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THE DYNAMICS OF INDIVIDUAL INVESTMENT DECISIONS: EVIDENCE FROM THE DHAKA AND CHITTAGONG STOCK EXCHANGE, BANGLADESH

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ABSTRACT
Research aim: Behavioural finance plays an analogous role to fundamental and technical analyses for investment decisions in the stock market. It deals with various factors that manipulate investment decisions. This study explores the factors influencing individual investment decisions in the Dhaka and Chittagong Stock Exchange (DSE and CSE) of Bangladesh.
Design/Methodology/Approach: Based on existing finance theories and literature, several factors were included in the self-developed questionnaire, with data collected using random sampling. We used SPSS (Version 26) to analyse the primary data collected. In the questionnaire, there were 24 variables, and statistical analysis (multiple regression) was carried out.
Research finding: There were 24 variables, five of which (i.e., investor experience, impact of P/E ratio, impact of fundamental analysis, impact of securities and brokerage firm, and impact of investor psychology) had significant impact on individual investment decisions in the CSE and DSE.
Theoretical contribution/ Originality: Theories pertaining to individual investment decisions are based on individual judgment, sentiment, risk perception, and risk attitude. These mechanisms are associated with behavioural finance. Various behavioural finance studies have been conducted in developed countries, but not in developing countries like Bangladesh. As such, the dynamics of the investment decision are the main focus of the present study.
Practitioner/ Policy implication: This article can serve as input to investment decisions that have an impact on economic value at the firm, industry, and macroeconomic level. Moreover, it highlights the role of related stakeholders and extent to which they influence investment decisions.
Research limitation: This study is country-specific, and the number of respondents is limited to 125 only. We could not consider the impact of technological advancement during this period.
Keywords: Investment decision, Stock market, Chittagong Stock Exchange, Dhaka Stock Exchange
Type of article: Research paper
JEL Classification: D9, F6, G23

1. Introduction

Individual investment decisions are based on individual judgment, sentiment, risk perception, and risk attitude. This is the common practice in the transformation of fiduciary investment to a sustainable investment. Investors

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consider a risk-return screening when making investment decisions. In this way, they transform their capital into investments and make profit. These mechanisms are associated with behavioural finance. Various behavioural finance studies have been conducted in developed countries (e.g., Gruber, 1996; Piana, 2001; Hallahan, Faff, & McKenzie, 2004). However, macro-market performance and market reaction affect one's subjective judgment (Barua & Chowdhury, 2009). As such, the dynamics of the investment decision are the main focus of this study. This is because investment decisions have an impact on economic value at the firm, industry, and macroeconomic level (Ali & Anwar, 2021; Khan, 2020; Layyinaturrobaniyah, Masyita & Sekartadjie, 2016; Rahman Khan & Saiful Islam, 2020).

In past studies, researchers also focus on the quantitative aspect of decisions. For example, Tabassum, Dovash and Sharul (2019) describe the determinants of stock price through a quantitative study, with P/E ratio, net assets value, earning per share (EPS) and dividend per share (DPS) being the main determinants. Rahman and Bristy (2018) explain profitability and its mixed impact on decision-making. The present study, however, focuses on investment decisions of Bangladeshi investors who trade in the Dhaka Stock Exchange (DSE) and Chittagong Stock Exchange (CSE). Special attention is given to the effect of the Covid-19 pandemic on the stock market. There was market scale down in Bangladesh in February 2021, but this was inverted by the end of that year. Several people resumed trading, but the Bangladesh stock market was not mature enough yet. The DSE and CSE are not efficient markets, and encounter many challenges. Moreover, there was turmoil in the price index in 1996 and 2009 (Khan, 2020), and the volatile market structure persists (Rahman & Bristy, 2018). Surprisingly, there is a dearth of research into identifying the key reasons for these anomalies. In addition, there are still insufficient market studies on investors' trading behaviour. As such, the main objective of this study is to identify factors that influence individual investment decisions in the Bangladeshi stock market.

