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Behavioral Factors and their Impact on Individual Investors' Decision Making and Investment Performance: Empirical Investigation from Pakistani Stock Market

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Abstract- The purpose of research study is to find out the impact of behavioral factors over investors' decision making and investment performance at Pakistan Stock Exchange. As there are a few studies in Pakistan related to behavioral finance, so this study mainly contributes in the field of behavioral finance in Pakistan. This study focus on existing theories of behavioral finance which led to develop the hypothesis. Data is collected from investors via questionnaire from Pakistan Stock Exchange, after successful collection of data SPSS software is used to analyze and run the data.

The results of the research study show that the behavioral factors including heuristic, prospect, market and herding have high impact on investors' decision making in Pakistani stock market. Furthermore results show that three factors which includes heuristic, market, and herding have positive impact over investment performance, however prospect is the only factor that has negative impact on performance of the investment. The findings of this research can be used by the security organizations to study the investors' Behavior.

Keywords: behavioral factors, behavioral finance, investment decisions, investment performance.

I. Introduction

In traditional finance paradigm investors are considered as "rational" in the financial markets. There are various traditional theories which consider investor as rational investor who makes decisions on the basis of risk and return. Finance has evolved a lot in past years on the basis of some assumptions that investor make rational decisions and they are unbiased in their decisions about the future (Nofsinger, 2001). An investor is rational when he tries to update his profile with new information on frequent basis, and go for those choices which are acceptable (Thaler, 2005).

Individuals reveal irrationality, incompetence and inconsistency in decision making particularly in those situations where they are faced with uncertainty (Bernstein, 1998). Nofsinger (2001) reveals that various psychologists have criticized the assumptions of unbiasedness and rationality. In this perspective psychologist Daniel Kahneman and Amos Tversky contributed to the field of psychology and finance and characterized new field as behavioral finance in 1980s and this field is basically about how various individuals behave in financial markets or in financial settings. Basically behavioral finance is all about how the financial decisions of individuals and corporation are affected by psychology in financial settings (Nofsinger, 2001).

Investment decisions and Behavioral Aspects

Many of the financial and economic theories assume that investors act rationally and take into consideration all of the information in process of decision making. Gilway (2009) states that market in efficiency comes when individuals base their decisions over simple tools like heuristics or mental shortcuts rather than relying on basic forecasting techniques or fundamentals. Field of behavioral finance reveals how the decision processes are affected by psychological factor (Oslon, 1998). Markets in which individuals make decisions are difficult to comprehend because there is high level of complexity in real world (Gwily, 2003). This issue has taken keen consideration that whether manager works in rational market, whether irrational manager works in rational market or both are there (Subrahmanyam, 2007).

Therefore behavioral finance work over those psychological factors which affect individual or groups while they work as investor, Portfolio managers or analysts (Brown & Reilly, 2004). When people are in unclear or uncertain situation they use heuristics or rule of thumbs against different alternatives, through this people are able to reduce complexities and make decision making simpler (Raines & Leathers, 2011).

a) Problem Statement

As stock market is the financial market which positively influence the economy of any country, so if there is rise in stock market it will surely influence health of the economy of a country in positive way. So the investment decisions made by investors in stock market perform major role in identifying, defining and setting trends in stock market that in turn influence the economy of the country. But some of the times investors make irrational and illogical decisions based on their personal perception and preferences which sometimes

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lead towards the losses in real settings of financial market. Individuals reveal irrationality, incompetence and inconsistency in decision making particularly in those situations where they are faced with uncertainty (Bernstein, 1998). Irrational behaviors of the investor makes the market inefficient because, rational investors are those who value the stocks rationally by taking into consideration the risk and return of the investment and they do not allow their subjective opinions to affect their decision making process (Shiller & Robert, 2002). Due to these facts it is necessary to identify the factors which affect the investors regarding investment decision making at Pakistan Stock Exchange and the degree to which these factors affect their investment performance.

