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Beyond Intuition: The Role of Financial Knowledge in Navigating Investments in Emerging Markets

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ABSTRACT

Over the last century, global stock markets have crashed multiple times, leading to bankruptcy and unemployment and making individuals highly cautious about investing. Hence, individual investors in developing markets are highly prone to behavioural biases in their investment decisions, which influence their investment experience. The objective of this study is to examine the relationships between behavioural factors and investment experience, as well as the moderating effect of financial knowledge on individual investors in Bangladesh. Data was analysed using the partial least squares structural equation modelling technique. The results revealed that behavioural factors such as anchoring, gambler's fallacy, social interaction, and locus of control significantly influenced individual investors' investment experiences. Moreover, financial knowledge had a moderating effect on these relationships. The study has important implications for investors, as it highlights the potential pitfalls of behavioural factors and the importance of financial knowledge in investors' investment experience. The study's findings imply that the government should develop new market opportunities through innovative products and take the necessary steps to incorporate regulations that will offer investors a better market experience.

Keywords: Behavioural Factors, Financial Knowledge, Investment Experience, Behavioural Theory
JEL Classifications: G410, G41, G530

1. INTRODUCTION

The rising cost of living, the obligation to save for unforeseen events, the permanent income hypothesis, and the life cycle hypothesis emphasise the importance of saving or investing in various financial assets to supplement current income and smoothen consumption. Stock market participation is one of the most prominent examples of such investment opportunities (Kuffour and Adu, 2019). Stock market participation can provide a secondary income source to generate additional income, enabling investors to keep pace with inflation and grow their wealth (Riha et al., 2024). The stock market is vulnerable to volatile stock prices, making stock market investment captivating to high-risk-tolerance investors (Yang et al., 2021). Yet, real-world investors act irrationally by following the crowd, holding losing stocks and dumping winning ones, deciding on investments based on past performance, and trading excessively. According to Yuliani et al. (2017) and Chami (2017), the decision to dispose of or acquire financial assets is highly strategic since investors' behaviour is linked to future returns.

Individual investors blame the macroeconomic factors that affect the stock market rather than realising that their experience is related to their own behavioural biases. Behavioural factors (such as loss aversion and anchoring) cause investors to dispose of their profit-making holdings while keeping their loss-making securities (Odean, 1998). Investors are inclined to have a gambling mentality, and individual investors' decisions are generally firm-specific (Kim and Nofsinger, 2008). Individuals with low financial literacy tend to face debt issues (Lusardi and Tufano, 2009). Moreover,

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during market shocks and economic and financial announcements, investors became more focused on trading systems and strategies. This finding shows that individual investors are susceptible to favourable and unfavourable economic news (Qadan et al., 2022). Low financial literacy makes individuals less likely to engage in volatile assets such as stocks. Higher financial literacy increases stock market participation and economic optimism (Lusardi and Mitchell, 2013; Aydin and Akben, 2019). Adil et al., (2022) examined the effects of behavioural biases on investment choices based on gender, as well as the moderating contribution of financial literacy. The study discovered that behavioural biases like overconfidence, risk aversion, herding, and disposition had a significant impact on both male and female investors' investment decisions. Financial literacy was observed to have a significant moderating effect on the impacts of these biases.

In addition, the stock markets in underdeveloped and developing countries are suffering slow growth due to a lack of knowledge and skills (IMF Report, 2019). After each bubble burst in Bangladesh, little or no attention was given to investors' behavioural aspects, specifically investor behaviour. Khan (2022) explained that the majority of individual investors incur significant losses during stock market crashes, making them more vulnerable to losses. Losses have a more severe and lasting impact than gains. Because losses have a severe impact on investors, they tend to focus more on them than gains. Prior losses can lead to reorganising investing objectives, tactics, and portfolio composition, or even exiting the market. Most fall victim to losses as they enter the market without fully comprehending what they are doing, and they bear unreasonably high risks (Chowdhury and Priyo, 2019; Iqbal et al. 2021). Currently, only 30% of the investors in the Bangladeshi stock market are institutional and foreign investors only 30% of institutional and foreign investors are present in the Bangladeshi stock market, and most stockholdings in Bangladesh are held by individual investors (Zaman and Rahman, 2019; Roy, 2019). According to Bangladesh's Digital Financial Service Lab, only 28% of the individual investors who invest in Dhaka Stock Exchange (DSE) are financially literate. The lack of financial knowledge among investors may lead to excessive trading and poor investment decisions in the market (Lu, 2010; Sohail et al., 2020; Zaman and Rahman, 2019). Furthermore, investors in developing markets learn more slowly from their investment experiences than those in developed markets, and they arbitrage away abnormal profit opportunities (Akhter and Yong, 2021).

This study aims to close the research gap by identifying the behavioural factors that influence individual investors' investment experiences and the moderating effects of financial knowledge in developing markets. Given the above discussion, the primary objective was to discover the behavioural factors influencing individual investors' investment experiences in Bangladesh. Other critical question to be answered are whether investors possess financial knowledge and whether financial knowledge matters in Bangladeshi investors' investment experience. The findings can assist governments, regulators, financial service providers, and investors in emerging countries. Regulators can use the findings to craft investment policies regarding investor behaviour.

The remainder of this paper is organised as follows: the literature review is presented in section 2, followed by the methods used in section 3. The results are illustrated in section 4. The discussion and conclusions are elaborated on in section 5.

2. LITERATURE REVIEW

2.1. Underlying Theories

The inability of classical finance to address money issues and market anomalies has led to the emergence of new theories. Standard finance believes that individuals constantly make rational decisions facilitated by comprehensive information available in the market (Ameur et al., 2020). However, numerous irrational investor behaviours have been explained by a number of theories which suggest that investors in the financial markets do not always make rational decisions (Barberis and Thaler, 2003). According to Nirmala et al. (2022), individual investors are less knowledgeable about the various financial products and exhibit risk-averse behaviour. Consequently, they are selecting investments with minimal risk and high return potential. Typically, they base their investment decisions on the specific circumstances they encounter. In this context, behavioural finance investigates the impact of an individual's psychological well-being on their financial decisions.

