sosa, 2019).

ERP Puzzle and Traditional Economic Aspects

Constantinides (1990) suggests that habit persistence is crucial for solving the ERP puzzle. He demonstrated that the rational expectations model could help in solving the ERP puzzle under certain conditions. Constantinides (1990) also found that relaxed time sub-distinctiveness and consumption are highly correlated. He named it habit persistence. Based on the empirical results, Constantinides (1990) also found that investors expect a higher premium due to risk-aversion factors. Investors are sensitive to short-term consumption decisions. Therefore, they require a higher premium on their investments to accommodate the given level of risk aversion due to the positive subsistence rate of utilization and non-reparability of consumption (Haasnoot, van-Aalst, Rozenberg, Dominique, Matthews, Bouwer & Poff, 2019).

Campbell & Cochrane (1999) extended the work of Constantinides (1990) and developed the "Habit Formation Model." According to the model, utility capacity with both utilization development and a reasonable moving outside propensity is "independently and indistinguishably dispersed." Mankiw & Zeldes (1991) analyzed 17 years of data for one-fourth of US families to investigate consumption patterns amongst investors and non-investors. They found that the total consumption of investors significantly varies from non-investors. They concluded that the non-equity consumption of investors is not associated with excess returns. Investor's consumption

is random and associated with surplus returns. The difference between investors' and non-investors consumption patterns helped in explaining the equity risk premium. However, Brown, Goetzmann & Ross (1995) evaluated accessible information for survival bias. They concluded that historical data does not take into account discontinued stocks. Thus, due to survivorship bias, only high-performing stocks were considered. However, the impact of survival bias was inadequate to explain the equity premium puzzle.

ERP Puzzle and Behavioral Aspects

Thaler & Benartzi (1995) attempted to justify the ERP puzzle through myopic loss aversion. Myopic loss aversion combines loss aversion with regular assessments (Alessandri, Mammen & Eddleston, 2018; Kahneman & Tversky, 1979). Myopic loss aversion suggests that investors are highly sensitive to losses than gains; therefore, they demand higher premiums to compensate for high return volatility (Ebrahimi-Sarv-Olia, Salimi & Ghouchifard, 2020). To a great extent, investors' decision-making is affected by how regularly they check the performance of stocks (Guillemette, Blanchett & Finke, 2019). Thus, extant literature suggests that investors, who make frequent assessments, favor less risky investment options (Durand, Fung & Limkriangkrai, 2019; Atsala, 2017). Investors avoid making short-term losses at the expense of long-term gains. Odean (1998) and Chrisman & Patel (2012) referred to this phenomenon as myopic loss aversion. They concluded that investors are myopic loss averse. Thaler & Benartzi (1995) also examined the investment pattern of individual and institutional investors. They found that institutional investors are more myopic loss averse than individual investors.

Ang, Bekaert & Liu (2005) used Gul's (1991) work on the disappointment aversion framework and concluded that investors want to fulfill their desires. Therefore, investors do not invest in stocks despite having a considerable premium. Also, investors tend to switch to other investment opportunities that provide a higher possibility of satisfying their expectations and lower expected return in absolute terms (Lien & Wang, 2002; Gul, 1991). Olsen & Troughton (2000) found that investors and decision-makers are ambiguity averse. Therefore, they expect market returns should reflect both ambiguity and risk premium. The capital asset pricing model tends to underestimate required returns because it does not contain any provision for ambiguity (Hollstein, Prokopczuk & Wese-Simen, 2020; Phuoc, 2018). Moreover, assets whose return potentials are ambiguous and difficult to quantify fall in the understatement category (Kuehn, Simutin & Wang, 2017).

The presence of pricing ambiguity relates to two other risk-related phenomena. First, most firms give a heavy discount in their initial public offerings (IPOs). Second,

Poterba & Summers (1995) and Miller & Scholes (1978) noted that the returns on large, non-routine, capital-budgeting expenditures are high relative to capital costs based on existing financial models. They suggested that the excess required return may result from managers not evaluating projects in a portfolio context. Another possibility, however, is that the excess required return is a result of ambiguity associated with forecasting the future of large, non-routine capital projects.