II. Literature Review

As most of the theories of economics and finance are based on the rational decision making processes. These theories consider that investors are always rational in decision making and they consider all aspects while deciding about anything (kim & Nofsinger, 2008). Generally financial behavior of investors is based on the intellectual model which includes various factors related to psychology, sociology and finance. The agents of the behavioral models are not considered as rational because the investor perception and preferences lead them to behave irrationally (Farlin, 2006). Culture, religion, ideology and emotions are the basic factors which lead to the irrational behavior of investor while taking decisions in different situations (Macgoun, 1992). Although there are many of studies in this area but most of the people are unaware of the concept of financial behavior and the elements which lead toward the irrational behavior (Montier, 2002).

a) *Heuristic variable*

Heuristics makes the decision making easier because these are based on rule of thumb. But heuristics can also lead towards the various biases when situations are changed. So in that case heuristics can lead towards the decisions which are suboptimal (Ritter, 2003).These heuristics helps in decision making in those situations when time is limited and decision is to be taken urgently (Waweru, Munyoki & Uliana, 2008).There are various biases like representativeness bias, availability bias, anchoring bias and availability bias (Kengatharan & Kengatharan, 2014).

i. *Representativeness*

Representativeness is the extent or degree to which the event is similar to its parent event of population, it is also refereed as degree of similarity or resemblance with population. In representativeness bias sometimes sample size is neglected and this occurs when people refer to very few samples (Luu, 2014). Representativeness is the degree by which the situations and instances resemble with the population (DeBondt & Thaler, 1995). Representativeness can lead towards the biases in decision making because due to representativeness people try to value more recent events and ignore long term events (Ritter, 2003). In situations where, there is more uncertainty people make their decisions on the basis of its similarity with its parent population and that event also has those characteristics from which it is generated. This leads the investors to analyze the companies on the basis of its various characteristics like returns, publicity, products and mainly its management and investment is mostly based on these characteristics if they are good (Onsomu, 2014).

ii. *Overconfidence*

Overconfidence refers to the inappropriate belief regarding judgement, reasoning and the cognitive abilities of the individual. This bias plays the major role in stock market business now a days, and the psychological studies covers the impact of overconfidence over the behaviors studied (Sadi et al., 2011). Whenever investor believe that he has much more knowledge than he actually needs and try to value more his personal information it means that individual want to exaggerate his perceptions, predictions and judgement (Razzi, 2008). Generally most of the individuals are overconfident about their abilities. Overconfidence gives its exposure in many of the ways, like very little diversification due to the fact that investor invests his money in that with which he or she is more familiar (Barber &Odean, 2001). The research study of Barber and Odean (2001) also determined that men exhibits more overconfidence than women.

iii. *Anchoring*

Anchoring bias occurs when people try to use initial values to make their decisions in particular situations. In anchoring people are biased towards the initial values. In anchoring investor go through historical trends and set range of prices and company's income which lead investors to underreact when any unexpected changes come (Luu, 2014). Anchoring bias is also connected to representativeness because it also shows that the investors try to focus more on experiences that are recent ones and they are more optimistic when there is rise in market and more pessimistic when there is fall in market (Waweru et al., 2008). Anchoring is so defined as the tendency of investors to refer their decisions to an irrelevant reference point regarding their investments (Pompian, 2006).

iv. *Gamblers' fallacy*

Gamblers' fallacy is the behavioral bias which occurs when individual believe that sample resembles its parent population from which it is drawn out (Statman, 1999). This bias arises in stock market when investor inaccurately predicts reverse points and those are considered as ends of the good or bad results. Investors try to predict reversal in stock prices when they

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are suffering from this bias, because they think that trend will be reversed (Waweru et al., 2008). In gamblers' fallacy investors think that random events in stock market are self-correcting.

v. *Availability Bias*

Availability bias occurs when people use general rules or the mental shortcuts in order to predict the probability of the results and the extent to which it occurs in their lives. In this situation people are more deviated towards the easily recalled events rather than those which are hard to imagine or recall. It is based on the general tendency of humans to recall recent and inspirational events very quickly. The process of evaluating the events which are at the end of the month are easy to recall rather than those which are at beginning of the month, so recent events affect perception more easily (Sadi et al, 2010).