2.1.1. Behavioural portfolio theory (BPT)

Shefrin and Statman (2000) developed BPT to substitute mean-variance portfolio theories. According to their theory, the investors' portfolio selection of a portfolio is determined by expected wealth, risk appetite for risk, desired outcomes, and the likelihood of attaining the desired outcomes. BPT is underpinned by Kahneman and Riepe, (1998) prospect theory. Individual investors have different goals from one another, often combining high and low goals. According to BPT, investors do not make logical decisions. Rather, their decision-making is based on feelings like anxiety and anticipation (Lopes, 1987). This theory may be used to elucidate observations including undiversified stock portfolios (hopes for wealth) and avoidance of stock markets despite the evidence of advantages from diversification. BPT treats these goals as layered pyramids, with every layer representing a goal. For example, "protection against poverty" may be included in the bottom layer of low-risk resources, and "hopes for wealth" may be shown in the upper layer of high-risk investment. Siebenmorgan and Weber (2003) used a behavioural approach to explain investors' deviations from normative portfolio theory. They included expected return, pure risk, and naive diversity in their new BPT. According to new BPT, investors appear to demonstrate both risk-averse and risk-seeking tendencies. BPT posits that investors have a tendency to overlook the relationships between assets by considering them as independent entities, and this tendency indicates the psychological phenomenon of mental accounting.

2.2. Hypothesis Development

An investor's correct investment decision is primarily based on accurately forecasting stock prices or values. Previous studies have shown that when making complex investment choices, investors are influenced not solely by external, macro-level institutional variables but also by their internal behavioural factors like risk tolerance and financial literacy (Rahman et

al., 2020). Furthermore, behavioural finance reveals that an individual's cognitive flaws and thought processes influence their investment decisions (Akhter and Hoque, 2022). Financial irregularities are attributed to numerous behavioural factors, including loss aversion, herding, mental accounting, anchoring, overconfidence, and over or underreacting (Adnan et al., 2020). Yuliani et al., (2017) found that investors who had a higher level of psychological bias had a greater tendency to engage in speculative trading, which could increase their exposure to risk. According to Jan et al. (2022), anchoring resulting from heuristics positively impacts investment performance. An inverse correlation was observed between the investment decision-making processes of risk aversion, anchoring, prospect, and herding. Yeh and Ling (2020) found that financially literate people can anticipate their future life from a life cycle perspective and understand the importance of disciplined savings and investment behaviour.

2.2.1. Investment experience (IE)

Several researchers have discovered that regardless of the performance of the market or the type of investment owned, investors are likely to achieve less than the average return on investment as return depends on the behaviour of investors instead of fund performance. In this study, investment experience is defined as both gains and losses arising from stock market participation. Three factors lead to capital gain, namely, a continuous trend of growing stock prices, continual monitoring of prices, and daily trading and orientation towards the stock price (Yuliani et al., 2017; Hani et al., 2020). Investment experience is thought to influence the investment decisions of households and individual investors, particularly when they are considering whether or not to adopt new financial products (Malmendier et al., 2020).

Even though it is well known that individual investors perform worse than the market, it is also known that some investors consistently do better than their peers. Coval and Shumway (2005) discovered that a handful of exceptionally competent investors consistently generated abnormal returns. Lusardi and Mitchell (2013) theorised, "The least financially literate are unlikely to be fee sensitive; they are most likely to bear such costs". Investors' selling and buying behaviours were found to affect their average return and investment performance (Luong and Ha, 2011). Investors who frequently traded in the stock market made higher returns than those with less trading activity (Anderson et al., 2005). An investor's ability or competence is greatly influenced by their level of experience. According to Heath et al. (2013), one of the factors influencing investors' expertise in stock trading is their experience. Compared to inexperienced investors, those with better investment experience have the ability to make better judgements on financial transactions. This is because experienced investors are equipped to manage a variety of potential scenarios (Kalsum et al., 2018). Kanagasabai and Aggarwal (2020) and Ahmad (2020) showed that investors with high risk tolerance had better investment performance. Investors who conducted fundamental and technical analyses before investing achieved satisfactory returns and outperformed others. The study by Purwidianti and Tubastuvi (2019) showed that prior financial experiences influenced investors' future financial behaviour and choice of investment. The study also found that prior experience mediated the relationship between financial literacy and financial behaviour.

Given the above insights, the present study hypothesised that:

H1: Behavioural factors significantly influence investment experience.

2.3. Independent Variables

This study examined six behavioural factors pertaining individual investors, namely, (1) anchoring, (2) gambler's fallacy, (3) herding, (4) locus of control, (5) risk tolerance, and (6) social interaction.

2.3.1. Anchoring (A)

When making investment decisions, people tend to rely excessively on the first piece of information they are presented with, such as news, unusual trading volumes, extremely high 1-day returns, and historical prices from recent experience. They tend to be more optimistic when the market rises and more pessimistic when the market falls. This tendency is known as anchoring (Andersen, 2010; Lai et al., 2013). This psychological rule of thumb causes investors to make irrational investment choices by overvaluing statistically random and psychologically determined anchors (Kahneman and Tversky, 1979). Studies showed that when attempting to predict an accurate invest-in price for a stock, investors constantly began with an initial price (the anchor) and then modified it in either direction to account for the latest data (Quaicoe and Eleke-Aboagye, 2021; Raut et al., 2020). Rasheed et al. (2018) and Rehan et al. (2021) found a positive link between heuristic factors (anchoring and gamblers fallacy) and investment performance. Thus, the present study hypothesised that:

H1a: Anchoring has a positive impact on investment experience.

2.3.2. Gambler's fallacy (GF)

According to Kahneman and Tversky (1979), the gambler's fallacy, also known as the Monte Carlo fallacy, is a common cognitive bias that stems from an erroneous belief in the impartiality of the law of chance. When investors make the erroneous assumption that market trends will reverse, they can be drawn into making impulsive, counter-trending decisions (Quaicoe and Eleke-Aboagye, 2021; Lyons et al., 2013; Waweru et al., 2008). According to Barberis and Xiong's (2009) interpretation of prospect theory, investors are "gamblers in the domain of losses" who make decisions about their portfolios based on their expectations of future gains rather than losses. However, the gambler's fallacy argument on market investors is more applicable to the social context of developing countries. Thus, this study hypothesised:

H1b: Gambler's fallacy has a positive impact on investment experience.

2.3.3. Herding (H)

The herding behaviour refers to the decision made by individuals to follow the crowd and adopt group behaviour rather than making independent decisions based on their own private information (Baddeley, 2010; Ton and Dao, 2014; Lai et al., 2013). Kumari (2020) defined herding behaviour as a specific investment-related behaviour that an investor adopts in order to deal with market volatility. The decisions made by others may significantly affect the trading decisions of investors, and this herding mentality

shields them from regretting the decisions they made (Waweru et al., 2008). Herding appeared to be significantly stronger during periods of high or rising participation willingness (Xiong et al., 2020). Metawa et al. (2019) found that investors who exhibited the herding behaviour made investment decisions according to the consensus of the crowd, and such consensus was influenced by several behavioural factors such as sentiment, overconfidence, overreaction, and underreaction. Studies identified the herding behaviour, caused by financial and emerging market losses and returns, as the main irrational investment behaviour (Nofsinger and Sias, 1999; Chen, 2013; Cakan and Balagyozyan, 2016). Thus, this study developed the following hypothesis:

H1c: Herding has a positive impact on investment experience.

