BEHAVIORAL FACTORS INFLUENCING INDIVIDUAL INVESTORS' DECISION MAKING: STUDY OF PAKISTAN STOCK EXCHANGE (PSX)

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ABSTRACT

The main objective of this research is to explore the behavioral factors that can influence the decision making of individual investors of Pakistan stock exchange. The questionnaires were sent to 385 individual investors, among them 350 individual investors respond which is 80% of the total sample size. The Cronbach's alpha test and regression analysis were used to analyze the data. The results found that herding bias and market information have positive influence on the investors' decision making while prospect and heuristic biases are insignificant. Among all variables market information have greatest influence on the decision making of investors at Pakistan stock exchange. That's show investors at PSX are more concern with market information while taking their investment decision.

Keywords: *Behavior Finance, Pakistan Stock Exchange, Investment Decision Making, Herding bias, Heuristic bias, Prospect bias, Market Information*

1. INTRODUCTION

In recent area, the stock market becomes the most important financial segment of a country. A well-established financial market enables the economy to grow more by raising investment and attract more foreign investment and reducing risk, it also takes a vital part to turn savings of people with a valuable investment. Moreover, investors are the key participant of the stock market and without the explanation of investors decisions of selling and purchasing stocks the functioning of the stock market it cannot be enlightened (Ali & Rehman, 2013). The modern financial theory is based on the concept of efficient market

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hypothesis and it believes that investors are rational, and they have considered to maximize their wealth by using the available information (Ritter, 2003).

As the time went on the researchers and academic in economic and finance have started to work on the aspect of behavior and phychology which cannot be explained by these theories. The two famous physiologists Kehnemann and Tversky, (1979) empirically found that people do not behave rationally, they had discussed the psychological biases that can influence the decision making under uncertainty. Their finding became the core concept of new field of finance called behavior finance. Thus, behavioral finance combined the social and psychological aspects with finance. It also bridges the gap between traditional finance theories and behavioral biases, on the other hand behavioral finance study how investors collect information regarding financial market and how they analyze and interpret this information (Kumari,2016). Further behavioral finance explores the decision-making patterns behind the decision of investors while buying or selling of stocks. It also concerns to investigate the psychological factors which could make decision making by investors irrationally (Ali & Tariq, 2013). The appropriate investment decision making is important for investors because it directly associate with their future returns, little negligence may occur losses. So, it's important for investors to become aware about all factors of economy and psychology. The concern of this study is associated Pakistan stock exchange, and according to the MSCI, 2017, Pakistan stock exchange is reclassified as an emerging market. The market trend at the begging of 2017 is seen in the upward direction, but after that the growth of the market is continuously going downward due to the political inability in the country. Therefore, overall investors at PSX have uncertainty and along with domestic, foreign investors have withdrawn their money from the market. This situation is consistent during the year 2017. Therefore, in present circumstances it's important to explore the behavioral patterns of investors' decision to secure their value able investments. Thus, this study will examine the effect of behavioural factors on the individual investor of Pakistan stock exchange and explore which behavioural factor have more influence on decision making by investors. The findings will enhance the better understanding of the implementation of behaviour factors on Pakistan stock exchange.

1.1 **Problem Statement**

Investors would not behave rational all the time their decision can be influenced by some physiological and behavioural factors (Kengatharan & Kengatharan, 2014). The presence of behavioural biases among the investors of Pakistan stock exchange cannot be neglected, therefore it become essential to conduct research to investigate the behavioural patterns of the investors at the Pakistan stock exchange. Thus, this study aims to understand why investor do irrational decision that can strongly affect their future returns and to identify the behavioural factors which can influence the individual investors' decision making at stock market.

2 **LITERATURE REVIEW**

Waweru, Munyoki and Uliana (2008), explored the impact of behaviour finance and psychological biases on the decision making of the investors of Nairobi Stock Exchange. The data have been collected by 23 institutional investors, the results show the behavioural biases (heuristic, prospect, herding) have impact on the investor's decision making while market variable have more influence on the decision making.

