



“Behavioral biases affecting investment decisions of capital market investors in Bangladesh: A behavioral finance approach”

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BEHAVIORAL BIASES AFFECTING INVESTMENT DECISIONS OF CAPITAL MARKET INVESTORS IN BANGLADESH: A BEHAVIORAL FINANCE APPROACH

Abstract

The aim of this paper is to identify the behavioral and psychological biases that may affect the investment decisions of individual investors in Bangladesh. This study considered behavioral anomalies such as Cognitive Dissonance, Regret Aversion, Loss Aversion, Overconfidence, Hindsight, Illusion of Control, Herd instinct, Self-attribution and Representativeness, and analyzed how significantly each of these would prevail by preventing investors from making rational decisions when investing. The research has been developed through a structured questionnaire and analyzing the survey results collected from 196 individual investors involved in Dhaka Stock Exchange. Factor analysis on a behavioral approach was conducted to analyze the responses. The outcome reveals that investors are not rational, and that there is a significant impact of the different behavioral biases, particularly cognitive dissonance (0.8005), regret aversion (0.7793), loss aversion (0.7418) and illusion of control biases (0.7260) on the investment decisions of investors in Bangladesh. Moreover, the most influential of four factors extracted jointly can explain 55.63% of the variance of the variables. Finally, the factor loading values show that all nine hypotheses can be rejected, which makes it clear that all the designated psychological biases exist in the investment decision of DSE investors.

Keywords

behavioral factors, psychological biases, investment
decision, rationality, Dhaka Stock Exchange, Bangladesh

JEL Classification

D53, D91, E71, G41

INTRODUCTION

According to the traditional theories of finance, investors make their investment decisions rationally when investing. In a practical scenario when making investment decisions, it has been observed that investors do not always make a rational decision, rather it is their psychological biases impacting their choice of decisions (Kahneman & Riepe, 1998). This irrationality can successfully be linked with the investors of many countries like Bangladesh where investors have already experienced a massive market collapse several times due to the anomalies by behavioral biases (Khan et al., 2015). For an emerging economy like Bangladesh, where the capital market is extremely concentrated, behavioral finance places an urge to study more about the behavioral anomalies being perceived in the financial market of Bangladesh (Islam et al., 2018). Moreover, all the notable stock market crashes of the Bangladeshi capital market strengthen the conception of the inefficient market, signifying the failure of traditional finance theories. Despite the acceptance of the existence for behavioral aspect of investors worldwide, in a developing economy such as Bangladesh, behavioral aspects are not considered and practiced properly, which ultimately affects the overall performance and prediction of the capital market. One major aspect of human emotions and cognitive limita-

tions being unapproached for major investment decisions ultimately leads to the problem of unexpected returns and inherent risks of abnormal volatility. This paper therefore contributes to the investigation of behavioral biases that are prevalent in the Bangladeshi stock market as an explanation for interrupting the rationality of individual investors and mitigating the stock market anomalies of securities. In the process, the problem with certain financial choices made by investors can be better explained and advanced to propose a behavioral finance approach as a mainstream alternative theory to traditional finance in an emerging market like Bangladesh.

1. LITERATURE REVIEW AND HYPOTHESES

Behavioral finance theory explains how investors' behavior is influenced by emotions and cognitive errors during decision making (Kengatharan, 2014). According to the researchers of the behavioral finance, investment decisions are affected by various types of behavioral aspect, beliefs, and biasness (Gitman & Joehnk, 2008). Due to these beliefs and bias, investors make irrational decisions by overreacting to some events or financial information and underreacting to others (Khan et al., 2015). To explain such unpredictable investment decisions of investors, behavioral finance is one of the best approaches (Ritter, 2003). Molla et al. (2018) claimed that behavioral anomalies are liable to the investment decision making process of investors. Researchers found evidence of behavioral biases in the investment decision of investors (Grinblatt & Keloharju, 2009; Trinugroho & Sembel, 2011; Venkata et al., 2018). When making investment decisions, most investors ignore the behavioral aspects of finance, and focus on the general financial measures of firms to measure their performance (Akhter & Ahmed, 2013).