2. Literature Review

Investment decisions in the capital market are invariably involved in various factors along with investor risk perceptions and risk attitudes (Agustin, 2019). It is also related to expected return against prevailing risk (Bhujel, 2020). Investment decisions in the stock market have been classified into behavioural aspects and a risk-taking approach (Drakopoulou, 2016). There are also active and passive investors in the market based on their business decisions (Bonga, 2015). Some investors prefer to invest in mutual funds, where professional experts manage funds for passive investment (Jahanzeb & Rehman, 2012). In this case, investors assess economic aspects, industry patterns, firm-level indicators and macro-level market trends as part of the fundamental analysis (Nagendra, Kumar & Jayashree, 2018; Rubio, 2013). For example, Sumaji and Salim (2017) indicate that technical analysis is effective for forex investment, but Wang, Yu and Wen (2014) focus on GDP growth, inflation rate, interest rate, national savings, exchange rate, and foreign investment as part of the fundamental analysis.

Additionally, there is an association between price movement and firm financial performance (Agustin, 2019; Babirath, Schmitl & Maitah, 2020). Bonga (2015) emphasises industry analysis and its movement considering industry growth, maturity, competition, and substitution (Drakopoulou, 2016), but the determinants are subject to company analysis (Agustin, 2019; Nagendra, Kumar & Jayashree, 2018). According to Wang, Yu and Wen (2014), technical analysis is related to price volatility and historical data of a stock or financial instrument. The key components of the technical analysis are price trends, chart patterns, moving averages, volume and momentum indicators, support and resistance levels, etc. These are also called technical indicators that help to forecast the near-term price of stocks. Rubio (2013) states that it is interrelated with the big database, and an investor can collect the database from the stock exchange company. Jahanzeb and Rehman (2012) refer to online-based financial institutions such as Yahoo Finance, 10K, Google Finance, and Finbox, etc., with indicators and results. Whereas Ali and Anwar (2021) mention the DSE, LankaBangla Financial Portal, AmarStock and others. These provide the data services and indicators service for investors. Drakopoulou (2016) highlights the relationship between technical analysis and behavioural finance and how to estimate short-term price movement and speculate trading decisions through technical indicators.

According to Babirath, Schmitl and Maitah (2020), price movement of stocks depend on the size of the listed company, volume of capital, market maturity, know-how of investors, role of the securities and exchange commission (CSE) and other authorities. Bonga (2015) focuses on the corporate governance system of the respective economy. The Japanese model refers to the bank-oriented corporate governance system where business entities, the government, and union groups get more importance than individual investors. Besides, the United States and the United Kingdom follow Anglo-US corporate governance systems where the board of directors and shareholders are the controlling parties. Agustin (2019) states that effective and efficient corporate governance has a significant impact on stock price movement and market trend. It is involved in information transfer to the shareholder, information asymmetry, and market price reaction.

In Bangladesh in particular, Ali and Anwar (2021) state that stock market investors are highly concentrated on fundamental stock issues when making investment decisions. Khan and Yousuf (2013) acknowledge that the DSE and CSE stock markets are undeveloped and its capital size is also modest. This is why there is ample opportunity to pool and be corrupt. Subsequently, fundamental analyses have a weak effect on stock price movement. Khan and Yousuf (2013) note that 27% of the companies with good fundamentals are undervalued in the long term. The main cause of this situation is the weak control by authorities and market exploitation. Rifat (2015) identifies the stock prices of some companies that are officially closed and have no business operations, but with share prices that are trading and even increasing gradually. This happens due to the gambling of the collaborative pool and financial fraudulence. In fact, authorities have almost no control over the activities of such syndicates (Layyinaturrobaniyah, Masyita & Sekartadjie, 2016).

Rahman Khan and Saiful Islam (2020) explore the educational and psychological understanding of individual investors in Bangladesh, and note that individual investors are very emotive and untrained in investment analysis when making decisions. Rahman Khan and Saiful Islam (2020) note that two-thirds of individual investment decisions are based on fake news, rumours, cohort pressure and influence from other investors. Rahman and Bristy (2018) find that 83% of individual investors are speculators, and only a handful of investors do sustainable business in the stock market. This is one of the significant causes of price volatility in the Bangladeshi exchange.

Layyinaturrobaniyah, Masyita and Sekartadjie (2016) state that there is no alternative but to increase the level of control by authorities (in this case, SEC and the Finance Ministry) to prevent system corruption and collaborative pooling. Moreover, this is a corporate governance issue. Rahman and Bristy (2018) emphasise effective training and education for individual investors to reduce the price volatility. In fact, effective fundamental and technical analyses are a must to achieve investment objectives. Individual investors should have good knowledge of fundamental and technical analyses, and be able to apply critical analysis in making investment decisions in the stock market.