Adhikari (2010), discussed the investors decisions regarding choosing stocks and behavioural factors which can impact decision making of investors at Nepal. The heuristic, herding and overconfidence used as independent variables while decision making of investor was dependent variable. Data have been collected through questionnaires, 49 respondents send the questionnaire back whereas the questionnaire send to 60 investors. Finding of the study show, financial and nonfinancial both needs intend investors to invest in stocks and on the other hand behavioural factors including heuristic, herding and overconfidence also impact investors decision making.

Kengatharan and Kengatharan (2014), examined that which behavioural factors influencing the decision of individual investors and performance of investors of Colombo stock exchange, the sample of 128 investors used and data were analysed by factor analyses and multiple regression. The existing behaviour biases have been tested and found that herding, market, heuristic and prospect factors impact decision making by investors, whereas, the performance of investors is positively influenced by the factor anchoring which is from heuristic

and choice of stock and over confidence have a negative influence on performance which are from herding and prospect.

Menike, Dunusinghe, and Ranasinghe (2015), studied that behavioural and contextual factors influence the performance of individual investors of Colombo stock exchange, sample of 164 individual investors were obtain, the factor and multiple regression analysis have been used to analysis data the results show the five factors as, herding, prospect, heuristic , market, contextual show influence on individual investor while regression results show , the factor herding including , buying , selling and speed of herding , the factor heuristic including, repetitiveness , overconfidence and anchoring , and the factor contextual including the brokers recommendation have positive influence on the performance whereas the factor prospect including two variables, regret aversion influence positive and loss aversion influence negative on performance of individual investor.

Grover and Singh, (2015), concluded a study of the behavioural factors which can impact the decision making of the investors of real state in Uttarakhand. The data have been collected by the 200 investors through sending the questionnaire. Factor analyses used to determine the results by SPSS. The result present, market information is the major factor, for investors they used past and present information of market while taking investment decision, logical approach, herding, over expectations also impact the real estate investors.

Shabgou and Mousavi, (2016), investigated the impact of behavioural variables on the decision making of the investors of stock exchange in Tabriz city. The sample of 385 people has been selected for the study and send them a questionnaire. The data have been analyzed through SPSS software, to check the authenticity of questionnaire Cronbach's Alpha test and to test the hypothesis Friedman test used to estimate result. The result found that herding variables, prospect variables and heuristic variables have an impact on decision making while market variables have the greatest influence on the decision making of investors.

Alquraan, Alqisie and Shorafa (2016), explored the influence of behavioural factors in the decision making of the investors of Saudi stock exchange. The data have been collected by Questionnaire send to 140 investors and the results have been analyzed through SPSS software, Cronbach's Alpha test is used to check the validity of questionnaire and multiple regression is used to test the hypothesis. The result reveal that behavioural factors as, loss averse, overconfidence and perception significantly impact and herding insignificantly impact the decision making while demographic variables as gender, age, income and experience impact insignificantly and education impact significantly on decision making of investors.

Kimeu, Anyango and Rotich (2016) examined the behavioural biases which can influence the investment decision of individual investors (equity and bonds) at the Nairobi stock exchange. The data collected by 80 individual investors through questionnaires, SPSS software used to analysis data, descriptive statistics, Inferential statistics (correlation and regression analysis) were tested to obtained results. The results indicate herding factors, prospect factors, heuristic factors and rationality have a positive and significant impact on investors decision making.

Bakar and Yi (2016) investigated the impact of physiologic factors on decision making of investors of the Malaysian stock market by taking the variables overconfidence, herding, conservatism and availability bias as dependent variable and investor's decision making as depended variable. 200 investors are taken as samples for this study, findings show that availability bias, conservatism and overconfidence have significant impact on investor's decision making while herding have no impact on decision making of investors decision making. They have also found that psychological factors are dependent on individual's gender to.

Anum and Ameer (2017) examined the behavioural factors which can impact the decision making and performance of investors at the Pakistan stock exchange. The data for the research has been collected through primary resources and the SPSS software is used to analyse the data the statistical tests have been applied here are Cronbach's Alpha, Descriptive Statistics and Multiple regression. The

result found that all behavioural variables as heuristic, prospect, herding and market variables have the positive impact on decision making while prospect variable have greatest impact. The investment performance is impact by herding, market and heuristic variable but among all herding variables have a major influence on the investment performance whereas, prospect variable found insignificant to investment performance.

