The Effects of Psychological Factors on Investment Decision Making of Investors: An Empirical Study from Bangladesh

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Abstract: *Behavioral Finance explains the psychological biases which cause the stock market anomalies. Investor's investment decision making is influenced by the cognitive psychological biases and heuristics where investors behave irrationally contrary to the standard finance theory of efficient market hypothesis. A survey was conducted on individual investors to collect answers on a set of questions with a view to find out the impact of psychological factors on investment decision from Bangladeshi stock market. The study also collects the investor's socio economic factors. The finding of the study reveals that risk aversion behavior, anchoring, representativeness, availability, overconfidence and mental accounting biases have strong influence on investment decision making of investors in capital market of Bangladesh.*

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1. Introduction

Conventional finance is based on the rationality assumption where there is no information asymmetry and investment choice is based on market information. It is easy to predict the future direction of the market based on the data and rationality assumption in the traditional finance. Investors take their decision to invest in the securities by using fundamental and technical analysis. But market price does not fully reflect firm's information and investors behave irrationally in the market although information is available to them. Due to this odd behavior capital market is not efficient in Bangladesh. Market inefficiency results in high volatility which leads to market crash. Behavioral finance interprets how investors formulate information for their investment decision making and facilitates investors in understanding the market trend. Behavioral finance suggests that investment decision making is a complex task in this dynamic decade. Investors are not always rational in their decision of buying and selling of securities. Some psychological factors and biases affect the decision making of the investors in capital

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market. Behavioral finance is the combination of cognitive psychological factors with the traditional finance theory to explain the irrational behavior of the investors. It is a new approach to find out the cause of irrationality of the individual investors. Individual investor's irrational behavior has influenced by behavioral finance dimension such as cognitive psychology. Cognitive psychology is the way of people's thinking about any matter. People are making systematic error for overconfidence and heuristics which divert people from right things to do. Moreover, cognitive psychological factors and personal biases are responsible for capital market volatility. Herd instinct behavior influences the market crash. All these suggest that psychological factors of an investor are influencing the investment decision making process.

Some researches were conducted in the different economies of the world considering the behavioral finance perspective on the investment decision making process. But no research has been conducted on the investors of Bangladesh from the behavioral finance perspective. This has motivated the researcher of this study to undertake this study. The objective of this study is to find out the influence of psychological factors on investment decision making in the capital market of Bangladesh.

2. Literature Review

Slovic (1972) conducted a study on human judgment on investment decision making and found that investors are in a fixed path of psychological inquiry and judgmental process of investment in stock market are caused for the different human behavior. In his study, Lewellen (1977) found that investors gather information thorough fundamental and technical analysis. Risk preference is low when the recent market price of the stock is high. Decision making of investment is also influenced by cognitive psychological factors. Hofstede (1980) conducted a study on the behavior of individual and the collective community and found that collective community makes individual more overconfident than individualism. The overconfident bias influences the decision making on all sphere of life. Education and cultural variation leads different human behavior. The culture and society is a good driver for cognitive bias determination. Based on findings of their study, DeBondt and Thaler (1985) argued that investors are overreacting in the stock market to the available information due to their own judgment. Investors are not rational and so their asset pricing is not accurate. Shefrin and Statman (1985) also found that psychological factor influences the investors to take capital market decision making. When investors need liquidity, they sell the winning share rather than losing stock.

Sitkin and Weingart (1995) concluded on a study that risk preference behavior and ability to bear risk is an important factor for capital market investment decision making. In their study, Fisher and Statman (1997) argued that decision making of buying any share is determined by the risk return expectation and the psychological factors. Behavioral factors have high impact on the stock purchase decision making from the capital market. Hirshleifer, (2001) found that investors who are overconfident provide more weight on private information rather than available market information. He argued that rational arbitrageurs are buying securities when overconfident traders are shorting their position with the hope of future price up. The study also found that the cause of the irrational behavior of the arbitrageurs is decision biases. Investor psychology of security's pricing is influenced by the current market psychological bias. He also concluded that Market return depends on the risk choice and misevaluation by the investors to take the arbitrage benefit. Barber and Odean (2001) conducted a study to test the excessive trading of the investors due to their overconfidence. The study revealed that the trading performance of overconfidence investor has fallen in interactive and optimistic market environment compare to the lonely market. Ritter, (2003) found that cognitive psychology and limits to arbitrage is the cause of irrational behavior in the financial market. Due to these behavioral factors, the financial market become inefficient which lead to the high volatility in the stock market. In their study, Waweru et al (2008) concluded that psychological and behavioral factors have influences on the decisions of the investors in the capital market. The decision making is based on their expectation, desire goal, risk preference etc.