2.3.4. Locus of control (LOC)

Locus of control is the belief that one has the ability to determine the final outcomes of their actions. The two opposites of locus of control are internal and external locus of control (Grable et al., 2009). According to Salman and Al-Refiay (2023), believing in one's own ability to bring about the desired outcome is an example of internal locus of control. While people with an external locus of control firmly believe that some external determinants like luck, chance, and fate, determine outcomes (Rasheed et al., 2018), those who possess an internal locus of control have a strong conviction that they can determine their financial position through their financial practices. Investors with a high internal locus of control believe that all successes are a reflection of their talents and all failures are due to their bad luck (Luong and Ha, 2011). The study by Kesavayuth et al. (2018) found that investors were risk-tolerant when they had high locus of control. Salamanca et al. (2020) demonstrated that individuals' investment behaviour was strongly linked to the feeling that they had control over their future outcomes. A recent study showed that locus of control influenced financial behaviour and played a crucial role in making people more financially responsible (Radianto et al., 2021). Rasheed et al. (2019) discovered that investors' decision-making was influenced by various factors, including risk perception, information sources, and social influence. Investors with higher internal locus of control were less likely to be influenced by external factors such as social influence and were more likely to base their investment decisions on their own independent risk analysis. As such, in line with the above literature, the following hypothesis was formulated:

H1d: Locus of control has a positive impact on investment experience.

2.3.5. Risk tolerance (R)

Risk tolerance refers to the decision maker's general or consistent willingness to take risk (Wood and Zaichkowsky, 2004). Shleifer (2000) identified the notion of risk as feelings. The willingness to bear financial risk is a major factor that influences individuals' financial decisions. The best way to ascertain how willing investors are to take risks when making regular investment plans is by looking at their risk tolerance (Rabbani et al., 2019). The study by Ameriks et al. (2020) showed that personal stockholdings influenced risk aversion. Nguyen (2019) found that investors' risk aversion had a major impact on their choice of investment tactics. Individual investors were more inclined to behavioural biases; they were less organised and had a low level of risk tolerance (Naveed et al., 2021). A positive correlation was found between idiosyncratic risk and stock return, especially amidst economic downturns, during which investors required companies to enhance their performance (Shubiri and Jamil, 2018; Bozhkov et al., 2020). Active investors were more likely to take risks and outperform in the stock markets, whereas passive investors were more likely to follow safe investment strategies and underperform in the stock markets (Chen et al., 2019). Hence, this study hypothesised that:

H1e: Risk tolerance has a positive impact on investment experience.

2.3.6. Social interaction (SI)

Social interaction means that people talk to each other to obtain information and to decide what to do with their money (Shiller and Pound, 1989). Sharing information with friends and relatives on the media has become an important part of social life (Akhtar et al., 2018). The study by Wu et al. (2018) found that social interaction, such as through social media and word of mouth, increased investment intention and boosted stock market participation. Such interaction boosted stock market participation. Individuals tended to acquire more information and build relationships with others before making investment decisions (Pompian and Longo, 2004). The so-called "peer effect" or "neighbourhood effect" in the stock market enabled potential investors to acquire knowledge from someone else's investment experience, thereby increasing the likelihood of their participation in the stock market. Thus, in line with the above literature, the following hypothesis was formulated:

H1f: Social interaction has a positive impact on investment experience.

2.4. Moderating Variable: Financial Knowledge

The financial industry is continually evolving, resulting in the introduction of highly complicated financial products. This phenomenon highlights the need to examine individuals' behaviour, as households in many countries across the world are facing money management issues (Tiftik et al., 2019). Urmee Ghose (2022) found that panic resulting from a lack of market information influences individual investors' investment decisions. Research indicates that Bangladeshi investors exhibit a low level of literacy. There is a negative and weak correlation between financial literacy and investment intentions. Remarkably, investors with poor literacy encourage others to participate in mutual funds, thus becoming significant players in the financial system in Bangladesh. Sorongan (2022) concluded that financial literacy enhances everyday financial decision-making. Investors' behaviour and attitudes influence their decisions as much as their skills and estimates. Investors' behaviour and attitudes, along with their skills and predictions, significantly influence their decision-making process. Therefore, it is necessary to determine the biases that affect investors' investment experiences in such markets. Rasool and Ullah (2020) examined the relationship between financial literacy and behavioural biases, and they found that an increase in financial literacy reduced the likelihood of having behavioural bias. Thus, this study posited that:

H2a: Financial knowledge moderates the relationship between anchoring and investment experience.

H2b: Financial knowledge moderates the relationship between the gambler's fallacy and investment experience.

H2c: Financial knowledge moderates the relationship between herding and investment experience.
H2d: Financial knowledge moderates the relationship between locus of control and investment experience.
H2e: Financial knowledge moderates the relationship between risk tolerance and investment experience.
H2f: Financial knowledge moderates the relationship between social interaction and investment experience.

This study developed a causal model consisting of six independent variables and one moderator based on a comprehensive and thorough review of the relevant literature. Figure 1 presents the conceptual framework of this study.

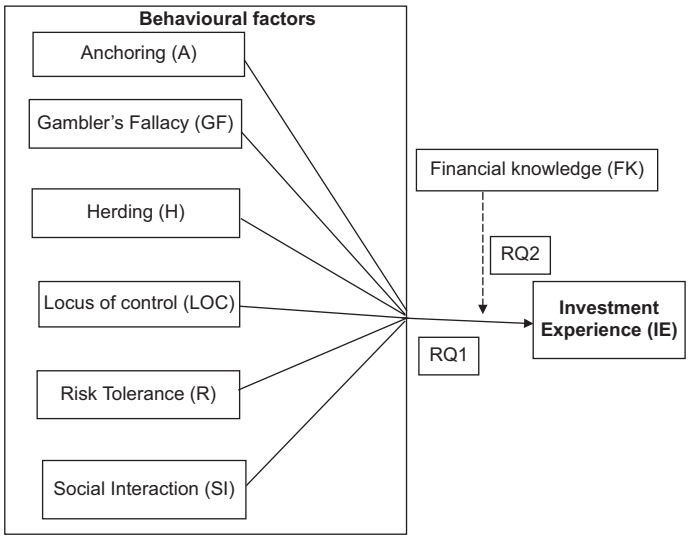
3. METHODS

This study was based on the positivism paradigm since the researcher selected the quantitative method to examine the relationships between the independent and dependent variables. This research adopted the survey questionnaire method to collect primary data in order to analyse the behavioural factors influencing Bangladeshi investors' investment experience. Since this research was focused on individual investors' behaviour and due to a lack of secondary data available, surveying was the most appropriate methodology. For this situation, a survey is appropriate to obtain new information quickly (Zikmund et al., 2003).