Velumoni (2017) examined the impact of the behavioural finance theory called prospect theory in the decision making of investors of Indian stock exchange in the city of Chennai. the research is descriptive and primary data have collected by questionnaire, convenient base sampling is used to collect data. The 303 investors have participated in the research as respondents. The SPSS software is used to analyse the data and the statistical tools applied here as t-test, ANOVA and regression analysis to estimate results. The result found behavioural variables as regret aversion, loss aversion and mental accounting have positive impact on the decision making of the investors of the city Chennai.

2.1   Hypotheses
After the review of literature, the following hypothesis are composed to explore the behavioural factors which influence the investor's decision making and their investment performance.

General Hypotheses:
H1: Behavioural factors have significant positive impact on the decision making of the individual investors of the PSX.

Specific Hypotheses:
H1: The heuristic bias has significant impact on the investment decision making of individual investors of PSX.
H2: The prospect bias has significant impact on the investment decision making of individual investors of PSX.
H3: The market information has significant impact on the investment decision making of individual investors of PSX.
H4: The herding bias has significant impact on the investment decision making of individual investors of PSX.

2.2   Theoretical Framework
The theoretical frame work of the model is adapted from the study of Kengatharan and Kengatharan (2014). The researcher of that

study has discussed the impact of behavioural factors in the investment decision making and investment performance. In this paper changes have made in the theoretical framework accordance of the research objective.
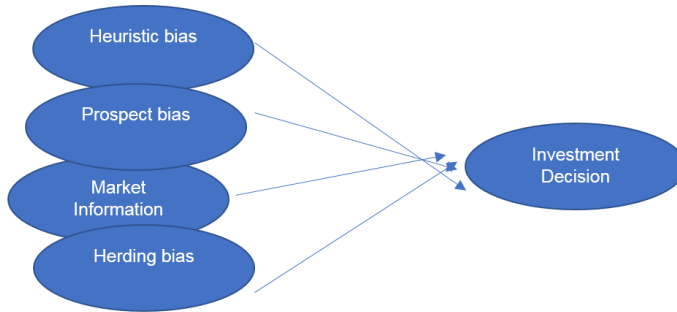
Figure 1: Conceptual Frame Work

3.   RESEARCH METHODOLOGY

The population of this research is comprised of the individual investors of Pakistan stock exchange. The total number of individual investors of the PSX is 216,966. (Pakistan day conference 2015). The data for the research has been collected by primary source. Furtherly, the sample size for the study has obtained as 385 at 95% confidence interval, according to Uma Sekaran (2003) if the population is more than 10000 than sample size should be 385. The convenience base sampling technique enables researcher to get more response by approach the respondent who is convenient to reach (Allameh, Chitsaz, Hosseini & landaran Esfahani, 2015). Therefore, convenience base sampling technique has used for this research to get response from individual investors of Pakistan stock exchange.

3.1   Research Instrument

Among the various data collection methods self-completion questionnaire is considered one of the best methods for collecting quantitative data. As concern of this research close ended questionnaire
has been adopted for all variables. The tool adopted from Kengatharan and Kengatharan (2014). According to Bakar and Yi, (2016), close ended questions are pre-coded therefore it's become

easier to turn data for further analysis another. The 5 Likert scale questionnaires have been used for the research. According to Menike, Dunusinghe and Ranasinghe (2015) and Bakar and Yi (2016), this method is commonly used to collect information from individuals about the degree of their agreement, likert scale helps researchers to ask participants about their response in agreement and disagreement degrees as they read statements. 5-point Likert scale is including from 1 to 5 respectively: strongly disagree, disagree, neutral, agree and strongly agree. The questionnaire has 4 parts: personal information, behavioural aspects, investment decision making. The following table shows the measurement of questionnaire.