Qian (2009) conducted a research on investor emotions regarding macroeconomic factors and concluded that investors are more optimistic on the share of small capitalization firm than the large capitalization firm. The degree of confidence level of investors and analyst declines in the time of economic expansion because the earning prediction is not accurate for the future. In his study on the effect of investor's emotions or sentiments on investment decision, Muhammad (2009) revealed that investors avoid losses by selecting securities based on their own analysis. Investors follow other investors trading behavior and others choice of investment. The investors analyze the past performance of the stock to forecast the future performance. They trade on the known securities in the portfolio more rather valued share. Kannadhasan (2010) found that investors generally update their information and investors decision is influenced by the behavioral factors.

Razek (2011) also conducted a study from behavioral finance perspective and concluded that market is not efficient and investors behave irrationally. Agrawal (2012) illustrated a framework of psychological biases and their relation and consequence on investor's decision. He concluded that the biases have no impact individually but they are active together. The anomalies lead to the market volatility which influences the irrational investment decision making in the financial market.

Khan et al. (2015) have conducted a study over 270 investors from Khulna city to find out the stock market investment decision making factors. They have found that financial performance of the company, hedging opportunity, market and economic factors are considered for taking stock market investment decision. They have concluded that investors are also considered motivational factors before investing in share market.

Bakar & Yi (2016) examined the impact of psychological factors on the investment decision making in the stock market in Malaysia. They have surveyed over 200 investors who are in middle age from Klang Valley and Pahang areas. They have found that investment decision is being affected by the conservatism, overconfidence and availability bias of the investors in Malaysia. They have also added that these psychological biases vary from gender to gender of individual investor.

Kanojia et al. (2018) surveyed the questionnaire on investment decision making factors of stock market in India. They have found that psychological biases have a great influence on individual investor’s stock market decision making. They claimed that representative bias has highest influenced on stock market investment decision of an individual investor in India. Overconfidence bias, cognitive dissonance and dispassion effect stimulate the psychology of the investors for making stock market investment. They have not found any significant influence of herding behavior of investors on investment decision making.

Sarbabidya & Saha (2018) have conducted a study on the investment decision making factors. They have developed a structured question and conducted survey over 100 respondents in Chittagong and Comilla. They have found that gambling, rumor, insider trading, bucket shop trading and syndication has negative influenced on the stock market investment. They claimed that investors are demotivating to invest their fund in the stock market due to political instability, market risk factor, uncontrollable macroeconomics index, stockholder’s whimsical attitude toward the market etc.

Sochi (2018) has conducted a study on the behavioral finance factors affecting the investment decision in the stock market in Bangladesh. She has surveyed the questionnaire over 203 retail investors from different brokerage house of Dhaka Stock Exchange. She found that behavioral bias affects the investment outlook and it also affects the investment decision of different individuals. She claimed that educated young age people with small amount of fund are satisfied with their investment performance. She also found that age and income of an individual investor has positive impact on the investment size in the capital market. She concluded that retail investors are being biased in the time of stock market investment by the behavioral biases.

Review of all these studies suggest that behavioral factors which are psychological in nature make investors irrational in the capital market. Most of the studies focused on the human behavior in the stock market but there is a few works on the impact of behavioral biases on investment decision. Especially in Bangladesh there is no work on exploring the effect of psychological biases on investment decision of investors in capital market.

3. Research Methods

This study is a qualitative research in nature. Deductive approach is most appropriate in this analysis to add a brick in the behavioral finance theory.

3.1 Data and sampling

Data are collected for the study by conducting a market survey through a set of questionnaire in Bangladesh. The questionnaire consists of 24 questions which identify the investor's psychological biases. Each of the questions is designed to understand the trading behavior of the investors under the behavioral finance theory. First section of the questionnaire describes the socio economic information of the respondents. The survey is conducted for two month long on retail investors who actively trade in their account. The responses were taken both in hard copy response and online based survey. Responses from 426 investors are collected and of them only responses from 400 investors are used for the analysis and others' responses are dropped due to incomplete answers. The online based survey has been done on the facebook group of investors such as DSE Investors Club, Investors Club (DSE & CSE). The field survey has been conducted on retail investors in different renowned brokerage houses.