3.1. Measurement

This study adapted previously validated scales to measure its variables. In this study, the researcher used the term "investment experience" instead of "investment performance" to measure investors' personal gain and loss experience when they participated in the stock market based on their own judgement. The construct was adapted and modified from Yuliani et al. (2017). A five-point Likert scale was used to ask individuals to evaluate their investment experience. To determine whether financial knowledge modifies the association between behavioural factors and investment experience, the advanced level of financial literacy test was used to select the financial knowledge scale for this study, in accordance with Lusardi and Mitchell (2007). The operationalisation of the anchoring construct was adapted and modified from Lai et al. (2013). Meanwhile, the gambler's fallacy construct was adapted and modified from Lyons et al. (2013) and Luong and Ha (2011). A five-item scale was adapted from Ton and Dao (2014) to measure herding. Cobb-Clark (2013) locus of control construct was modified and used in this study. Further, the risk tolerance construct was adapted and modified from Rahman et al. (2020). The measurement items for social interaction in this study were adapted and modified from Fuller-Iglesias and Rajbhandari (2016).

Figure 1: Conceptual framework



Note of indicators: —— indicates direct relationship; – – – indicates moderating relationship

A structured questionnaire was developed subsequent to the preliminary selection of measurement scales. To ensure the accuracy and clarity of the questionnaire, the researcher conducted a pre-test involving three academic experts and five participants. This process aimed to confirm the meaning, language, flow, and comprehensibility of the items (Rahman and Mazumder, 2021).

3.2. Sample

One of the primary purposes of the study was to target individual investors due to their lack of awareness of behavioural biases and higher susceptibility to psychological errors. Survey questionnaires were distributed to individual investors who were selected based on convenience sampling. The convenience sampling method prioritises generalizability (Etikan et al., 2016). According to Zikmund et al. (2003), for a non-probability sample, it is fair to base the sample size on existing research or available resources. To obtain reliable results for this study, the researcher selected a sample of 1,015 participants.

4. RESULTS AND DATA ANALYSIS

The study's conceptual model was examined using the partial least squares structural equation modelling (PLS-SEM) approach instead of covariance-based structural equation modelling (CB-SEM). The PLS-SEM technique was very relevant for this research, which attempted to predict and explain the key variables of investment experience.

4.1. Common Method Variance

Since all of the data for this research were obtained from an identical source, there was a possibility of common method variance (CMV) remaining even though certain precautions were taken beforehand (Podsakoff et al., 2016). According to Kock (2015), a model is considered free of common method bias if all the (factor level) variance inflation factors (VIFs) obtained from a complete collinearity test are equal to or lower than 3.3. In this study, the results in Table 1 show that the pathological VIFs for all constructs were between 1.056 and 1.243, confirming that CMV was not a major issue in this study.

4.2. Descriptive Analysis

Table 2 presents the profiles of the respondents, detailing their education, employment, industry, stock market experience, place of residence, and other factors. The survey received 1,015

Table 1: Full collinearity testing

IE	Anchoring	GF	Herding	LOC	Risk tolerance	SI
1.243	1.236	1.056	1.226	1.153	1.214	1.182

IE: Investment experience, GF: Gambler's fallacy, SI: Social interaction, LOC: Locus of control

Table 2: Demographic profiles of respondents

Variables	Group	Frequency, *n* (%)
Gender	Male	635 (62.6)
	Female	380 (37.4)
Age	<25	58 (5.7)
	25-34	260 (25.6)
	35-44	264 (26.0)
	45-54	313 (30.8)
	55 and above	120 (11.8)
Education	Primary or secondary	133 (13.1)
	Diploma	366 (36.1)
	Bachelor's	245 (24.1)
	Master's	252 (24.8)
	Doctoral	8 (0.8)
	Others	11 (1.1)
Marital	Unmarried	101 (10.0)
	Married	802 (79.0)
	Others	112 (11.0)
Occupation	Student	40 (3.9)
	Employed	525 (51.7)
	Business	382 (37.6)
	Others	68 (6.7)
Industry	Agriculture	71 (7.0)
	Financial	447 (44.0)
	Manufacture/construction	200 (19.7)
	Garments	163 (16.1)
	Health	6 (0.6)
	Others	128 (12.6)
Monthly income	TK 15,000 or <15,000	154 (15.2)
	TK 15,001-50,000	409 (40.3)
	TK 50,001-100,000	294 (29.0)
	TK 100,001-500,000	151 (14.9)
	>500,000 TK	7 (0.7)
Domicile	Dhaka	582 (57.3)
	Sylhet	110 (10.8)
	Chittagong	72 (7.1)
	Others	251 (24.7)
Religion	Islam	733 (72.2)
	Hindu	63 (6.2)
	Buddhist	27 (2.7)
	Christian	165 (16.3)
	Others	27 (2.7)

completed responses from 635 male (62.6%) and 380 female (37.4%) participants. In terms of age, the respondents were 25–54 years old and older. The majority (79%) of the respondents were married, 10% were single, and 11% were in other types of relationships. Of the 1015 respondents, approximately 72.2% were Muslims. Most respondents (57.3%) resided in the Dhaka district. Regarding education, 36.1% had a diploma, followed by those with a master's degree (24.8%) and a bachelor's degree (24.1%). Over 51.7% were employed in the government or private sector. In terms of employment, the financial industry had the highest representation (44%). The middle-income group was the most represented (40.3%), and 51% of the respondents (518) earned their income from salaries.

4.3. Measurement Model Analysis

This study used the two-step process suggested by Hair et al. (2017) to examine the research model. The initial phase involved using composite reliability, convergent validity, and discriminant validity to assess the measurement scales. Average variance extracted (AVE >0.50) and composite reliability (CR >0.70) were used to assess construct reliability. For the reliability test, the Cronbach's alpha (α) statistic was used to assess the internal consistency's suitability (Pallant, 2010). The reliability test findings for each construct are presented in Table 3 and Figure 2. All of the measures were found reliable based on Cronbach's alpha values, which ranged from 0.642 to 0.920. The model's convergent validity was established using the standardised factor loadings, which varied from 0.508 to 0.943, and the P-values ($P < 0.001$) of each item (Hair et al., 2011; Malhotra, 2010; Pallant, 2010). Due to the conceptual definition of latent variables, an extremely stringent criterion of 0.85 (HTMT0.85) was established to evaluate discriminant validity (Kline, 2011; Franke and Sarstedt, 2019). Table 4 demonstrates that the respondents recognised the distinctiveness of the constructs, as all of the HTMT values were below the stringent threshold of 0.85.