b) Prospect variable

Prospect theory and Expected Utility Theory (EUT) are the main important approaches in investor decision-making process having different perspective. Prospect theory stress over the subjective kind of decisions of the investors which are mainly influenced by investors' system of values, however expected utility theory focuses over investor's rational expectations in decision making related to their investments (Filbeck, Hatfield & Horvath, 2005). The normative model of rational choice which reflects the economic behavior is main basis of EUT, it involves analysis and evaluation of decisions through risk. Prospect theory shows the behavior of people in those situations when they face uncertainty and risks. People generally prefer certainty, therefore they go for outcomes that are more certain and probable in nature. (Waweru et al., 2008) explains prospect theory (i.e. loss aversion, regret aversion, mental accounting) as major states of mind which significantly affect individual decision making process.

i. *Loss Aversion*

Loss aversion is basically referred as the tendency of individuals for avoiding the losses as compare to gains. Whenever any problem is framed in negative manner, the loss aversion will be more intense, so the individual would go for different decision when he is faced with negatively framed problem. In that situation there will be less negotiation whenever exposure of loss is stronger and powerful because individuals are not aware of that loss (Chira, Adams, & Thornton, 2008). Loss aversion is also defined as the mental penalty the individuals place on same amount of losses or gains (Barberis & Huang, 2001). Most of the people show more distress about the prospect losses than the pleasure that they show on equivalent gains (Luu, 2014). Losses that occur after gains are considered to be less painful than the losses that occur after prior losses (Barberis & Huang, 2001).

ii. *Regret Aversion*

The psychological error that comes out of extra consideration or focus on the emotions and feelings of regret in situations where decision is to be taken, it is mostly poor because other outcomes seem to be more better to the investor. The cause of regret aversion bias is that individuals mostly do not admit their mistakes. In this situation individuals try to avoid decision making due to the fear that whatever the decision they would have that would be suboptimal.

As most of the people are less willing to admit and correct their mistakes on proper time, so this leads them to losing positions. Regret aversion hinders entry of the investors into market whenever there is down trend which shows that signals of ending (Bhatt & Chauhan, 2014). Along with financial loss pain it also includes regret for poor decisions, by which loss were raised. Due to regret aversion investors try to hold poorly performing stocks. Regret aversion also affects the decisions regarding new investments. Investors try to avoid those sectors which performed poorly in the recent times and due to regret expectations they do not go for investment because they think that if they go for investment they will incur losses (Singh, 2012).

iii. *Mental Accounting*

The process with which individuals analyze and evaluate the transactions regarding their financial decisions is referred as mental accounting (Barberis & Huang, 2001).Mental accounting leads the investors manage and organize their investment portfolios in different accounts (Ritter, 2003).

c) Herding variable

Herding effect is the tendency of individual to follow the actions of others in stock market. Analysts carefully go through the herding affect because investor try to rely more on information that is collective rather than information that is private, this results in the deviation in the prices of stocks from their core or fundamental value. Herding is considered as important factor because it majorly influence the risk and return characteristics of securities (Tan, Chiang, Mason & Nelling, 2008). Herding can lead to various biases. Investors generally go for herding because they think that it would help them to get useful information. Herding can greatly contribute for analyzing and evaluating professional performance because individuals having low ability try to mimic behaviors of individuals having high ability for developing their reputation (Kallinterakis, Munir & Markovic, 2010). In stock markets investors make their investment decisions that are similar to masses regarding transactions of buying and selling. However rational investors do not follow the flow of masses which is the main cause of efficient markets. However herding makes the market inefficient which leads the market towards speculative bubbles in market. Generally in herding the investors