Many Asian countries come up identifying the existing psychological biases that affect the rationality of investors. Indonesian investors were examined and resulted in anchoring bias, representativeness bias, herding behavior, loss aversion, overconfidence, and optimism biases (Kartini & Nahda, 2021). Saif Ullah et al. (2020) conducted a similar investigation in the context of Pakistan Stock Exchange and come up with three biases, disposition effect, herding and overconfidence bias, having a significant positive impact, whereas another study showed a non-significant impact of heuristic biases in the same market (Shah et al., 2018). Atif Kafayat (2014) conducted a study in the Islamabad Stock Market and found that biases

like overconfidence, self-attribution and over-optimism are negatively related to the investment decision of investors. The same stock market has come up with the impact of overconfidence bias and illusion of control being significantly affecting investor decisions in another study (Qadri & Shabbir, 2014). An extended study included and investigated overconfidence, confirmation bias, illusion of control, loss aversion, mental accounting in the Islamabad Stock Market, and results showed that only overconfidence, illusion of control and confirmation biases among all are positively significant (Bashir et al., 2013). Previous studies for the same demonstrated a significant impact of even detailed behavioral biases such as representativeness bias, gambler's fallacy, anchoring bias, overconfidence bias, and availability bias, and risk aversion (Qureshi et al., 2012).

In addition, another notable neighbor of Bangladesh, the Indian Stock Exchange, has been proven with overconfidence bias, anchoring bias, disposition effect and herding behavior (Madaan & Singh, 2019). Adding to the essence of more psychological prevalence into the similar market, a systematic review analysis has come up with 17 different types of cognitive biases being identified (Zahera & Bansal, 2018). Joo and Durri (2017) investigated a potential impact of psychological factors such as overconfidence, optimism and pessimism on the rationality of Indian investors. Moreover, Bhubaneshwar Stock Exchange is influenced by psychological biases such as overconfidence, anchoring, regret and loss aversion (Tripathy et al., 2014). Most of studies summed up the irrationality of investors, questioning the complete soundness at any point of time (Mukherjee et al., 2019). Notable opportunity hub of the capital market in the Asian context accounts for the Malaysian stock market as a target-emergence for the Bangladeshi capital market. Hence, this market too suffers from conservatism, herding, regret

aversion biases (Lim, 2012). The developed market of Asia, Ho Chi Minh share market, has also been explored with the behavioral patterns like overconfidence, regret aversion, anchoring, herding and loss aversion moderately affecting decision making (Ngoc, 2014). The results are supported by another study finding three factors (herding, prospect, and overconfidence) that have a moderate impact on investment performance (Luong & Thu Ha, 2011).

Not only the Asian markets, but also the global market of Bangladesh, Tehran Stock Exchange, has been examined with the existence of overconfidence bias being positively significant (Pourjiban et al., 2014). Another Asia market, such as the Colombo Stock Exchange, has observed overconfidence bias, herding bias, prospect bias, availability bias to be the most influential on the investment decisions of individual investors (Kengatharan, 2014). While most of the recent developmental schemes for the Bangladeshi capital market revolve around its potentiality by accessing into the African markets, it has the dominance of similar behavioral disorders of investors too. Wamae (2013) conducted a study focusing on investment banks of Kenya to examine biases and concluded that investors are mostly influenced by herding and then prospecting, anchoring and risk aversion biases accordingly. Another study found that Nigerian investors are affected by the overconfidence bias, loss aversion, framing and the status quo bias (Babajide & Adetiloye, 2012). In addition to the relevance due to the Asian emergence, specific behavioral anomalies of investors have been studied and applied globally. Loss aversion is one of such major psychological dilemmas that have been studied and identified globally in all markets (Bodnaruk & Simonov, 2014). The pain of losing something hits harder than the happiness of gaining something equivalent is what loss aversion stands for (Kahneman & Tversky, 1979). Another important study of loss aversion found that previous winning companies are undervalued, while past losers are overvalued, due to excess selling pressure on past winners and excess buying pressure on past losers, respectively (Grinblatt & Han, 2005).