Muscarella & Vetsuypens (1989) and Clarkson & Merkley (1994) also found that ex-ante uncertainty is positively related to the size of IPO discounts. Thus, a high degree of ambiguity and future performance of the new stocks are associated with a large discount. Olsen & Troughton (2000) justified the ERP puzzle using ambiguity aversion. They concluded that investors prefer investments in a high return uncertain stock market due to the unclear return structure of equity investment.

Empirical Research

Campbell (1999) explored the equity premium puzzle in 11 developed countries and concluded that the average real return on equity is around 5%, whereas short-term debt investments have only reported an average return of over 3%. The paper demonstrated that the relationship between equity returns and real consumption rate is variable in various nations. The ERP puzzle is a strong aspect of these economies because of a substantially higher risk aversion coefficient. Hibbard (2000) inspected the presence of ERP puzzles using consumption data and quarterly monetary security returns in New Zealand. The research demonstrated that high equity premium in New Zealand could not be justified using the Consumption-Based Asset Pricing Model, which indicates that the ERP puzzle existed in New Zealand from 1965 to 1997.

Cysne (2006) utilized quarterly data from 1992 to 2004 of Brazil to assess the existence of the ERP puzzle. Differing from the actual results of Mehra & Prescott (1985), the paper demonstrated that the equity premium puzzle existed in Brazil during the study period. The research formally established the presence of the ERP puzzle phenomenon in developing countries. The coefficient of risk aversion was calculated to be 561.75, which lay outside the normally acceptable range, inferring the presence of the ERP puzzle in Brazil. In light of the GMM method and Hansen-Jagannathan limits, Park & Kim (2009) demonstrated that a moderate level equity premium exists in South Korea, reposing the unpredictability of consumption and asset returns. A survey was conducted by on a large group of Polish investors in the Warsaw stock exchange (Łukowski, Gemra, Maruszewsk & Śliwiński, 2020). The results suggest that investors are biased in investment decisions and affect the market, creating an equity premium puzzle. Further, Nyberg & Vaihekoski (2014), using annual data from 1913 to 2009 for

Finland and Sweden, found the ERP to be 10.14% and 6.01%, respectively. A rational economic paradigm could not explain such a high equity premium. The results were partly driven by government controlled interest rates, which were kept intentionally low, which allowed artificially low returns on short-term debt securities, Using data from 17 countries between 1900 and 2005, Dimson, Marsh & Staunton (2008) found that the US equity risk premium was higher than the average of other 16 countries. They concluded that investors expect a minimum of 4.5% to 5% equity premium on the world equity index, which is still higher under rational economic models.

Choi, Lee & Pae (2012) conducted a study on the Korean stock exchange for the years 2000 to 2007 and found compelling evidence of a significantly higher equity risk premium of 15.1%. The study also found that due to the prevailing financial crises, the premium decreased in subsequent years. Huang, Zhou & Zhang (2019) employed three approaches, i.e., the dividend growth model, average realized equity premium, and consumption growth model, to test the equity premium puzzle in the Chinese stock exchange. They concluded that the dividend growth model provided a higher estimate of the equity risk premium. The average realized equity premium and consumption growth model failed to explain the high volatility in realized equity premium.

Bessler (1999) found consistent evidence of the equity premium puzzle in Germany from 1870 - 1992. It was concluded that average returns on equity are considerably higher than average bond returns over long investment periods, consistent with the findings in other industrially developed economies. The research also leads to the conclusion that despite higher returns, investment in equity markets is low. A decline in equity risk premium in the South African equity market was reported using data ranging from 1900 to 2004 (Digby, Firer & Gilbert, 2006). Using the dividend and earnings growth model, it concluded that expected equity returns in South Africa had been lower than in the past, indicating a fall in equity risk premium.