Table 1

Measurement of Questionnaire

Variables	Proxy	Questions	References	Measurement
Heurist Variable	Representativeness. Overconfidence. Anchoring. Gamblers Fallacy. Availability Bias.	Question no 1 to 8.	Kengatharan and Kengatharan (2014) and Waweru, Munyoki and Uliana (2008).	5 Likert Scale
Prospect Variable	Loss Aversion. Regret Aversion. Mental Accounting.	Question no 9 to 14.	Kengatharan and Kengatharan (2014) and Waweru, Munyoki and Uliana (2008).	5 Likert Scale
Market Information	Price Changes, Market Information. Past Trends of Stocks.	Question no 15 to 20.	Kengatharan and Kengatharan (2014)	5 Likert Scale

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	Fundamentals of Underlying Stocks. Customer Preference - Over-Reaction to Price Changes.		and Waweru, Munyoki and Uliana (2008).	
Herding Variable	Buying and Selling Decisions of other Investors. Choice of Stock to Trade of other Investors. Volume of Stock of other Investors. Speed of Herding.	Question no 21 to 24.	Kengatharan and Kengatharan (2014) and Waweru, Munyoki and Uliana (2008).	5 Likert Scale
Investment Decision Making	Informed decision. Uninformed Decision. Investment based on personal and financial needs.	Portion IV Question no 1 to 3.	Kengatharan and Kengatharan (2014) and Waweru, Munyoki and Uliana (2008).	5 Likert Scale

Table notes: This table show the description of all independent and dependent variables.

3.3   Data Analysis

After data collected it have been analyzed Through SPSS software. To estimate the results, statistical techniques used here as, Cronbach's Alpha test and multiple regression analysis.

4.   RESULT AND DISCUSSION

385 questionnaires were distributed to the individual investors of Pakistan stock exchange. Among them 350 individual investors respond which is 80% of the sample size. The specifications of 350 respondents as, education level, age, gender and monthly income are demonstrated as follows,

Table 2: Age, Gender, Education Level and Monthly Income
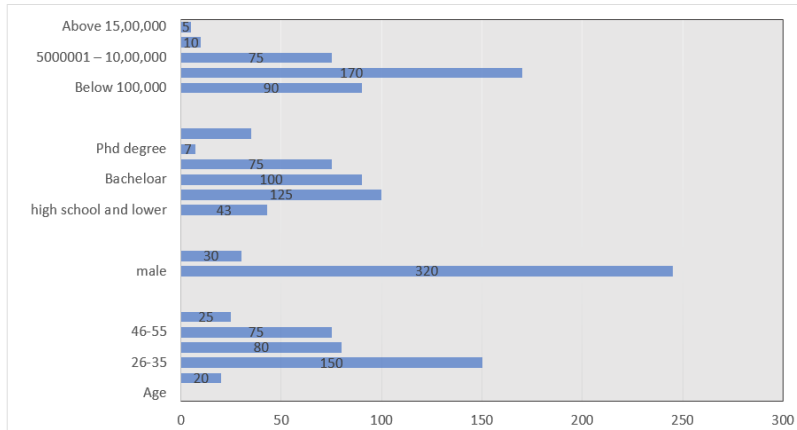
The table above present that the female participants are 8% and male participants are 92% of the total sample obtained. Most of the investors are at the age of 26-35 (43% of the total sample) whereas, 23% investor are the age of 35-45, investors at the age of 18-25, 46-55 and above 55 are respectively 6% ,21% and 7%. The table 4.1 also presents the monthly income of the investors and the highest number of investors monthly earning are between 100000 - 500000 which is the 49% of the total sample size,
26% earn below 100000, 21% earn 500000 -1000000, 3% and 1% earn respectively 1000000-1500000 and above 1500000. Educational information shows most of the investors are undergraduate (29% of sample 350) whereas, 26% are graduate, 21% have master's degree, only 2% of investors have PHD degree, 12% of the investors are high school and lower and 10% tick other option.

4.1   Cronbach's Alpha Test for Reliability

The Cronbach's alpha test used to check reliability or internal consistency of the research instrument. The coefficient greater than or equal to 0.7 is considered good and acceptable (Iqbal & Usmani, 2009). The following table shows the results of the test.

Table 3

Cronbach's Alpha Test		
Items	N of questions	Cronbach's Alpha
Heuristic bias	**8**	**0.77**
Prospect bias	**6**	**0.81**
Market information	**6**	**0.70**
Herding bias	**4**	**0.71**
Decision making	**4**	**0.74**

Table notes: the acceptable value is 0.5

Table 3 show that the value of the coefficient of all the items are greater than 0.70 which shows the items have good internal reliability.