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behave in similar manner as prior man who was unaware of market and surrounding environment, they are combined in groups in order to support their safety (Caparrelli, Arcangelis & Cassuto, 2004). Various factors affect herding behavior of the investors which include investment volume, overconfidence etc. whenever investor is more confident they try to rely more on information that is private or personal for their investment decisions, here in this situation investors do not go for herding behavior. When investor invest huge amount of capital, then they follow others to avoid risk of losses. Investor type also determines herding behavior, as individual investor try to follow masses in decisions regarding their investment as compare to institutional investors (Goodfellow, Bohl & Gebka, 2009). Herding drives up stock market and also bring momentum in stock market, but herding can bring market down after certain level because costs of getting return increases. Investor investment decisions that are influenced by others include, choice of stock, buying of stocks, selling of stocks, length of time and volume of stocks (Waweru et al, 2008). Investor decisions of buying and selling are affected by decisions of others in stock market and herding can lead investor towards regret aversion regarding their investment decisions. However volume of stock, choice of stock and period of time for holding stock; these decisions are less influenced by herding behavior. Individual and institutional investors behave differently due to the fact that individual follow herding more as compare to institutional investors (Waweru et al, 2008).

d) Market variable

Investor behavior is the major factor that affect the financial markets. DeBondt and Thaler, (1995) explains that investors exhibit different reaction whether that is over reaction or under reaction to the changes in price, any news, prediction for future on the basis of past trends, less focus over fundamentals of stock; so these market factors affect individual investor decision making in stock markets. Various factors that affect decision making of investors in markets are market information, past trends of stocks, price changes, consumer preferences, over reaction or under reaction to the changes in price of stocks and the fundamental of stocks (Waweru et al., 2008). Generally changes in fundamentals of stocks, market price and market information stimulates over and under reaction of investors to the changes in price. These fluctuations majorly affect decision making behaviors of individuals. Over reaction of investors or under reaction of investors leads towards the different strategies which in turn influence their decisions regarding investment. Decisions by investors are highly influenced by the market information, due to this investors try to focus over those stocks which are popular and also focus over those events that grab high attention in stock markets (Waweru et al., 2008). Various attention grabbing events influence investors' decisions even though investor is unaware whether it would result in better future performance or not (Barber & Odean, 2000). Investors tend to rely on market information of stocks whenever they make decisions of their investment. Price changes of stocks influence the investor behavior (Waweru et al., 2008). Investor go for trading of those stocks that go through higher price fluctuations in the past years, so here changes in price are considered as attention grabbing event in the market (Odean, 1999).

Caparrelli et al., (2004) determined that investors try to move with the flow of others whenever there is change in price. Due to this investors may incorrectly estimate the returns of stock which can significantly influence their decisions related to stock investments (Waweru et al., 2008). Odean (1999) states investors go for those stocks which attract them, but selection of stocks for investment is also influenced by investor perception and preferences. Some of the investors go for those stocks which show satisfactory performance however most of the rational investors try to sell out those stocks which incurred losses in the past which help investor to avoid taxes. Past trends of the returns of the stocks also have influence over the decision making of investors (Waweru et al., 2008). Technical analysis is one of the method through which past trends of stocks are analyzed. Generally factors related to market are not the part of behavioral related factors, however these factors affect behavior of rational investors in a way that influence their decision making in various ways, so that's why market factors are included in variables that affect investor decision making process regarding their investments (Waweru et al., 2008).

e) Investment Decisions and Stock Performance

Decision making includes the processes and steps for analysis of various options. The investor decisions are based on the complex models related to traditional finance. These financial models have basis of expected return and risk analysis related to the investment like (CAPM) capital asset pricing model (Bodie, Kane, & Marcus, 2008). But as matter of fact decisions may not be just based on complex financial models because these model mostly ignore the situational factors faced by investors. Situational factors includes all the issues and problems which faced by the investors and decision makers and the whole context which also includes environment in which investor has to take decision. So for having appropriate decisions the cognitive psychology should also be taken into consideration psychology (Kengatharan & Kengatharan, 2014). Investment decisions are very much important to investors as investment is their commitment of resources and funds in order to get future benefits (Bodie et al., 2008). Investors face difficulties in making decisions for many reasons like, lack of financial

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information, shortsightedness, and insufficient self-regulation (Winchester, Huston, &Fink, 2011). As matter of fact that information changes from time to time and it loose its value as more and more time passes, so the decision making in markets becomes more complicated (Formlet, 2001).