However, Alpalhao & Alves (2005), employing Godfrey–Espinosa approach, studied the Portuguese stock market from 1993 to 2001 and found no evidence of extraordinarily high-risk premiums. It observed that the Portuguese market has settled for a very low-risk premium compared to other European counterparts. The phenomenon attributes to a recent merger with Euronext, which may have caused a structural break in the data series. However, it was anticipated that Portuguese market premiums could overtake other European markets shortly due to high market volatility. Morawakage, Nimal & Kuruppuarachchi (2019) reported similar results for the Indonesian market where investors were not compensated for conditional volatility of excess returns. In the same study, however, it was observed that investors in Sri Lanka are rewarded for risks due to

prevailing negative returns shock.

From the above discussion, it can be concluded that the ERP puzzle is not tested frequently in Asian and developing markets. Many attempts have been made to explain the phenomenon using the behavioral economics model, but the ERP puzzle is still considered a widely unexplored and unsolved puzzle in finance.

Data

The study used stock price data from July 1997 to December 2017 collected from the PSX data portal. Further, the data for inflation and risk-free interest rate was extracted from the State Bank of Pakistan website. We also collected private consumption and population data from the Pakistan Bureau of Statistics. Due to the restricted accessibility of data, the dividend yield was not utilized to compute gross return for the PSX. Thus, gross return for each period was computed as follows.

$$R_t = ln \frac{P_t}{P_{t-1}}$$

Where R_t is the return on the benchmark index at time t.

Real consumption per capita is calculated by converting private consumption into millions, divided by inflation (CPI) and total population. Log difference in current and one-period lagged consumption per capita is used to calculate real consumption growth. The nominal data is converted to real terms by utilizing the Consumer Price Index.

Methodology

By utilizing the work of Campbell (1999), we used the consumption-based asset pricing power utility model to test the ERP puzzle in Pakistan. The model is as follows:

$$(r_{i+1} - r_{f,t+1}) + \frac{\sigma_i^2}{2} = \gamma \sigma_{ic}$$

Where,
r_i = Gross return on asset i
r_f = Risk free return on asset
σ_i^2 = Unconditional variance of log consumption [$Var (C_{t+1} - E_t C_{t+1})$]
γ = Coefficient of risk aversion
σ_{ic} = Unconditional covariance of innovations [$Cov (r_{i,t+1} - E_t r_{i,t+1}, C_{t+1} - E_t C_{t+1})$]

An asset is considered risky and requires a large risk premium when the marginal utility of consumption is high. In other words, assets with high consumption covariance

register lower returns when consumption is low. We utilize the above equation to check the presence of the ERP puzzle in Pakistan. According to the equation, the covariance of consumption growth and the coefficient of relative risk aversion with debt and equity returns will determine the equity risk premium in Pakistan. In general, if the coefficient of risk aversion is higher than 10, as prescribed by Mehra and Prescott (1985), it will indicate the ERP puzzle in Pakistan.

Results and Discussions

Descriptive Statistics and Analysis
Table 1 shows the results related to the descriptive statistics.

Table 1: Stock & T-bill Returns from 1997-2017

Country	Sample Period	r_e	$\sigma(r_e)$	r_f	$\sigma(r_f)$
Pakistan	1997-2017	21.10%	40.71	9.1`8	3.52

Table 2: Stock and T-bill Returns over Five Year Periods

| Country	Sample Period	r_e	$\sigma(r_e)$	r_f	$\sigma(r_f)$
Pakistan	1997-2002	13.18%	41.08%	10.34%	3.37%
Pakistan	2003-2007	44.73%	24.82%	5.81%	3.14%
Pakistan	2008-2012	8.77%	28.05%	12.11%	1.28%
Pakistan	2013-2017	22.61%	18.41%	7.66%	1.70%

The above tables show the annualized mean returns and standard deviation of stocks and T-bills. The study has annualized monthly returns from the formula $[((1 + R)^{12}) - 1]$ x 100. We have also computed the annualized standard deviation by taking the square root of the annualized variance. Table 1 shows that the return on stocks is 21.10%, and the return on T-Bills is 9.18% during the sample period of 1997 – 2017. The results also suggest that the standard deviation of return on stocks is more volatile than T-bills. However, the annualized standard deviation of stock returns with monthly data is less volatile than yearly data. The return on short-term debt is stable except for the period 2003-2004.