It is evident from the literature that numerous factors affect decision-making processes when it comes to the stock market. In alignment with that, the main objective of the present study is to identify the dynamics of individual stock market decision-making.

3. Research Methodology

3.1 Sample design and procedure

From a behavioural perspective, there are several factors associated with investment decisions at the individual level. This study explores several common factors that could potentially influence individual investment decisions taking into account past literature, local grey literature, local news media, observation and perception. This study is based on primary data and selects 24 variables for further analysis. The reason behind the selection of the variables are twofold: past literature and practical observations of the local stock market. For example, one of the variables selected is the importance of training and education. The same assessment indicator is used by Rahman and Bristy (2018) for another market.

In our survey, 150 individual investors were contacted with a questionnaire. Of the 150 respondents, 25 questionnaires were incomplete, or contained strange values, outliers, and irrelevant answers. Moreover, several investors were not willing to answer all of the questions. After filtration, we proceeded to analyse the answers of 125 respondents. The unit of analysis of this study is individual investors who trade on CSE and the DSE. Consent was obtained from all respondents, with assurances that the collected information would be kept private and confidential. The information obtained was only used for the purpose of this study.

3.2 Questionnaire design and data collection

A self-developed structured questionnaire with a closed-ended answering system was developed based on previous literature. As it is a self-developed questionnaire, we tested validity and reliability through consulting with personnel in the SEC, brokerage houses and academicians. We took into account their suggestions when refining the questionnaire, but did not retest validity and reliability. Random sampling technique was used in this study. The questionnaire consists of two parts: Section A contains general information and demographic characteristics of respondents (i.e., gender, age, education and income, business education). Section B measures the variables (i.e., factors that potentially impact individual investment decisions) using a five-point Likert scale (Hoare & Hoe, 2013).

3.3 Analysis and reporting

For the statistical analysis, the collected data was keyed into SPSS (version 26). Before running multiple regression analyses, a set of assumptions was statistically tested. The model met all the assumptions (e.g., linearity, normality). Then, the variation inflation factor (VIF) was identified to assess the multicollinearity of the independent variables. The respective values of all independent variables are < 3 and the maximum value is for consideration of a firm's economic growth (VIF = 2.99). The results were robust for the multiple regression model. The regression analysis was analysed by 24 independent variables, and investment decision was selected as the dependent variable.

$$Y= \alpha+ \beta_1X_1+ \beta_2X_2 +\beta_3X_3 +\ldots\ldots\ldots\ldots+ \beta_kX_k$$

where, Y= dependent variable, X = independent Variable, α= intercept, β = slope of the equation

3.4 Descriptive statistics

As noted above, the questionnaire is divided into two sections. Section A contains the demographic details of the respondents, and Section B the variables related to investment decision. In the following tables the descriptive statistics and the respective frequencies are displayed.

Table 1. Descriptive Statistics of Section A

Category	Frequency	%	C. %
Age			
18–30	18	14.4	14.4
31–40	55	44.0	58.4
41–50	33	26.4	84.8
> 50	19	15.2	100.0
Total	125	100.0	
Level of education			
High school	4	3.2	3.2
College	13	10.4	13.6
Graduate	38	30.4	44.0
Postgraduate	70	56.0	100.0
Total	125	100.0	
Income level (annual)			
Less than BDT100,000	24	19.2	19.2
< 500,000	31	24.8	44.0
< 1,000,000	33	26.4	70.4
< 1,500,000	21	16.8	87.2
> 1,500,000	16	12.8	100
Total	125	100	
Business education			
Yes	22	18.6	18.6
No	103	81.4	100
Total	125	100	
Gender			
Male	89	71	71
Female	36	29	100
Total	125	100	