Huberman (2001) states that in decision making generally investors show their preference for holding the stocks of those companies which are localized rather than investing in stocks of other companies. However Grinblatt and Keloharju (2001) show that agents face more risk for holding stocks of firms which are nearby the investor. Hong, Kubik, and Stein (2004) states that social interaction affect the stock market participation, so the investors having more social interaction generally prefer to invest their funds in stock market. Cohen (2005) states that some participants rely on earning per share for their investment, but they exclude the important factors like firm's revenues and cash flows. Whenever investors are having multiple information they just focus on that information which seems important to them. Individuals leave most of the information unprocessed and fail to adjust it accurately (Hirshleifer 2011). Although there are various factors which affect the investor decision making but previous literature review shows that investors' decisions are majorly affected by the behavioral factors as these influence the perception of investor regarding risk, which ultimately affect decisions of investors.

Regarding performance of the stocks some of the researchers of behavioral finance argue that poor performance of stocks of the irrational investors could eliminate them from stock market, however some other researchers state that investor who is overconfident having strong trading behavior could have good results (Anderson, Henker, & Owen, 2005). As overconfident individual has high subjective probability, so they trade more than rational investors and expect higher return over their investments and hope for the good performance of their investment (Kyle & Wang, 1997).

f) Conceptual or Theoretical Framework

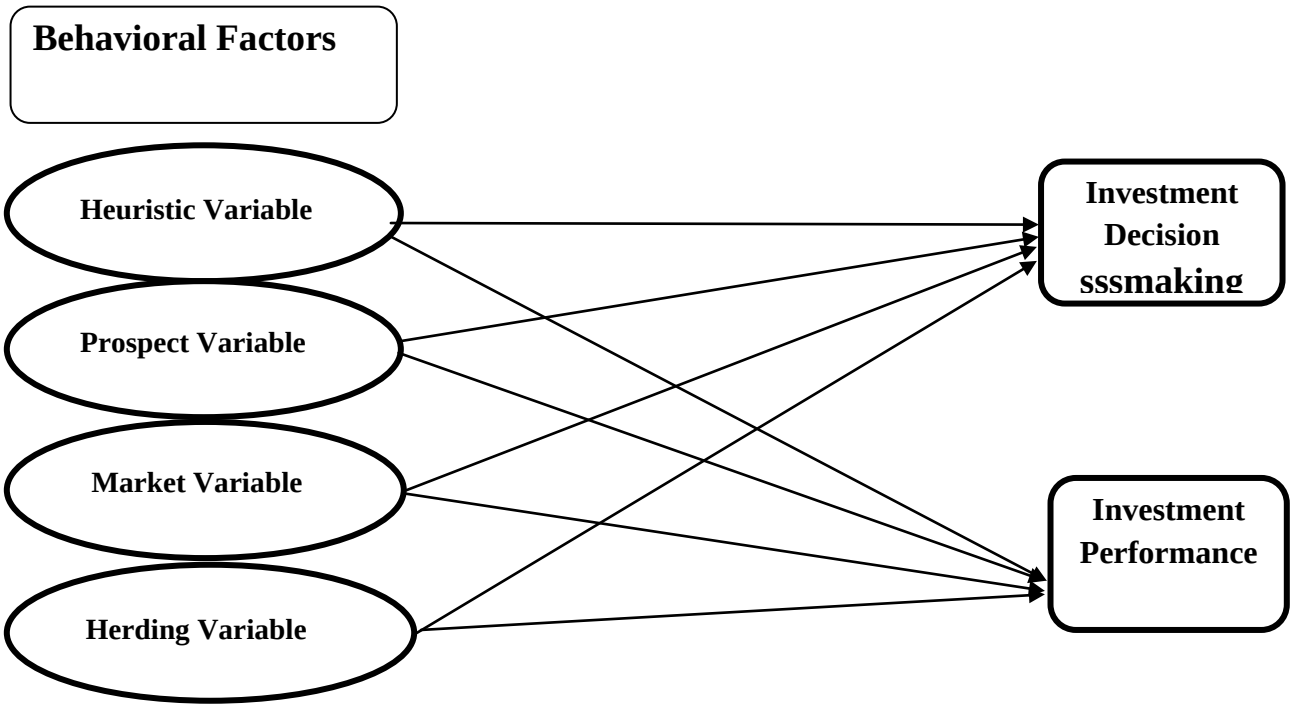

Figure 2.1: Research model for impact of behavioral factors on investors' decision making and investment performance