Mbaluka et al. (2012) conducted a study at the Nairobi Securities Exchange, Kenya, and investigated framing and loss aversion biases to find

the impact on the investment decision. The result demonstrated that majority of investors are loss averse. The identical investors have also shown their creeping determinism in the name of hindsight bias. Shiller (2000) stated that hindsight bias is a tendency to think that he/she would have known the actual event before it happened. Monti and Legrenzi (2009), after conducting a study on the impact of hindsight bias, found strong evidence that investors portfolio of investments is influenced by the hindsight bias. There are many other studies that show that hindsight bias has a strong impact on the investment decision on a global platform (Statman et al., 2006; Shefrin, 2002). Another common cognitive factor that can be examined generally is the prevalence of representative bias. Nofsingera and Varma (2013) used stock information from the NYSE, AMEX and NASDAQ and found that availability bias plays an important role in stock repurchasing by investors. Apart from Asian markets, overconfidence bias has also been predominantly studied worldwide, and interestingly, almost every study marked it as the prevailing one. Cherry (2001) captured this misconception of investors in a different way of behaving by frequent selling of securities, considering the amount of taxes resulted from the trading of securities. Such frequent selling of securities is perceived as a way to minimize high volume of costs (Pompian et al., 2006), while this belief has been linked to optimistic bias, believing that different costs will reduce the return of the securities (Soman, 2004). Chen et al. (2007) in the same mark, claimed that overconfidence and conservatism biasness of the investors during the investment decision led to poor returns.

Emerging market investors also showcased a self-attribution tendency where investors tend to be fixed in the initial perceived decisions, despite whatever happens (Hirshleifer, 2015). Finally, it can be said that traditionally the thoughts of investors may appear as rational, but the investors are influenced by the investment decision, it depends on different behavioral characteristics of the investors (Dewri & Islam, 2015). Birau and Singh (2012) also found the impact of emotional and psychological factors on investment decisions. Korniotis and Kumar (2011) extended the impact of such biases beyond the financial markets and showed a lack of financial literacy to be the foremost reason.

This paper tries to explore the prevalence and effects of psychological biases that prevent individual investors from taking rational decisions on the Dhaka Stock Exchange. Therefore, this study aims to test nine psychological biases, such as Cognitive Dissonance Bias, Regret Aversion Bias, Loss Aversion, Overconfidence Bias, Hindsight Bias, Illusion of Control Bias, Herd instinct Bias, Self-attribution Bias, Representativeness Bias, along with the effect each of the stated behavioral biases may have on the financial decision making of the stock market of Bangladesh, one of the fast-emerging economies of Asia. Thus, research hypotheses can be tallied up to test each of the selected biases as follows:

- H1: *There is a significant impact of representativeness bias on investors' investment decisions.*
- H2: *There is a significant impact of overconfidence bias on investors' investment decisions.*
- H3: *There is a significant impact of hindsight bias on investors' investment decisions.*
- H4: *There is a significant impact of cognitive dissonance bias on investors' investment decisions.*
- H5: *There is a significant impact of herd instinct bias on investors' investment decisions.*
- H6: *There is a significant impact of regret aversion bias on investors' investment decisions.*
- H7: *There is a significant impact of self-attribution bias on investors' investment decisions.*
- H8: *There is a significant impact of illusion of control bias on investors' investment decision.*
- H9: *There is a significant impact of loss aversion bias on investors' investment decisions.*

2. METHODOLOGY

This work is mainly a qualitative study conducted by analyzing data collected from 196 individual investors on the Dhaka Stock Exchange. The cross-sectional

research design has been used in this study where data were collected and analyzed from more than one point at one single time. The research has taken the behavioral factors that dominantly explain the selected psychological biases such as Cognitive Dissonance, Regret Aversion, Loss Aversion, Overconfidence, Hindsight, Illusion of Control, Herd instinct, Self-attribution, and Representative biases. The inputted data of the factors are analyzed to find which factor/s have the most impact on the decision-making process when investing, using the factor analysis model.