Table 2. Descriptive Statistics of Section B

	N Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Deviation Statistic	Variance Statistic	Skewness Statistic	Std. Error
Impact of peers and social media	125	1	5	2.27	1.167	1.361	.629	.217
Experience	125	1	5	2.99	.112	1.573	-.683	.217
Historical data and information	125	1	5	3.54	1.081	1.169	-.368	.217
Expert's opinion	125	1	5	2.42	1.252	1.567	.620	.217
Impact of social media discussion	125	1	5	2.35	1.252	1.569	.681	.217
Impact of statistical Analysis	125	1	5	3.26	1.177	1.386	-.151	.217
Impact of financial Analysis	125	1	5	3.89	1.116	1.245	-.872	.217
Consideration of Firm's economic growth	125	1	5	3.98	1.000	1.000	-.804	.217
Consideration of Debt-Equity Ratio	125	1	5	3.30	1.164	1.355	-.163	.217
Consideration of Dividend yield ratio	125	1	5	3.75	1.148	1.317	-.638	.217
Consideration of P/E Ratio	125	1	5	3.89	1.041	1.084	-.818	.217
Impact of Fundamental Analysis	125	1	5	3.58	1.086	1.180	-.449	.217
Consideration of Financial Statement analysis	125	1	5	3.62	1.169	1.366	-.397	.217
Consideration of Market Study and analysis	125	1	5	3.89	.952	.907	-.741	.217
Impact of Personal willingness	125	1	5	2.65	1.246	1.553	.190	.217
Consideration of Market Trend and Index	125	1	5	3.10	1.250	1.562	-.250	.217
Impact of portfolio analysis and diversification	125	1	5	2.78	1.104	1.219	.074	.217
Impact of market rumor	125	1	5	3.34	1.245	1.550	-.197	.217
Impact of Fundamental analysis	125	1	5	3.19	1.223	1.495	-.079	.217
Impact of macro market information	125	1	5	3.83	1.091	1.189	-.797	.217
Impact of securities and brokerage firm	125	1	5	2.59	1.302	1.695	.374	.217
Impact of investor's psychology	125	1	5	2.70	1.225	1.500	.158	.217
Association between firm's return and market return	125	1	5	2.62	1.175	1.382	.227	.217
Impact of investor's attitudes	125	1	5	3.05	1.294	1.675	-.045	.217
Valid N (listwise)	125							

4. Analysis and Discussion

4.1 Model summary

By using multiple regression analysis, the following outcome has been derived based on the 24 independent variables and investment decision as dependent variable.

Table 3. Summary of the Model

Model summary										
Model	R	R^2	Adjusted R^2	Std error	R^2 change	Change statistics			Sig. F change	Durbin-Watson
						F change	df1	df2		
1	.588[a]	.346	.144	1.209	.346	1.71	24	100	.028	2.424

The model summary in Table 3 above shows the multiple correlation coefficient among the independent and dependent variables. The value of R (.588) indicates a significant positive relationship. It indicates that stock market investment decisions are correlated with the stated independent variables of this study.

Subsequently, the value of R^2 (.346) indicates that 34.6% of the overall investment decision is explained by the stated independent variables with all else constant. This study also indicates the scope of further research for the remaining 65.4% variation of the overall investor's decision. However, the adjusted R^2 is 0.144, which is quite different from R^2. Based on the outcome, this study concludes that the contribution of the independent variables is satisfactory (Beale et al., 2010). However, there is still room to further explore socioeconomic dynamics and the CSE and DSC of Bangladesh with regard to investment decisions.

4.2 Significance of the overall regression equation

The F-test is associated with the variance analysis (ANOVA) and is mainly used to test a null hypothesis. In this study, R^2 = 0.346 which means that the null hypothesis can be rejected at the significance value of (0.082). In Table 4, the value of F = 1.510 is significant at 90%. It indicates that the null hypothesis can be rejected, which aligns with Chatterjee and Hadi (2006). In addition, this study argues that the impact on the investment decision on stock price can be explained by the stated independent variables.

Table 4. ANOVA Test Outcome Using SPSS

ANOVA [a]

Model		Sum of squares	Df	Mean Square	F	Sig.
1	Regression	21.228	24	.885	1.510	.082[b]
	Residual	58.564	100	.586		
	Total	79.792	124			

a. Dependent variable: investment decision

b. Predictors: (Constant), Impact of investor's attitudes, Impact of Financial Analysis, Consideration of Market Trend and Index, Impact of market rumour, Year of Experience, Impact of social media discussion, Impact of peers and social media, Impact of Fundamental Analysis, Impact of securities and brokerage firm, Association between firm's return and market return, Impact of Personal willingness, Consideration of Debt-Equity Ratio, Impact of portfolio analysis and diversification, Impact of Fundamental analysis, Historical data and information, Impact of investor's psychology, Consideration of Financial Statement Analysis, Expert's opinion, Impact of statistical Analysis, Impact of macro market information, Consideration of P/E Ratio, Consideration of Dividend yield ratio, Consideration of Market Study and analysis, Consideration of Firm's economic growth.