3.2 Definition of the key variables

Risk Aversion: Investors are risk averse in the diverse environment where new information is flowing quickly. Risk aversion is an aspect of human behavior which induces a person to take attempt to lower uncertainty when he/she is exposed to any uncertainty. An investor is said to be a risk averse investor when he/she prefers lower returns with known risks rather than higher returns with unknown risks.

Anchoring bias**:** Anchoring is the situation when people hold the initial decision. Investors are holding a fixed value of share although recent information suggests different value of the share. Investors use the initial price while analyzing to buy or sell security and today's price is determined by the past price.

Representativeness: Representativeness is the shortcut judgment of the people where they think all characteristics is similar to the population. Investors are assessing a share similarly with the industry or the sector. Although this heuristics is reducing much effort, it misleads the investors in the time of decision making. Sometimes it causes the overestimation or underestimation of the investment.

Availability bias: Availability bias is the flaw in decision making caused by the available information in the memory for human attribution and statistical errors. Investor's decision making is influenced by the events available in the memory. It is a cognitive illusion where people store the memorable events.

Overconfidence: People are overconfidence when they are optimistic in their decision. An individual investor thinks that he has better knowledge and skills over other investors and accordingly he trades excessively in the stock market. Overconfidence increases the perception of the investors about their ability to bet the market.

Mental Accounting: Mental accounting refers to the tendency of the investors to attribute different gambling outcomes to different reasons. Investors are making frame toward the return distribution of any stock. It is believed that good money being thrown after bad money through trading of non-profitable stock with the hope of future recovery in any way.

Herding Behavior: Herding behavior arises from the tradition of following other people. Here investors follow a group of investors and take decision similar to that group. In the stock market investors are more influenced by the public information rather than the private information.

4. Analysis and findings

4.1 Socio-economic factors: To analyze the effect of cognitive biases on investment decision, understanding the attributes i.e. socio economic factors of the investors selected under this study is important. The reason is that these factors also influence the investment decision as well as the cognitive biases. Among the socio economic factors, first the gender of the investors has been analyzed. Table 1 shows the gender of the investors responded in this study.

Table 1: Gender of the respondents

Gender	Frequency	Percentage
Male	336	84.00%
Female	64	16.00%
Total	400	100%

From the respondent, 84 % respondents are male. It can be concluded that male people are more involved in the stock market than the female investors. Female investors are lagged behind with the male investors in the stock market trading operation.

Age of the investors also influence the investment decision. Risk preference and other cognitive biases may differ among investors of different ages. Table 2 shows that most of the investors are belonging to age groups of 26-35 and 36-50 years. It revealed young and middle aged investors are more involved in our capital market.

Table 2: Age group of the respondents

Age group	Frequency	Percentage
Under 25 years	60	15.00%
Between 26-35 years	160	40.00%
Between 36-50 years	88	22.00%
Between 51-65 years	66	16.50%
Over 65 years	26	6.50%
Total	400	100%

Another important socio-economic factor of investors is their education level. Less educated people take more irrational decision than highly educated people. They also have more physiological biases.

Table 3: Education level of the respondents

Education level	Frequency	Percentage
Without any degree	16	4.00%
Higher Secondary degree	32	8.00%
Bachelor degree	158	39.50%
Master degree	194	48.50%
Total	400	100%

In this study, 88.00% respondents have bachelor and master degree. So it can be inferred that most of the respondents have enough knowledge about the market. Surprisingly, 4% of the investors do not have any education. As investment in capital market is most risky investment, these people are prone to make more irrational decision than others.

Table 4: Profession group of the respondents

Profession Group	Frequency	Percentage
Student, housewife	80	20.00%
Employee, Executives, Manager	180	45.00%
Businessman	54	13.50%
Academic Researcher, Director, Doctor, Engineer	34	8.50%
Retired	52	13.00%
Total	400	100%

Investment decision and physiological biases are also influenced by profession of the investors. 45.00% respondents are employees, executives, managers which is highest among the different profession group. These investors have core profession from where they earn their livelihood and income from capital market is the additional income to them. Interestingly 20% of the investors are either student or housewife. This finding revealed the increasing participation of women in the capital market of Bangladesh. Academician, Researcher, Director, Doctor, Engineer are trading in the market for different motives i.e. experiment, ownership holdings and income generating source. Retired investors are investing in the market for passing their time and earn some extra income.