4.4. Structural Model Analysis

After establishing the measurement model, the study proceeded with evaluating the structural model. These models were analysed to assess their predictive power of the target constructs (Hair et al., 2019). The results for each path relationship within the model were produced using the bootstrapping method to test the hypotheses. Multicollinearity, or high correlation between independent variables, can be detected by examining the level of tolerance and the VIF. As shown in Table 5, there was no evidence of multicollinearity in this study because the VIF values were <10 (Hair et al., 2007).

To examine the prediction-orientated structural models, this study determined the path coefficient, t-statistic, explanatory power (R^2), predictive relevance (Q^2), effect size (f^2), and prediction error assessment values (Ogbeibu et al., 2020). The results in Table 6 show that the theoretical model of this study explained 49.0% ($R^2 = 0.490$) of the variance of investment experience (IE). This is considered a substantial level of predictive accuracy (Cohen, 1988). The substantive effect of each predictor variable on the dependent variable is known as effect size (f^2). From Table 6, it can be observed that anchoring (0.235) and social interaction (0.221) had large effects, while herding (0.001) and risk tolerance (0.001) had small effects, in producing the R^2 for investment experience.

This study also assessed the predictive relevance of the theoretical model based on the Q^2 value. The results in Table 7 show that all the endogenous constructs in the structural model had adequate predictive accuracy at $Q^2 = 0.237$ (small) for IE (Hair et al., 2019; Sarstedt et al., 2017).

Out-of-sample predictive power was calculated using the Q^2 prediction and root mean square error (Table 8). Each of the indicators of the endogenous construct had a Q^2 prediction value >0. Therefore, the structural model's out-of-sample predictive power was sufficient.

Table 3: Measurement model for the constructs

Constructs	Items	Loadings	Cronbach's alpha	Rho_A	AVE	CR
IE	IE4	0.681	0.849	0.865	0.571	0.888
	IE5	0.646				
	IE6	0.708				
	IE8	0.685				
	IE9	0.856				
	IE10	0.807				
	IE11	0.780				
Anchoring	A1	0.844	0.642	0.709	0.567	0.796
	A3	0.728				
	A4	0.677				
GF	GF1	0.813	0.846	0.857	0.597	0.881
	GF2	0.779				
	GF3	0.695				
	GF4	0.846				
	GF5	0.719				
Herding	H1	0.728	0.783	0.782	0.501	0.833
	H2	0.826				
	H3	0.647				
	H4	0.671				
	H5	0.650				
LOC	LOC1	0.859	0.902	0.922	0.757	0.940
	LOC2	0.861				
	LOC3	0.874				
	LOC4	0.860				
	LOC5	0.895				
Risk tolerance	R1	0.896	0.840	0.947	0.677	0.889
	R3	0.934				
	R5	0.881				
	R6	0.508				
SI	SI1	0.920	0.912	0968	0.787	0.937
	SI2	0.838				
	SI4	0.843				
	SI6	0.943				
FK (moderator)	FK	SIM			NA	NA

IE: Investment experience, A: Anchoring, GF: Gambler's fallacy, H: Herding, LOC: Locus of control, R: Risk tolerance, SI: Social interaction, NA: Not available, AVE: Average variance extracted, CR: Composite reliability

Table 4: Heterotrait-monotrait ratio

Constructs	Anchoring	FK	GF	Herding	IE	LOC	Risk tolerance	SI
Anchoring								
FK	0.099							
GF	0.221	0.090						
Herding	0.103	0.144	0.063					
IE	0.644	0.124	0.163	0.080				
LOC	0.241	0.108	0.051	0.187	0.455			
Risk tolerance	0.298	0.045	0.143	0.084	0.188	0.085		
SI	0.206	0.049	0.174	0.080	0.494	0.356	0.238	

SI: Social interaction, LOC: Locus of control, IE: Investment experience, GF: Gambler's fallacy, FK: Financial knowledge

Table 5: Collinearity statistics (inner VIF values)

Constructs	IE
Anchoring	1.158
FK	1.059
GF	1.090
Herding	1.084
IE	
LOC	1.217
Risk tolerance	1.127
SI	1.277

SI: Social interaction, LOC: Locus of control, IE: Investment experience, GF: Gambler's fallacy, FK: Financial knowledge

Table 6: Results of explanatory power R^2 and effect size (F^2)

Variables	Explanatory power (R^2), IE
Anchoring	0.235
FK	0.008
GF	0.024
Herding	0.001
IE	0.490
LOC	0.068
Risk tolerance	0.001
SI	0.221

SI: Social interaction, LOC: Locus of control, IE: Investment experience, GF: Gambler's fallacy, FK: Financial knowledge

Figure 2: Results of measurement model analysis (loadings and AVE)