4.3 Significance of the partial coefficients (Coefficients [a])

Table 5. Individual coefficients using SPSS

Table-5: Individual coefficients outcome compiled by the author using SPSS

Model	Coefficients [a]			t	Sig.
	Unstandardised Coefficients		Standardised Coefficients		
	B	Std. Error	Beta		
(Constant)	1.404	1.474		.952	.343
Experience***	.265	.118	.224	2.246	.027
Impact of peers and social media	-.125	.103	-.128	-1.220	.225
Historical data and information	-.206	.126	-.160	-1.638	.105
Expert's opinion	.093	.101	.096	.919	.360
Impact of social media discussion	.109	.099	.113	1.102	.273
Impact of statistical analysis	-.178	.118	-.156	-1.510	.134
Impact of Financial Analysis	-.157	.133	-.129	-1.179	.241
Consideration of Firm's Economic Growth	-.018	.156	-.013	-.115	.909
Consideration of Debt-Equity Ratio	.142	.129	.121	1.101	.274
Consideration of Dividend Yield Ratio	-.076	.124	-.065	-.614	.541
Consideration of the P/E Ratio***	.384	.135	.296	2.851	.005
Impact of Fundamental Analysis **	-.244	.126	-.188	-1.929	.057
Consideration of Financial Statement Analysis	.153	.129	.127	1.193	.236
Consideration of Market Study and Analysis	.017	.166	.011	.099	.921
Impact of Personal willingness	.022	.100	.022	.217	.829
Consideration of Market Trend and Index	.070	.110	.063	.638	.525
Impact of Portfolio Analysis and Diversification	-.021	.113	-.019	-.190	.849
Impact of market rumours	.011	.110	.011	.103	.919
Impact of Fundamental Analysis	-.192	.116	-.173	-1.654	.101
Impact of macro-market information	-.009	.132	-.007	-.069	.945
Impact of securities and brokerage firm **	.187	.098	.186	1.907	.060
Impact of investor psychology***	-.285	.113	-.263	-2.524	.013
Association between firm return and market return	.148	.109	.136	1.352	.180
Impact of investor's attitudes	.085	.129	.067	.662	.510
a. Dependent variable: investment decision					

Table 5 above shows that the partial regression coefficient for investors' experience is 0.265 with beta coefficient = 0.224 and t = 2.246. The model shows that five factors have a significant relationship with the investment decision: investor's experience, consideration of P/E ratio, impact of fundamental analysis, impact of securities and brokerage firm, and impact of investors' psychology.

From these five variables, experience aligns with the finding of Mandal et al. (2011) for investment decisions. Investors also focus on the P/E ratio to make decisions and take into consideration fundamental analyses before buying shares. The table also shows that investment decisions are influenced by the personnel of brokerage firms and securities companies. The most important finding related to behavioural finance is the impact of investor psychology, intuition, and subjective judgement of their investment decisions.

On the whole, however, the Bangladeshi stock market is not very well-structured and has anomalies in terms of market volatility and market manipulation. The volatile market structure might explain some of the variables not having a significant influence on individual investment decisions. This is why in some cases, there are non-supporting results compared to previous literature. In fact, the number of individual investors has gradually declined due to the high risks prevailing in the market structure. As with technical analysis, the P/E ratio influences investors when making decisions. This is theoretically justified, and this finding is also confirmed by existing literature. Furthermore, investors' psychological attitudes, influence of stakeholders, market trend analysis, and influence of market rumours also matter when investment decisions are made in the stock market.

5. Conclusions and Recommendations

The success of individual investors depends on the effective investment decisions that lead to profitability (Apuke, 2017). Consequently, this study finds that experience, impact of P/E ratio, investor perception and attitudes, and stakeholder influence, mainly of brokerage firms, have a significant impact on the investment decisions made in the stock market at the individual level. However, this study only has 125 respondents, which is statistically insufficient to draw a clear conclusion. Moreover, the CSE and DSE still have a large population size of individual investors.

Therefore, this study suggests that further research be conducted with a larger number of respondents and other determinants that ensure more accurate validity and reliability of the research question. In this way, the remaining 65% of the variation may be derived from research findings. Moreover, behavioural finance (i.e., assessment of individual perceptions and attitudes regarding stock market investment decisions) is still a new concept in Bangladesh. More dynamic research can be done in the future with the same research question.

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