4.2 Psychological factors or biases

Seven psychological factors such as risk aversion, anchoring, representativeness, availability, overconfidence, mental accounting, herding behavior biases have influence on the investment decision making of the individual investors which eventually lead them to trade more to earn excess return but actually these biases makes the market inefficient.

4.2.1 Risk Aversion

Rational investors are assumed to risk averse. Table 5 shows that investors in Bangladesh are risk averse. 71% of people are investing in government securities or less risky investment if they have 1000 Taka in hand.

Table 5: Risk aversion bias

Risk Aversion Indicators	Frequency	Percentage
Investment Choice of 1000 Taka	284	71.00%
Selling decision of share	168	42.00%
Best investment choice	162	40.50%
Portfolio constitution objective	162	40.50%
Weighted average risk aversion	48.50%	

Investors want secure income and gain because they are feared of the loss after 2010-2011 Bangladeshi stock market debacles. 42% respondents sell their investment in capital market when the market value of their investment starts to fall. Relating to question of best investment choice, 41% investors answered that the best investment is the stock which has no chance of losing invested money. Another question of the risk aversion is the objective to construct portfolio. 40.50% of the respondents answered that they manage their portfolio for fundamental trading where there is low risk of losing the invested fund. Providing equal weight to the each of the risk aversion indicators, it is revealed that 48.50% investors of Bangladesh are risk averse in their investment decision making choice.

4.2.2 Anchoring bias

Investors are said to be biased by anchoring behavior when they use information from their past experience in making new investment decision.

Table 6: Anchoring bias

Anchoring bias variables	Frequency	Percentage
Decision to invest further in a share while the investor has already incurred loss on it previously	130	32.50%
First idea	184	46.00%
Weighted anchoring bias	39.25%	

To assess anchoring bias the investors were asked whether they invest on the same share when they incurred loss in that share previously. 32.50% of the investors responded that they do not further invest in the same share when they made loss on a particular share. The second question was on the belief of the first idea in decision making. 46% of the respondents answer that the first idea is always best and good when they sell their security. The weighted average responses is 39.25% which indicates 39.25% retail investors are influenced by the anchoring bias in the capital market of Bangladesh.

4.2.3 Representativeness

Representativeness bias is inferring the similarity of anything with the category. People are influenced by this bias to make decision quickly bases on the other category results.

Table 7: Frequency distribution of representative bias

Representativeness variables	Frequency	Percentage
Investors rely on available market information	114	28.50%
Investors examine PE ratio	168	42.00%
Weighted representative bias	35.25%	

The first representative bias question is the dependence on market information in making the investment decision. 28.50% of the respondents follow the available market information without any analysis to make capital market investment. Another question of representativeness is the use of industry Price Earning (PE) ratio in taking the decision of investment in a particular stock. 42% investors are viewing the industry PE ratio to make quick investment decision. The weighted responses suggest that 35.25% of investors in Bangladesh are influenced by the representativeness in their investment decision. Investors generally follow the representativeness to reduce the time for analysis.

4.2.4 Availability bias

When people make any choice, they follow the immediate events result to draw the conclusion. Investors in the stock market tend to formulate their investment decision by analyzing the available information on the hand.

Table 8: Availability bias

Availability bias variables	Frequency	Percentage
Reaction to rumor	190	47.50%
Weighted Availability bias	47.50%	

To assess the availability bias, investors were asked about their reaction at the time of rumor circulation in the stock market. 47.50% of the investors answered that they react instantly to the information. This bias ultimately leads the investors to make irrational decision and also cause market inefficiency.

4.2.5 Overconfidence

Many investors believe that they are confidence enough to earn return in excess of average return by formulating own investment analysis and this overconfidence lead them to trade more than other investors in the market.

Table 9: Overconfidence bias

Overconfidence variables	Frequency	Percentage
Sources of information for selecting security	144	36.00%
Causes of managing own portfolio	260	65.00%
Belief on luck	246	61.50%
Investor's skill and knowledge to outperform the market	126	31.50%
Weighted overconfidence bias	48.50%	

If investors use single and few sources of information, investors are biased by overconfidence. 36% of the investors responded in the study used single source of information for investment. Another factor which determines overconfidence bias is how investors manage their portfolio. 65% respondents believed that they have confidence and skills to manage their own portfolio. Overconfident investors generally have strong belief on their luck. 61.50% investors of this study believe that they are lucky when they gain and unlucky when they loss by their choice of investment. Another important aspect of overconfidence is the investor's belief about their ability to outperform the market. 31.50% respondents in this study believe that they have that level of skill and knowledge to outperform the stock market. Considering all these aspects of overconfidence, the weighted average responses suggest that 48.50% individual investors in Bangladesh are influenced by the overconfidence bias while making their investment decision.