A structured questionnaire has been built based on a question format involving 14 behavioral factors each of which represents the respective psychological biases. A similar approach consisting of questions constructed by using 5-point Likert Scale was also developed and used by Dabholkar (1996). Likert scale indicates how strongly respondents agree or disagree with the opinion or statement (Saunders et al., 2009). One of the relative advantages of using this scale is its suitability for the applications of multifarious statistical tools used in marketing and social research study (Malhotra et al., 1999). The data collected are statistically processed subsequently to get useful information.

When the population is unknown, then snowball, quota and convenience sampling methods are used for conducting survey (Lim, 2012). Due to the rapidly changing population size of the study area, a convenience method is used due to its availability to researchers (Bryman & Bell, 2022). Therefore, based on the population of this study as rapidly changing every day, the convenience and snowball sampling method was for doing the needed survey and primary data collection.

For unknown population, the sample size has been calculated by using the following formula:

$$n = \left[Z^2 \cdot \left\{ \frac{p \cdot q}{e^2} \right\} \right], \quad (1)$$

where n = Sample Size, p = Population percentage $q = (1-p)$, Z = Z-score of the z-table, e = Marginal error.

Taking population size is unknown, P value as 50%, and marginal error as 7%, the required sample size is come up as 196.

To analyze data, mainly factor analysis, which included correlation matrix analysis, Bartlett test, KMO test and factor loading analysis, has been used with the implication of STATA (version 15).

3. RESULTS

Table 1 shows the statements, which represent different behavioral biases, and the percentage of “agree” or “disagree” with these statements of the respondents.

In this study, the responses received from a sample of 196 respondents were examined, which represent 67.7% of men and 32.3% of women of the total number of respondents. Most of the investors’ sources of information about the investment

come up as broker/fund manager and objective of investment of the majority investors is to have stability of principal.

Table 2 shows all the variable’s mean value is positive and around 4, which indicates that on average all the responses of the questionnaire have come up with the “agree” statement. Also, all of the low standard deviation values justify that the values are close to the mean value, which is also the expected value of the dataset.

Furthermore, for summarizing, reducing, and identifying the most influential variables of the data set, factor analysis has been conducted. Hence the analysis process initiates with determining the correlation matrix of the variables followed by conducting the validation and reliability tests of

Table 1. Summary of behavioral responses

Statements	Variables	Strongly disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly agree (5)
My past history influences the present investment decision	Representativeness bias	0%	0%	10.5%	39.2%	50.3%
I am holding to my investments because selling them would incur loss	Cognitive bias	0%	0%	15%	44%	41%
I am sure that I can make correct investment decision	Overconfidence bias	0%	0%	14.7%	39.2%	46.1%
Thinking hard and for a long time about the investment decision sometimes gives me satisfaction	Herd instinct bias	0.3%	0.3%	14.4%	47.9%	37.1%
I was informed about all the fundamentals of the company that I am confident in making my investment	Illusion of control bias	0.3%	0.3%	16.5%	44%	38.9%
I intend to sell my investments immediately it goes back to the acquisition price	Loss aversion bias	0.3%	0.6%	14.7%	41%	43.4%
The previous profits generated from similar investments by the company made it very attractive to me to invest in it	Hindsight bias	0.3%	0%	16.8%	43.7%	39.2%
The investment was more of a bad/ good luck than it was my own judgment.	Self-attribution bias	1.2%	0%	14.4%	44%	40.4%
I am holding my investment because I know the prices will revert soon	Regret aversion bias	0%	0%	14.1%	41.6%	44.3%

Table 2. Descriptive statistics

Variable	Observation	Mean	Std. Dev. (%)	Min	Max
Representativeness bias	196	4.59	0.561	3	5
Cognitive dissonance bias	196	4.37	0.630	3	5
Overconfidence bias	196	4.31	0.648	3	5
Herd instinct bias	196	4.26	0.700	1	5
Illusion of control bias	196	4.25	0.734	1	5
Loss aversion bias	196	4.29	0.745	1	5
Hindsight bias	196	4.31	0.723	1	5
Self-attribution bias	196	4.27	0.804	1	5
Regret aversion bias	196	4.37	0.654	3	5