Table 2 shows that the stock returns during the five-year periods of 1997 – 2002 and 2008 – 2012 are considerably lower than the other two periods. The stock exchange's downfall in 1998 and the global financial crisis have contributed to this trend. These unprecedented events have lowered stock returns and increased the risk-free rate. The periods of 2003 – 2007 and 2013 – 2017 generate 44.73% and 22.61% stock returns. The

results indicate that the Pakistan stock exchange recovered from the crisis and provided efficient returns. However, the Pakistan stock exchange remained highly volatile but grew between 2014 and 2017 to an all-time high of 52,000 points.

The Pakistan stock market bubble burst in the mid of 2017, which caused the benchmark index to fall by almost 10,000 points. Figure 1 depicts the stock returns and benchmark index trend over the period 1997-2017. The figure also indicates volatility in stock returns during this period. Furthermore, Figure 2 depicts the T-Bills rates during the sample period.

Figure 1: Stock Returns and Benchmark Index Returns in Pakistan from 1997-2017
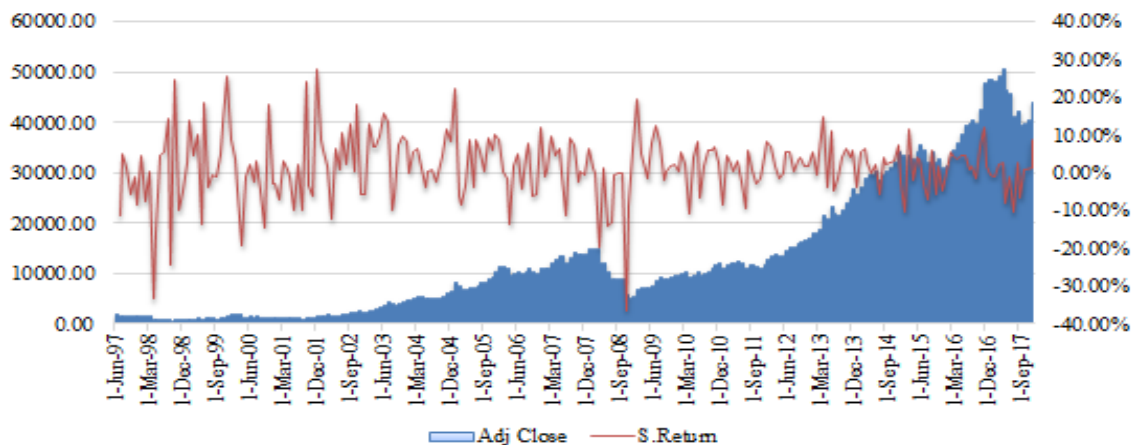
Figure 2: T-Bill Rates in Pakistan from 1997-2017
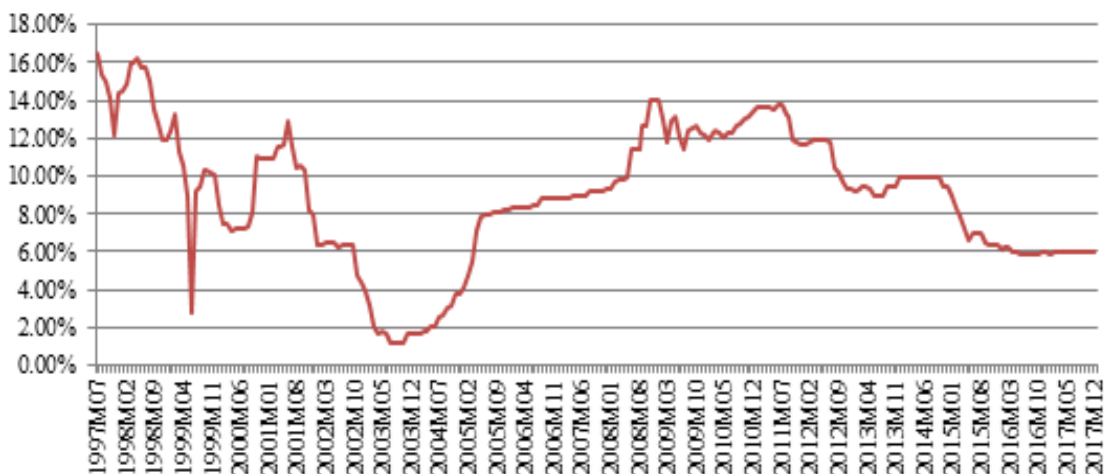
Tables 3 and 4 depict the excess returns and consumption growth in Pakistan during the period 1997-2017. Table 3 suggests that Pakistan experienced a positive excess return of 11.91%, which is exceptional considering that the international benchmark was 6%. We also found that the standard deviation of excess returns was highly volatile. The standard deviation of excess returns is highly volatile due to stock returns volatility over the period. The consumption growth was 4.19%, with a standard deviation of 5.86%, suggesting stability in the consumption pattern.