4.2.6 Mental Accounting

Investors are also biased by mental accounting in their decision to buy or sell shares in the capital market. Mental accounting bias has been assessed by the questions listed in Table 10.

Table 10: Mental accounting bias

Mental Accounting variables	Frequency	Percentage
Hesitation to buy share which has no indication to rise	76	19.00%
Reaction when share price goes down at a large percentage in one day	142	35.50%
Decision to held high performing share when market start to goes in downtrend	126	31.50%
Decision to invest in bullish stock market	154	38.50%
Weighted mental accounting bias	31.13%	

Table 10 revealed that 19% respondents buy shares which they decided to buy even though share price is going up. The second question to assess mental accounting is formulated to determine what investors do when the share price is gone down at a large percentage. 35.50% investors responded that they buy the share because they believe that it is great opportunity which should not miss to reap the market. 31.50% of the respondents liquidate the share when the market is in downtrend to reduce their loss and put the investment in secure place. Finally retail investors are buying and holding their existing stock in the boom share market. 38.50% investors are buying with the hope of increase the share price in the future. By averaging the different aspects of mental accounting biases it can be concluded that 31.13% investors in Bangladesh are influenced by mental accounting biases which lead them to be diverted from the fundamental and technical analysis in making their decision in capital market.

4.2.7 Herding Behavior

People are likely to live together and they follow each other for decision making. When an investor follows other investors in the time of trading the investor is said to be influenced by herding behavior bias.

Table 11: Herding behavior bias

Availability bias variables	Frequency	Percentage
Other investors' stock choice influence investment decision	144	36.00%
Weighted herding bias	36.00%	

Table 11 revealed that 36% investors are influenced by the trading stock choice, volume etc by other group of investors. Investors follow others when they believe that other investors have more knowledge and skills to reap the market. Investment choice in stock market is influenced by the herding psychological bias.

4.3 Chi-Square Test

Pearson's Chi-square is widely used for hypothesis testing of sampling distribution where respondents provide binary response. Table 12 shows the results of Chi-square test which can determine the statistical significance of different psychological biases of investors.

Table 12: Chi-square test of behavioral biases

Row variable	Column variable	Pearson $chi^2(8)$	Probability
Decision making	Risk Aversion bias	48.0144	0.000
	Anchoring bias	17.0809	0.029
	Representative bias	20.4062	0.009
	Availability bias	11.4501	0.022
	Overconfidence bias	56.7300	0.000
	Mental Accounting	39.4274	0.001
	Herding behavior	1.2740	0.866

Except herding behavior, all selected psychological biases are statistically significant where the chi- square probability is less than 5% level of significance. The table infers that investment decision making of individual investors in Bangladesh is highly influenced by those six statistically significant psychological biases.

6. Conclusion

In any stock market, the core participants are the retail investors, institutional investors, mutual fund etc. Retail investors manage their portfolio by their own means and trade to earn profit from the investment. In theory of standard finance it is assumed that stock market is efficient but in reality the market is not efficient due to the irrational behavior of the investors. The irrational behavior is caused by the investor's intuition, cognitive biases and heuristics in the time of investment decision making. From the results of the study, investors in Bangladesh are not behaving rationally in the market. Due to irrational behavior of investors, the market is inefficient. Behavioral factors are actively or passively influencing the decision of investors in capital market of Bangladesh. Investors in Bangladesh are not skilled enough to earn above average profit. They are following the behavior of others and they process the information by their intuition and heuristics. Psychological factors such as cognitive biases and heuristics make the investors behaving irrationally which leads the market to operate inefficiently. The study result exhibits that risk aversion, anchoring, representativeness, availability, overconfidence and mental accounting biases have strong impact on investment decision making of retail investors. Except herding behavior of investors, all psychological factors are statistically significant to influence the investment decision making.

The study can assist individual investors by knowing the effect of behavior biases on investment decision making to improve their investment choice. It also helps investment advisors, regulators to understand the cause of market abnormality.

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