g) Hypothesis for Research

- *H1:* Heuristic variable highly impact the individual investors' decision making.
- *H2:* Prospect variable highly impact the individual investors' decision making
- *H3:* Market variable highly impact the individual investors 'decision making.
- *H4:* Herding variable highly impact the individual investors' decision making.
- *H5:* Heuristic variable positively impact the investment performance.
- *H6:* Prospect variable positively impact the investment performance.

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- *H7:* Market variable positively impact the investment performance.
- *H8:* Herding variable positively impact the investment performance.

III. Research Methodology

a) Research Design

The cross-sectional design is used in this research. In the cross-sectional design, data is collected and analyzed from more than one point at one single time. This research design is relevant to this research because it best suits this type of research to show the common trends of the behavior of investors rather than a single specific one. So the main reason is that the data in this study is collected at single point of time not the multiple stages (Saunders et al., 2009).

b) Data Analysis Method

In order to run the data SPSS Software is used because data is cross sectional. Varioyus tests are conducted through SPSS like Cronbach's Alpha, Descriptive Statistics and Multiple regression model.

IV. Data Analysis and Results

a) Reliability Measurement

Cronbach's Alpha (Measurement Reliability)

Table 4.1: Cronbach's Alpha

Cronbach's Alpha value	Number of Items
.808	41

Cronbach's alpha is .808 which is greater than 0.6 which shows that scale has very good reliability. As in social sciences acceptable reliability is 0.6 and this questionnaire has significantly higher value which shows that it is good measure to follow. It means that the factors or variables included in the scale which are heuristic, prospect, and market and herding are reliable enough to proceed the further analysis.

Through means of sample, level and intensity of impact of behavioral variables on decisions of investors is identified. The mean value of 6- point Likert scale would help to see the level of impact of these variables. Following values of means would help to evaluate the impact level (Kengatharan, 2014).

b) Impact of Behavioral Factors over Individual Investors' Decision Making

Table 4.2: Mean value range and its impact level

Mean value	Impact level
Mean below 2	Very low impact
Mean exceeds 2 but less than 3	Low impact
Mean exceeds 3 but less than 4	Moderate impact
Mean exceeds 4 but less than 5	High impact
Mean exceeds 5	Very high impact

Table 4.3: Mean value range and Standard Deviation

Variable	Mean	Standard Deviation
Heuristics	4.5175	.46653
Prospect	4.6508	0.47951
Market	4.3775	1.04028
Herding	4.4735	.55238

Heuristic variable has mean of 4.5175 which is greater than 4 and less than 5, which indicates that heuristic has high impact on investment decision making. So the hypothesis that Heuristic variable highly impact individual investors' decision making is accepted. The mean of prospect variable is 4.6508, which shows that prospect has very high impact on investment decision making. So the hypothesis that prospect variable highly impact individual investors' decision making is accepted. Market variable has mean of 4.3775 which is greater than 3 less than 4, which indicates that market variable has moderate impact on

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investment decision making. So the hypothesis that market variable highly impact individual investors' decision making is rejected. The mean for herding variable is 4.4735, which is greater than 4 and less than 5, so herding has high impact over investment decision making. This result supports the hypothesis that herding variable highly impact individual investors' decision making, so the hypothesis is accepted.

c) *Impact of behavioral variables on investment performance*

- *H5:* Heuristic variable positively impact investment performance.
- *H6:* Prospect variable positively impact investment performance.
- *H7:* Market variable positively impact investment performance.
- *H8:* Herding variable positively impact investment performance.