Table 3: Excess Returns and Consumption Growth

Country	Sample Period	er_e	$\sigma\,(er_e)$	ΔC	$\sigma\,(\Delta C)$
Pakistan	1997-2017	11.91%	42.37%	4.19%	5.86%

Table 4: Excess Returns and Consumption Growth over Five Year Periods

Country	Sample Period	er_e	$\sigma\,(er_e)$	ΔC	$\sigma\,(\Delta C)$
Pakistan	1997-2002	2.85%	48.46%	8.68%	8.33%
Pakistan	2003-2007	38.91%	36.86%	5.33%	6.46%
Pakistan	2008-2012	-3.33%	43.69%	4.70%	4.55%
Pakistan	2013-2017	14.95%	26.61%	2.08%	1.96%

Table 4 suggests that excess return on stocks and T-bills during five-year periods. However, we found a negative excess return during 2008-2012 due to the global financial crisis as stocks did not perform well. However, the risk-free rate was high at that time, providing attractive returns. Further, the consumption growth over the period was not correlated with excess returns. However, the low standard deviation of real consumption growth explains the stable consumption pattern in Pakistan.

Table 5 depicts the results of the equity premium puzzle in Pakistan using the equation:

$$\left(r_{i+1} - r_{f,t+1}\right) + \frac{\sigma_i^2}{2} = \gamma\sigma_{ic}$$

Table 5, $a(er_e)$ denotes the normal excess equity return in addition to half of the variance of the excess stock return, $\sigma\,(er_e)$ represents the annualized standard deviation of excess return. $\sigma(\Delta c)$ represents the annualized standard deviation of real consumption, $\sigma(m)$ is the sample estimate of the lower bound on the standard deviation of the log stochastic discount factor. The correlation between real consumption development and real excess equity returns is presented in the fifth column, while the covariance is represented in the sixth. Further, RRA(1) denotes the risk aversion coefficient.

Table 5: Equity Premium Puzzle

Country	Sample Period	a(er$_e$)	σ(er$_e$)	σ(ΔC)	σ(m)	ρ(er$_e$,ΔC)	Cov(er$_e$,ΔC)	RRA(1)	RRA(2)
Pakistan	1997-2017	-20.8%	42.37%	5.86%	49.30%	-.1077	-.0026	-78.00	12.26

RRA(2) is equivalent to a(er$_e$) divided by $\sigma(er_e)$ and $\sigma(\Delta c)$, making the correlation between real consumption growth and excess equity return equals to one. In a standard economic model, excess equity return and real consumption are positively correlated. We utilize RRA(2) to trace the presence of the ERP puzzle in Pakistan, which originated from the correlation between real consumption growth and excess equity returns.