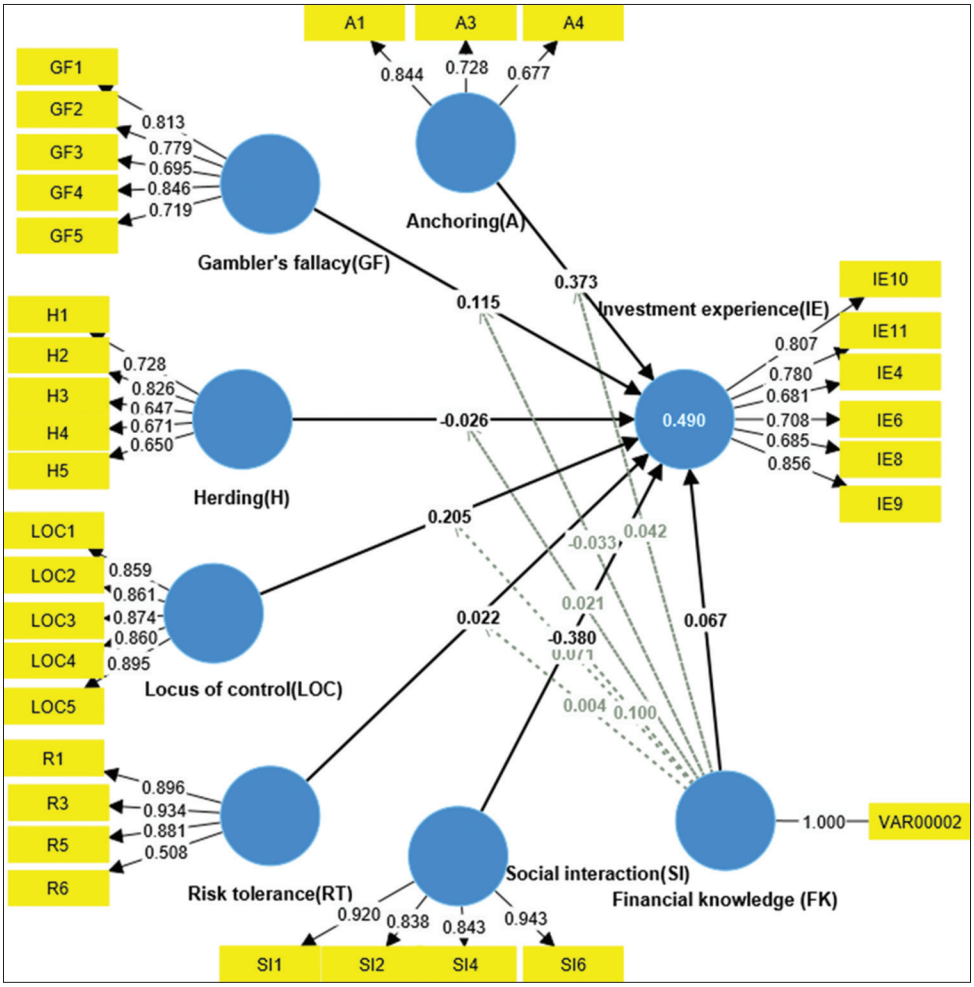


Table 7: Results of predictive accuracy (Q^2)

Endogenous constructs	Predictive accuracy (Q^2) magnitude
IE	0.237 (small)

IE: Investment experience

4.5. Hypothesis Testing

This study used 5000 bootstrap subsamples to test the hypotheses, as suggested by previous studies (Ali et al., 2018; Sarstedt et al., 2017). Figure 3 illustrates the comprehensive analysis of the model's direct and indirect relationships.

Table 9 presents a summary of the results for testing the sub-hypotheses of hypotheses 1 and 2. As expected, there was a significant positive relationship between anchoring and investment experience (β = 0.370, P = 0.000). Similar with the findings of previous studies gambler's fallacy was positively related to investment experience (β = 0.115, P = 0.000). Therefore, H1a and H1b were supported. The standardised coefficient beta for the path from herding to investment experience was negative and insignificant (β = −0.026, P = 0.202). Lastly, the standardised coefficient beta for the path from locus of control to investment experience was positive and significant (β = 0.206, P = 0.000). This finding implies that a high level of locus of control provides a better investment experience for investors, and vice versa. Next, the relationship between risk tolerance and investment experience was positive and not significant (β = 0.020, P = 0.191). Therefore, H1d was supported, but H1c and H1e were not supported. Conversely, the relationship between social interaction and investment experience had a significant negative relationship (β = −0.382, P = 0.000). Thus, H1f was supported.

The interaction SEM model was used to test hypothesis 2. This study included financial knowledge as a moderator of the relationships between behavioural factors and investment experience (H2). Financial knowledge dampened the positive effect of some of the behavioural factors on investment experience, but the change was not statistically significant. The path value (β = 0.043, P = 0.049) showed the reducing effect of financial knowledge on the direct relationship between anchoring and investment experience. This finding indicates that high financial knowledge strengthens the anchoring–investment experience link more than low financial knowledge. Next, financial knowledge positively moderated the relationship between social interaction and investment experience (β = 0.101, P = 0.000). This finding implies that a high level of financial knowledge strengthens the link between social interaction and investment experience more than a low level of financial knowledge. Thus, H2a, H2d, and H2f were supported. The moderating effects of financial knowledge on the links between other behavioural biases (gambler's fallacy, risk tolerance, and