Summary of Regression Model

Table 4.4: Summary of regression model

Model	R value (correlation)	R-Square value	Adjusted R-Square value	Standard Error of Estimate
1	0.698	0.487	0.452	.3803

Regression coefficient results

Table 4.5: Regression coefficient results

Model		Coefficients (Unstandardized)		Coefficients (Standardized)	t-value	Significance
		Beta (value)	Error (Std)	Beta (value)		
1	(Constant)	1.280	.592		2.363	.002
	Heuristic	.177	.102	.129	1.733	.015
	Prospect	-.063	.100	.047	.628	.531
	Market	.12	.45	.19	2.263	.014
	Herding	.448	.082	.388	5.482	.000
F-Value=10.142			p= 0.05			

$$\text{Investment performance} = 1.280 + .177 \times \text{Heuristic} - .063 \times \text{Prospect} + .12 \times \text{Market} + .448 \times \text{Herding} + \varepsilon$$

The above equation shows that value of intercept β_o is 1.280, this value represents that if the values of all predictors are zero then value of investment performance would be 1.280.

The value of β_1 0.177 which reveals that if heuristic variable changes by 1%, there would be 17.7% change in investment performance, by holding the other predictors constant.

The value of β_2-0.063 this shows that if prospect variable changes by 1%, there would be -6.3% change in investment performance, by holding the other predictors constant.

The value of $\beta_3$0.12 which reveals that if prospect variable changes by 1%, there would be 12% change in investment performance, by holding the other predictors constant.

The value of β_4 0.448 this shows that if prospect variable changes by 1%, there would be 44.8% change in investment performance, by holding the other predictors constant. From above regression equation it is very much clear that herding variable has highest impact on investment performance, because it brings highest change of 44.8% as compare to the other variables values in the equation.

The above table of regression analysis show that all variables have significant impact on investment performance except prospect, which has no significant impact on the dependent variable (investment performance).

The p-value of heuristic is 0.015 which less than 0.05, so the hypothesis that heuristic variable positively impact investment performance is accepted.

The p-value of prospect variable is 0.531 which is less than 0.05, so the hypothesis that prospect variable positively impact investment performance is rejected.

The p-value of market variable is 0.014 which is less than 0.05 so the hypothesis that market variable positively impact investment performance is accepted.

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The p-value of herding variable is 0.000 which is less than 0.05 so the hypothesis that herding variable positively impact investment performance is accepted.

d) Conclusion

This study accomplished answers of all those questions which were identified in the introduction. This study identified the impact of several behavioral factors over investors' decision making in Pakistan. Research concluded that most of the behavioral factors have high impact on investor decision making in Pakistan. As Pakistan stock market is not much developed one, major portion of investors do not have financial expertise in order to evaluate their investments, so they mostly focus on that information which is available in the market and make their decisions on the basis of explicit outcomes. All the behavioral variables highly impact investors' decision making which led to accept the all hypothesis related to impact level of behavioral factors on individual investors' decision making. But among all those variables prospect highly impact investor decision making. It shows that individual investors in Pakistani stock market mostly commit behavioral errors like loss aversion, regret aversion and mental accounting biases while making their investment decisions. In relation to variables that impact investment performance only three of the four variables have significant impact on investment performance. Herding has the highest positive impact on investment performance, after that heuristic and market have high positive impact investment performance. Results of all these variables are significant. However prospect variable negatively impact on investment performance but impact of this variable is not significant, which led to reject the hypothesis that prospect positively impact investment performance.

e) Limitations of the Study

In this research study data regarding behavioral factors is collected through questionnaires. But financial decision making is very much complex process and investors encounter various situations where they irrationally make decisions. But when investor provide data through questionnaires, they are somewhat relaxed so they answer differently. To overcome this interviews with investors could have been done to obtain accurate data. In order to enhance the accuracy of data related to performance, secondary data of stock return performance should have been taken, because most of the investors do not exactly know the expected returns of their investments and the average rate of return of the market so they just make random estimates. So secondary data of stock returns may increase the accuracy of measurement.

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