From Table 5, we observe the presence of the ERP puzzle in Pakistan. The coefficient of risk aversion is higher than 10, a benchmark set by Mehra & Prescott (1985). The risk aversion coefficient is negative because the covariance of consumption growth with equity return is negative. However, in this case, the covariance is near zero. Nevertheless, disregarding the low correlation between equity returns and consumption growth, RRA(2) still has a risk aversion coefficient of more than 10.

The risk aversion coefficient in Table 5 is a point estimate and is prone to sampling error. For these assessments, the study has not calculated the standard errors. However, Lam, Cecchetti & Mark (2000) and Kocherlakota (1996) examined the long-run yearly US data and found few standard errors. They also dismissed the risk aversion coefficients since they were below the traditional level of 8.

Table 6: Five Years Equity Premium Puzzle

Country	Sample Period	a(er$_e$)	σ (er$_e$)	σ (ΔC)	σ(m)	ρ(er$_e$,ΔC)	Cov(ere,ΔC)	RRA(1)	RRA(2)
Pakistan	1997-2002	10.78%	49.53%	7.93%	21.77%	-0.017	-0.0006	-159.93	2.75
Pakistan	2003-2007	39.45%	36.86%	4.77%	107.03%	-0.66	-0.0117	-33.58	22.46
Pakistan	2008-2012	11.62%	43.69%	4.20%	26.60%	-0.02	-0.0004	-265.07	6.33
Pakistan	2013-2017	19.98%	26.61%	1.86%	75.19%	-0.56	-0.0028	-71.19	40.30

Table 6 shows the equity risk premium puzzle during five-year periods. The negative risk aversion coefficient is due to a negative correlation between excess return and consumption growth. Excess consumption growth is generally positively correlated. However, this is not the case in Pakistan.

RRA (1) indicates that the equity risk premium in Pakistan is higher than 10. However,

the best chance model and our benchmark for establishing equity risk premium puzzle RRA(2) is less than ten during 1997-2002 and 2008-2012, and there is no equity premium puzzle as the risk-free rate was higher than the stock return. During 2003 – 2007 and 2013 – 2017, RRA(2) is 22.46 and 40.30, respectively. These results suggest that an ERP puzzle exists in Pakistan.

Conclusion

In this research, we have tested the presence of the ERP puzzle in Pakistan. The results suggest that the ERP puzzle is a prominent phenomenon in Pakistan. One limitation of the present investigation is the small sample size. A larger sample could have reduced short-term biases. However, this is not possible because stock data availability is limited in Pakistan. Part researchers have suggested different approaches for solving the equity premium puzzle. Rietz (1988) argues that the abnormal return on stocks compared to T-bills may be due to market crashes resulting in high equity risk premiums and low risk-free returns. Some researchers have used improvised structural models to justify the equity risk premium puzzle with macroeconomic factors and recessions. Therefore, we recommend that future studies may investigate the ERP puzzle in developing countries using these models.

Limitations

Past research has supported their conclusions based on data, comprising fifty years or more (Mehra & Prescott, 1985; Campbell, 1999; Hibbard, 2000; Nyberg & Vaihekoski, 2014). However, PSX being a nascent equity market lacks such long term data availability. Hence, our scope is limited to twenty years.

Future Research

Our study is primarily focused on the ERP puzzle, which has been investigated in developed countries. Being a novel study in Pakistan, our study is a basis for new research in the area of asset pricing domain in developing economies. It will be worthwhile to empirically explore the causes of such phenomenon and its effects on various financial institutions and asset classes.

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KARACHI INSTITUTE OF ECONOMICS AND TECHNOLOGY

PAF Airmen Academy, Korangi Creek, Karachi-75190

Tel: (021)35091114-7

Email: editorialboard@kiet.edu.pk

http://www.pafkiet.edu.pk/marketforces/index.php/marketforces