Figure 3: Full model analysis

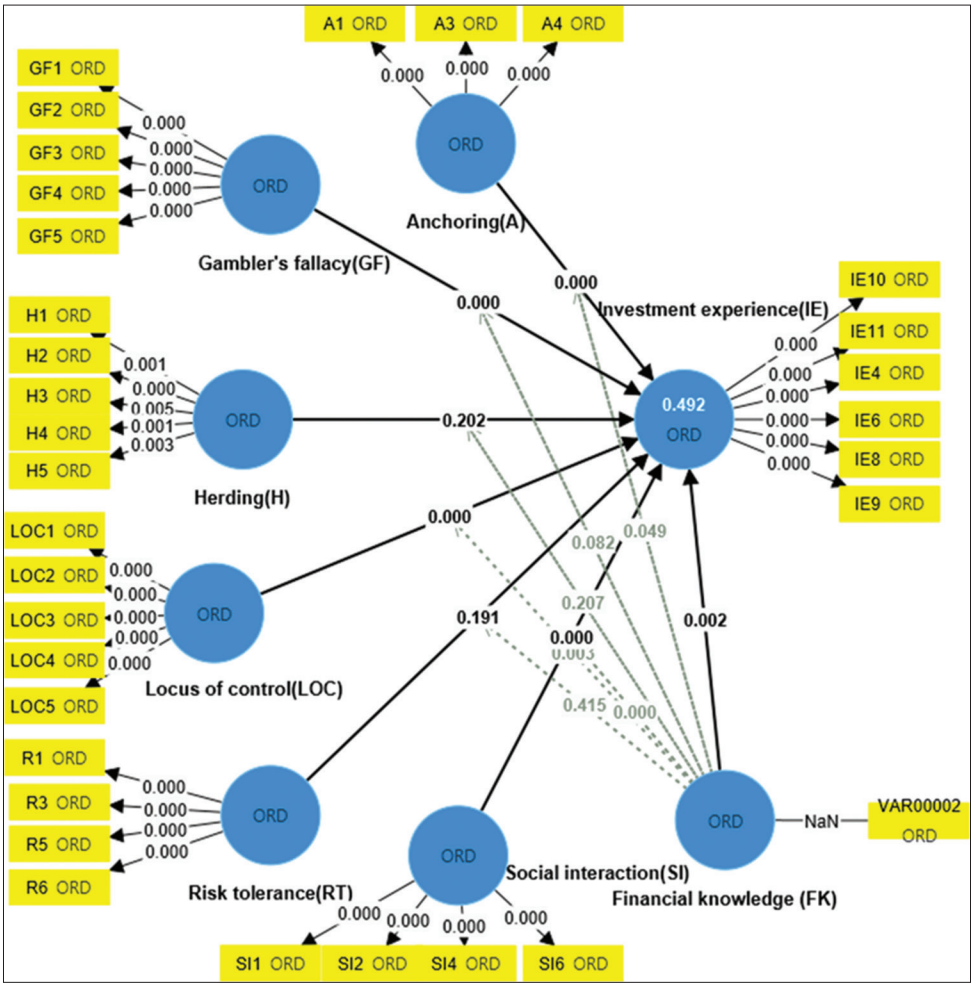


Figure 4: IPMA graphic

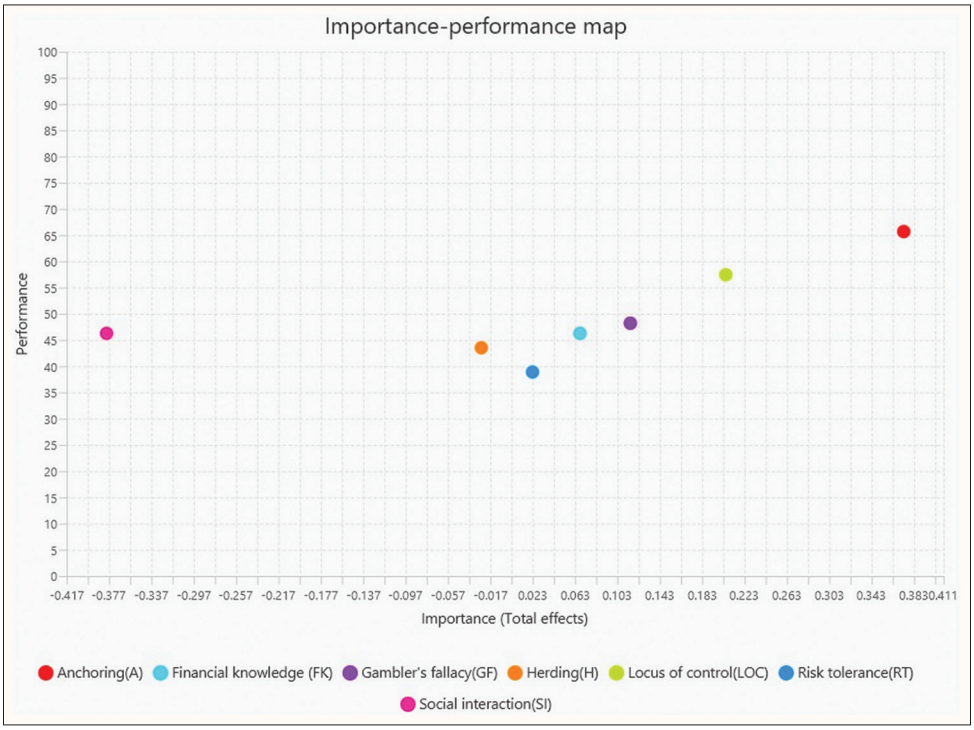


Table 8: Summary of partial least squares predict results

Indicator	PLS-SEM		Latent Q^2 predict	LM	
	RMSE	Indicator Q^2 predict		RMSE	PLS-SEM - LM RMSE
IE4	0.908	0.155	0.444	0.914	−0.006
IE5	0.975	0.204		1.034	−0.058
IE6	1.115	0.145		1.248	−0.134
IE8	0.841	0.244		0.864	−0.023
IE9	1.009	0.258		1.058	−0.049
IE10	0.839	0.380		1.027	−0.187
IE11	1.011	0.240		1.053	−0.042

PLS-SEM: Partial least squares structural equation modelling, IE: Investment experience

Table 9: Summary of results

Hypothesis 1: Behavioural factors significantly influence investment experience						
Hypothesis	Relationships	Standard beta	SE	T	P	
H1a	A→IE	0.370	0.025	15.055	0.000	
H1b	GF→IE	0.115	0.023	4.971	0.000	
H1c	H→IE	−0.026	0.031	0.835	0.202	
H1d	LOC→IE	0.206	0.027	7.757	0.000	
H1e	RT→IE	0.020	0.023	0.875	0.191	
H1f	SI→IE	−0.382	0.025	15.562	0.000	
Hypothesis 2: Moderating effect of financial knowledge						
Hypothesis	Relationships	Standard beta	SE	T	P	95% BCaI
H2a	FK-A→IE	0.043	0.026	1.653	0.049	−0.07-−0.03
H2b	FK-GF→IE	−0.033	0.024	1.393	0.082	−0.02-0.15
H2c	FK-H→IE	0.021	0.026	0.818	0.207	−0.04-0.09
H2d	FK-LOC→IE	0.071	0.026	2.783	0.003	−0.09-−0.03
H2e	FK-RT→IE	0.005	0.023	0.214	0.415	−0.13-0.02
H2f	FK-SI→IE	0.101	0.027	3.682	0.000	0.02-0.15

IE: Investment experience, A: Anchoring, GF: Gambler's fallacy, H: Herding, LOC: Locus of control, R: Risk tolerance, SI: Social interaction, SE: Standard error

Table 10: Results of importance-performance matrix analysis

Construct	Importance (total effect)	Performance (index value)
Anchoring	0.373	65.694
FK	0.067	46.281
GF	0.115	48.215
Herding	−0.026	43.534
LOC	0.205	57.459
Risk tolerance	0.022	38.904
SI	−0.380	46.278

Sorted in ascending order based on level of importance (total effects). SI: Social interaction, LOC: Locus of control, IE: Investment experience, GF: Gambler's fallacy, FK: Financial knowledge

herding) and investment experience were not significant. Thus, H2b, H2c, and H2e were not supported.

The importance-performance matrix analysis (IPMA) or importance-performance map analysis extends the results of standard PLS-SEM estimations by comparing the latent variables' total effects on a target variable with their scores (Hair et al., 2019). The results from IPMA for each predictor structure used in the structural model are shown in Table 10.

The IPMA graphic in Figure 4 reveals that risk tolerance had high importance but lowest performance among the variables. In contrast, social interaction had higher performance but lowest importance. Anchoring had the highest importance and performance. These findings suggest that the performance of each predictor variable needs to be improved in order to improve the investment experience of individual investors.

5. DISCUSSION AND CONCLUSION

This study investigated the relationships between behavioural factors, investment experience, and financial knowledge. The behavioural factors investigated are anchoring, gambler's fallacy, herding, locus of control, risk tolerance, and social interaction. The study also investigated the moderating effects of financial knowledge on the associations between behavioural factors and investment experience.