Table 3. Correlation matrix

Variable	Representativeness bias	Cognitive bias	Overconfidence bias	Herd instinct bias	Illusion of control bias	Loss aversion bias	Hindsight bias	Self-attribution bias	Regret aversion bias
Representativeness bias	1.00								
Cognitive bias	-0.018	1.00							
Overconfidence bias	-0.109	-0.005	1.00						
Herd instinct bias	-0.012	0.049	0.024	1.00					
Illusion of control bias	-0.029	-0.103	0.166	-0.030	1.00				
Loss aversion bias	-0.066	0.044	0.002	0.256	0.079	1.00			
Hindsight bias	-0.060	0.040	0.065	-0.079	0.081	-0.064	1.00		
Self-attribution bias	0.107	0.029	0.145	0.158	-0.011	0.306	-0.054	1.00	
Regret aversion bias	0.136	-0.005	-0.065	0.047	-0.028	0.021	-0.017	-0.030	1.00

the data. Finally, factor loadings are measured and rotated to extract the most influencing factors of all. Table 3 shows the correlation among the selected variables of the data set used in this study. The matrix shows that the correlation among the variables is weak. If the variables were highly correlated, and the correlation value would be more than +0.8 or -0.8, then it would indicate the multicollinearity problem. Hence, it can be concluded that there are no such variables that are highly correlated to each other, and all the values are less than +0.8 or -0.8, meaning that there is no multicollinearity problem among the variables of the dataset.

Moreover, this study proceeded with validity and reliability test of the data set through the Bartlett test of sphericity and KMO tests. Bartlett test of sphericity is conducted to find whether the correlation matrix of the data set is an identity matrix or not. Identity matrix indicates that the variables are unrelated and unsuitable. Hence, the following hypotheses can be developed to test the Bartlett test of sphericity:

Null hypothesis: The correlation matrix is an identity matrix signifying no relation among variables.

Alternative Hypothesis: The correlation matrix is not an identity matrix signifying relations among the variables.

Table 4. Bartlett test and KMO test

Determinant of the correlation matrix Det	0.704
Bartlett test of sphericity	
Chi- square =	67.041
Degree of freedom =	36
p-value =	0.001
Kaiser- Meyer- Olkin Measure of Sample Adequacy	
KMO =	0.501

Table 4 shows that the p-value of the Bartlett test is 0.001, which is less than the 5% (0.05) significance level, which means the null hypothesis can be rejected. Therefore, accepting the alternative hypothesis of normality indicates that the correlation matrix is not an identity matrix further ensuring that the data set used is normally distributed. Moreover, KMO measures the adequacy of the sample in the data set. KMO values that are equal or greater than 0.5 indicate the sample adequacy. The value of the KMO test in Table 4 is 0.501, which is also in the acceptable range, which means the sample size taken for the study is adequate. Moving forward to identify the most influential factor/s while making investment decisions, factor analysis has been developed with factor loadings. From the principal component factor analysis, the factors that must be extracted can be determined initially. The factor having Eigen value greater than 1 is considered as Factors that must be extracted.

Table 5 shows that there are four factors with the Eigen value greater than 1. The proportion column

Table 5. Principal component factor analysis

Factor analysis / correlation Method: Principal-component factor Rotation: (Unrotated)		Number of obs =196 Retained factor =4 Number of params = 30		
Factor	Eigen value	Difference	Proportion	Cumulative
Factor 1	1.533	0.235	0.1704	0.1704
Factor 2	1.297	0.162	0.1442	0.3145
Factor 3	1.135	0.094	0.1261	0.4407
Factor 4	1.040	0.061	0.1156	0.5563
Factor 5	0.979	0.119	0.1088	0.6651
Factor 6	0.860	0.035	0.0956	0.7607
Factor 7	0.824	0.058	0.0916	0.8523
Factor 8	0.766	0.203	0.0851	0.9375
Factor 9	0.562	–	0.0625	1.0000

shows how much variation can be explained by each of the factors individually. And the cumulative column shows the variation explained by the factors jointly. In the same regard, it can be summarized that the first factor can explain 17.04% of the variability. The variability explained by factors two, three and four are 14.42%, 12.61% and 11.56%, respectively.