4.2   Regression Analysis

Through multiple regression, the impact of several independent variables jointly or individually on dependent variable can be obtained (Bakar & Yi, 2016). Thus, multiple regression analysis used here by researcher to determine the impact of behavioural factor on investment decision making of individual investors at the Pakistan stock exchange. The table below show the result of multiple regression analysis

Table 4

Regression Analysis			
	Unstandardized Coefficients		
	B	Std. Error	Sig.
(Constant)	.270	.249	.278
Heuristic bias	.114	.059	.054
Prospect bias	.134	.071	.062
Market information	.336	.070	.000
Herding bias	.343	.058	.000
Adjusted R Square	.431		
F value	67.112		
Sig. F value	.000		

Table notes: significance value is .05

From table 4 the value of R Square founded as 0.431 which show that in the case of investment decision making as dependent variable the independent variables as heuristic, prospect, and market and herding can explain it by 43%. According to the literature in the

filed the value of R Square in the study of Bakar and Yi, (2016) is 0.696, Aziz and khan, (2015) is 0.221. Thus, the model is fit for further analysis. ANOVA test is used to see the overall significance of the model (Velumoni ,2017). The F value presented in table no. 5 is as 67.112, the significant value of the test is 0.000 which means the model is overall significant.The below regression models have been adopted from the studies conducted by Kengatharan and Kengatharan (2014).The regression equation of model presented in table 5 is as follows:Investor's Decision Making=0.270+0.114 heuristic bias +0.134 prospect bias +0.336 market information+0.343 herding biases + e.

The constant value show in the above equation as 0.270 which indicates if all independent variables become zero then investors decision making will be equal to 0.270. Furthermore, the result present heuristic bias has estimated coefficient value as 0.114 and the significance value or P value as 0.054 as the P > 0.05 which show heuristic bias is statically insignificant and do not have significant influence on the investors decision making. Along with this coefficient prospect bias is 0.134 and significance value is 0.062 which is also greater than 0.05 therefore prospect bias also insignificant and does not impact on investors' decision making. Thus, H1 and H2 are not supported.

Further, the market information has the coefficient as 0.336 and the significance value is 0.000 (P<0.05) which means market information have significant positive impact on the investor's decision making. On the other hand, one percent change in market information will increase investors' decision making by 0.336 percent.

As market information has a positive influence on the investor's decision making therefore, the H3 of the study is supported and accepted. The estimated coefficient of herding bias is 0.343 and significance value is 0.000 (P<0.05) that's mean herding bias has positive and significant impact on decision making. So, the one percent change in herding bias will cause the 0.343 percent increase in investors' decision making. The herding bias has positive influence on the investors' decision making. Therefore, the H4 of the study is supported and accepted.

According to the coefficient value or beta value of market information, it has highest beta value among all independents variables market information has highest influence on the investors' decision making. On other hand, the individual investors of Pakistan stock exchange considered market information important while taking investment decisions.

5. CONCLUSION AND RECOMMENDATION

The main objective of this research is to determine the behavioural factors which can influence the decision making of individual investors at the Pakistan stock exchange. By fulfilling all objective study has concluded that the behavioural biases which can impact the decision making of individual investors at a Pakistan stock exchange are as market information and herding whereas heuristic and prospect biases are positive and insignificant. The result reveals that investors in Pakistan stock exchange are more concerned about the market information which is referred to the conventional theories of finance and the fundamental methods. But behavioural factors also do influence the decision making, as herding bias shows great influence on the investors' decision making which show the investors of Pakistan stock exchange are used to follow the other investors investment decisions. The reason is behind this is most of the investors are less aware about the analysis techniques and they do follow what others do as the data collected for this research show most of the investors are undergraduate this may also cause the herding because they do not have the proper skills to analysis market.

5.1.1 Recommendation for Individual Investors of Pakistan Stock Exchange

The result of the study shows that the investor of Pakistan stock has herding behaviour at great extent while taking their investment decisions as Pakistan stock exchange is emerging market and there is less information available therefore the investors should have good analysis before taking investment decision from this they can prevent themselves to bear losses. The result show that the market information has the major influence on the decision making of individual investors at Pakistan stock exchange. As the conventional techniques of analyses market information needs good skills because they are more complex. So, the investors suggested to take analysis carefully while taking decision to avoid losses.

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