As expected, anchoring had a positive impact on investment experience. Based on the findings, Bangladeshi investors use mental shortcuts to expedite their decisions on participating in the stock market and buying and selling stocks, and these actions affect their investment experience. In alignment with this finding, the study by Chowdhury et al. (2024) found that most individual investors in Bangladesh had low sophistication and moderate financial knowledge. In investing, individuals must make complex financial decisions that require careful considerations of many factors. Therefore, they rely on random news and irrational reference information to make ad hoc decisions rather than going through the time-consuming process of systematic evaluation. This finding is supported by Gavrilakis and Floros (2021), who found that individual investors' portfolio construction and level of satisfaction with performance were positively affected by the

heuristic variable. In contrast, Shah et al. (2018) and Parveen et al. (2021) found that heuristic biases, including anchoring, negatively affected investment decisions.

The results also demonstrated the existence of a strong and statistically significant relationship between gambler's fallacy and investment experience. This suggests that investors with the gambler's fallacy believe that future gains are more likely if some previous periods have suffered losses. Investors in Bangladesh are taking too much risk, given the positive outlook, and thus they can possibly incur losses. As a result, the gambler's fallacy leads to poor decisions. However, most investors want to earn short-term profits without having any solid objectives for the long term. This study's findings are consistent with the results of Quaicoe and Eleke-Aboagye (2021), Chandra and Kumar (2012), Tekçe et al. (2016), and Alsedrah and Ahmed (2017), which found heuristic factors (including the gambler's fallacy) affected investors' decisions.

Further, this study found that herding had a statistically insignificant positive impact on investment experience. Since the Bangladeshi people practise the collectivist culture, individuals are more inclined to follow others' decisions on their life matters. This study's results are consistent with the findings of Gavrilakis and Floros (2021), who showed that herding bias did not affect portfolio building or the level of satisfaction of active individual investors. However, this study's findings are inconsistent with Rehan et al. (2021) and Senarathne and Jianguo (2019), who noted a significant positive relationship between herding and profiting from market irrationalities.

Locus of control had a statistically insignificant positive impact on investment experience. This result implies that individuals with relatively high locus of control participate in the stock market more frequently and have more favourable investment outcomes. Investors in Bangladesh, with a high level of locus of control, observe the stock market to filter information before making objective and rational investment decisions, try to find the best time to buy and sell the best stocks, and dare to take a position when the stock price falls and demand it. They enter the stock market with a small amount of money in hand, ith some of them selling their assets to invest in the stock market and always acting hastily to get back their money as soon as possible (Chowdhury et al., 2024)

In this study, risk tolerance had a positive relationship with investment experience. This finding suggests that individuals who are willing to take on more risks are more likely to invest in the stock market and have better investment experiences. Bangladeshi investors who anticipate higher returns seem to invest more in the stock market to increase turnover and earnings. Further, they typically aim for short-term gains rather than setting out with a long-term investment strategy (Chowdhury et al., 2024). Most of them invest in high-risk Z-category stocks for profit, allowing them to have a positive investment experience in the market. The result of the present study is consistent with the findings by Fauzi et al. (2017) and Yang et al. (2021), which found that risk tolerance had a strong positive impact on stock market investment intention. Along the same line, Chen et al. (2019) demonstrated that active investors took on more risk and outperformed the stock market, whereas inactive investors preferred conservative investment models and achieved lower investment performance.

This study found that social interaction had a statistically insignificant positive impact on stock market participation and a statistically insignificant negative impact on investment experience. In other words, individuals with relatively high levels of social interaction participated in the stock market and experienced losses in the stock market, but none of the relationships was statistically significant. One possible explanation for this finding is people face difficulties to interact with someone in society who is knowledgeable and experienced in the stock market. Family, friends, and neighbours may lack financial knowledge and market experience. In contrast, experienced investors put a greater emphasis on practical values.

This study also examined the moderating effect of financial knowledge on the relationships between behavioural factors and investment experience (H2). Investors' financial knowledge in the Bangladeshi stock market can affect the operations of the market. When Bangladeshi investors understand the functions of the stock market because of their previous investment experience, they perform fundamental and technical analyses before participating in the stock market. Knowing investors' personal investing experience is vital, as it greatly helps shape their future participation in the stock market (Strahilevitz et al., 2011).

The results of this research support the idea that when investors' level of financial knowledge influence their behavioural bias by decreasing or increasing it, the investors experience gains or losses in the stock market. The role of financial knowledge as a moderator between anchoring and investment experience was supported and significant. Financial knowledge weakened the relationship between anchoring and investment experience. An explanation for this finding is that financial knowledge helps investors in forecasting the changes in stock prices (anchor) for their next investment decisions.

Financial knowledge provides individual investors with a solid foundation for investors' experience, hence its inclusion in this study as a key factor influencing investment experience. Due to a scarcity of literature, limited empirical evidence is available to validate these findings, indicating the need for further investigation into the moderating role of financial knowledge in the relationships between behavioural factors and investment experience. Overall, this study's finding indicate that financial knowledge only minimally affects the relationships between behavioural factors and stock market participation in the context of Bangladesh. Perhaps, even though Bangladeshi investors possess the necessary financial knowledge, they believe the Bangladeshi stock market is excessively volatile and they lack the confidence to participate in the stock market (Kamal and Wohar 2023).

5.1. Contributions and Implications

This study contributes to the existing literature on investors' investment experience. It expands several existing research areas into frontier markets in South Asia. Since this study is

one of the first to examine how financial knowledge moderates the relationship between behavioural factors and investment experience in a South Asian emerging country, the study's findings contribute substantially to the body of literature.

The study raises awareness and understanding of investors' behavioural factors, which can be beneficial to investors and financial professionals such as portfolio managers and traders in commercial banks, investment banks, and mutual funds. This study helps investors in selecting the best investment opportunities and avoiding crucial mistakes caused by behavioural factors. For individuals with limited financial knowledge, financial service providers should create higher-yield funds and allocation funds that can potentially maximise investors' profits in order to attract them to participate in the market.

Another contribution of this research is it can help regulators craft policies that are responsive to the behaviour of investors. These policies should be prioritised in order to shield investors from the negative impacts of financial crises. The government should include educational modules on effective risk management pertaining to stock market participation since investors pay more attention to potential risk that profits when making investment decisions.

5.2. Limitations and Future Research

Despite the substantial attempts made, this research is not exempt from limitations. The study was restricted to individual investors in Bangladesh. The behavioural factors of institutional investors and households may be different from those of individual investors. Therefore, care should be taken when drawing conclusions about the Bangladeshi population. Also, future research may conduct comparative studies between individual investors and institutional investors or households.

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