From the Factor Loadings and Unique Variance table (see Table 6), four factors have been loaded after the extraction process based on Eigen value. Uniqueness means the percent of variance which cannot be explained by the common factors. Generally, the value of uniqueness of more than 0.6 is considered as high which means variables

cannot be explained by the factors properly. Here, it is seen that all the values of the uniqueness are less than 0.6 which indicates that factors can explain the variables properly and efficiently.

Factor loading has further been followed by factor rotation, which helps to solve the problem of cross-loading that is like factor loading in more than one variable. Table 7 shows the factor rotation matrix where it is seen that the extracted four factors jointly can explain 55.63% of the variance of the variables.

After rotation, it is seen in the table (see Table 8) that the factor loading and uniqueness values of the variables have been changed. This indicates

Table 6. Factor loadings and unique variance

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Uniqueness
Representative bias	0.0097	–0.5108	0.5156	0.0480	0.4708
Cognitive bias	0.1251	–0.1356	–0.4919	0.6434	0.3100
Overconfidence bias	0.2142	0.6514	0.0758	0.0159	0.5238
Herd instinct bias	0.6165	–0.1436	–0.0787	0.0748	0.5875
Illusion of control bias	0.0729	0.5591	0.5252	0.0008	0.4063
Loss aversion bias	0.7453	0.0204	–0.0060	0.0288	0.4432
Hind sight bias	–0.2065	0.3971	0.0645	0.6432	0.3817
Self-attribution bias	0.6984	0.0040	0.0831	–0.0390	0.5038
Regret aversion bias	0.0179	–0.3202	0.5730	0.4501	0.3662

Table 7. Principal component factor analysis (rotated)

Factor analysis / correlation Method: Principal-component factor Rotation: (Unrotated)		Number of obs = 196 Retained factor = 4 Number of params = 30		
Factor	Variance	Difference	Proportion	Cumulative
Factor 1	1.533	0.235	0.1704	0.1704
Factor 2	1.297	0.162	0.1442	0.3145
Factor 3	1.135	0.094	0.1261	0.4407
Factor 4	1.040	0.061	0.1156	0.5563

Table 8. Rotated factor loadings

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Uniqueness
Representative bias	0.0327	-0.1767	0.6732	-0.2098	0.4708
Cognitive bias	0.1150	-0.1872	-0.0313	0.8005	0.3100
Overconfidence bias	0.1774	0.6030	0.2849	-0.0063	0.5238
Herd instinct bias	0.6213	-0.1060	-0.0414	0.1168	0.5875
Illusion of control bias	0.0391	0.7260	0.0931	-0.2377	0.4063
Loss aversion bias	0.7418	0.0634	-0.0118	0.0476	0.4432
Hind sight bias	-0.2484	0.5082	0.1031	0.5364	0.3817
Self-attribution bias	0.6975	0.0729	0.0357	-0.0557	0.5038
Regret aversion bias	0.0175	0.1087	0.7793	0.1201	0.3662

that there is no correlation among the factors as the values have changed after rotation.

From the result of the Factor Rotation Matrix (Appendix 8) it is found that all the variables have factor loadings more than 0.5 under four factors, indicating that all the variables are significant and, therefore, have statistically proven impact on the investors' investment decision. That means all the null hypotheses can be rejected and the alternative ones can be accepted.

Table 9. Factor rotation matrix

	Factor 1	Factor 2	Factor 3	Factor 4
Factor 1	0.9980	0.0566	-0.0112	0.0257
Factor 2	-0.0543	0.8461	-0.5301	0.0155
Factor 3	-0.0063	0.4735	0.7425	-0.4739
Factor 4	-0.0315	0.2384	0.4094	0.8801

Further pattern matrix analysis (see Table 10) shows the variables under any factors that have the factor loadings value more than 0.5 are considered as important variables. The variables that have factor loading values more than 0.7 indicate that the factors extract sufficient variance from those variables.

From Table 10, loss aversion (0.7418), self-attribution (0.6975) and herd instinct bias (0.6213) have high positive loadings under factor one; Illusion of control bias (0.7260) and overconfidence bias (0.6030) have high positive loadings under factor two. Under factor three, Regret aversion bias (0.7793) and Representative bias (0.6732) have high positive loadings. And lastly, under factor four, Cognitive bias (0.8005) and Hindsight bias (0.5364) have high positive loadings values. Therefore, the result of the analysis shows that cognitive dissonance bias (0.8005), regret aversion bias (0.7793), loss aversion bias (0.7418) and illusion of control bias (0.7260) are the most important behavioral factors that affect the investment decision of the investors on the Dhaka Stock Exchange.

4. DISCUSSION

The findings provide evidence that behavioral anomalies leading to psychological biases prevail into the investors of the stock market of Bangladesh, which makes them biased and irrational at the time of choosing investment alternatives. The existence of strong behavioral aspect ultimately questions the market efficiency as per the traditional finance theories, which is also evident

Table 10. Rotated factor loadings (pattern matrix) and unique variance sorted

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Uniqueness
Loss aversion bias	0.7418	0.0634	-0.0118	0.0476	0.4432
Self-attribution bias	0.6975	0.0729	0.0357	-0.0557	0.5038
Herd instinct bias	0.6213	-0.1060	0.0414	0.1168	0.5875
Illusion of control bias	0.0391	0.7260	0.0931	-0.2377	0.4063
Overconfidence bias	0.1774	0.6030	-0.2849	-0.0063	0.5238
Regret aversion bias	0.0175	0.1087	0.7793	0.1201	0.3662
Representative bias	0.0327	-0.1761	0.6732	-0.2098	0.4708
Cognitive bias	0.1150	-0.1872	-0.0313	0.8005	0.3100
Hindsight bias	-0.2484	0.5082	0.1031	0.5364	0.3817

in the context of the Bangladeshi stock market through its highly volatile performance indicators, and in cases two market crashes in the past.

The findings from this study completely go around with the behavioral study done on the Indonesian investors marking all the selected psychological biases significant impacting the rationality of the investors (Kartini & Nahda, 2021). Similar results can also be seen for several studies conducted on other Asian stock markets such as the Pakistan Stock Exchange (Qureshi et al., 2012). In addition to the study, pattern analysis was included (Table 10), from which the most influential psychological biases could be detected narrating that cognitive

bias, regret aversion bias, loss aversion bias and illusion of control biases are the most important behavioral factors that affect investors' investment decisions. This finding is also consistent with most of the studies done on Indian (Mukherjee et al., 2019), Malaysian (Lim, 2012), and even other global stock markets (Kengatharan, 2014). The further prospect of this study can be linked to the financial literacy (Korniotis & Kumar, 2011), which advocates for increasing awareness about the behavioral anomalies, providing proper consultation about financial knowledge, and monitoring the pattern of investor trading can lead to more controlled performance of the Bangladeshi stock market.

CONCLUSION

The purpose of the study was to determine whether the individual investment decisions of the Dhaka Stock Exchange are affected by cognitive errors and psychological biases such as Cognitive Dissonance, Regret Aversion bias, Loss Aversion bias, Overconfidence bias, Hindsight bias, Illusion of Control bias, Herd instinct bias, Self-attribution bias, and Representativeness bias. A behavioral finance approach-based factor analysis has been developed to identify the most influential ones from the chosen behavioral factors, which interrupts the rational decision making of individual investors. The findings of the analysis emerge as each of the reported behavioral biases has a factor loading value higher than the threshold value of 0.5, indicating all the variables as important and statistically significant. Therefore, each of the nine research hypotheses can be rejected, and it can be concluded that all nine psychological biases affecting the investment decisions of DSE investors exist. Apart from the significance of variables, the highest factor loadings associated with cognitive dissonance bias (0.8005), regret aversion bias (0.7793), loss aversion bias (0.7418) and illusion of control bias (0.7260) are the most important influential behavioral factors. These results are clearly in line with the findings of similar studies conducted in various emerging economies such as Bangladesh. Moreover, this study clearly opens the pathway for future research to include progressively more behavioral factors to signify their prevalence into the stock market of Bangladesh in a scientific way. It is high time for behavioral finance to become a better alternative to the mainstream theory of asset pricing in the Bangladeshi stock market.

AUTHOR CONTRIBUTIONS

Conceptualization: Farhana Yasmin, Jannatul Ferdaous.

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