IMPACT OF ALLIED FACTORS ON INVESTMENT PERFORMANCE, MEDIATING ROLE OF INVESTMENT DECISION: EVIDENCE FROM INVESTORS IN LAHORE

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ABSTRACT

In traditional finance, investors are assumed to behave rationally while making financial decisions. In contrast, proponents of behaviour finance argue that investors are not always rational. In fact, the financial decisions they make and their investment performance are influenced by various behavioural factors. So, the literature is filled with a plethora of studies on finding the impact of behavioural factors on decision-making and investment performance. However, studies on emerging economies like Pakistan are scarce. Further, most studies focus on finding only behavioral factors' impact. However, the current study takes into account behavioural factors, psychological factors, market factors, social factors, and financial literacy together in one model. This study aims to determine whether psychological factors, market factors, social factors, and financial literacy impact investment performance while testing the mediating role of decision-making. The study uses SEM for the analysis. Nine hypotheses are being investigated. The outcomes of the PLS-SEM mediation analysis suggest a mediation effect in all of the parameters investigated in this research study. Interestingly, the results of this study are persistent with the prospect theory and assert that investors do not always make rational judgments when making financial investments. Thus, study results are helpful for retail investors to understand the mistakes they make while making investment decisions.

INTRODUCTION

Individuals, in their life, make their own choices. Some of the choices have a small while others have a large impact on their lives. As human beings, we make decisions based on our experiences and emotions (Barrett et al., 2007). In literature, there are many economic and financial theories that state that the decision-making process of individuals is rational, where every decision is based on all possible and available information. Decision-making (DM) becomes easy if the individual decides by considering all the relevant information (Chandra, 2008). Financial DM is the selection of various financial choices (Wamae, 2013). Informed DM enables investors to make good investment decisions and protect themselves from potential losses. Huang (2018) argued that risk and return aptitude vary among individual investors, and every individual investor must consider his risk and return aptitude while making a risky investment. Sabir et al. (2019) contended that investors carefully evaluate the alternatives to select the best investment. Tetteh and Hayfron (2017) argued that traditional financial theories reveal the rationality of investors and their decisions by engulfing every piece of information available in the market. The majority of finance theories

and propositions include this notion that investors have a tendency to demonstrate rational behaviour, and they only take those decisions which are wealth-maximizing. These theories of rational behaviour are majorly showing consistency with the efficient market hypothesis (Fama, 1965). However, in literature, researchers have identified that the individual decisions of investors are not dependent only on rationality but also based on other factors like psychological factors (Wanyoike, 2016), stock market factors (Kengatharan & Kengatharan, 2014), social factors (Borgers et al., 2015), and financial literacy (Lebdaoui et al. 2021), which is a new branch of finance known as "behavioural finance." Behavioural theorists believe that investors do not always make rational decisions according to the law of traditional finance (Yurttadur & Ozcelik, 2019). Thus one can imply that the process of investing is influenced by a range of factors that vary from person to person (Awais et al., 2016). This complexity of investment increases more in the stock markets (Park et al. 2007).

Stock markets are assumed to be one of the basic pillars of an economy. So good individual investment performance results in more individuals participating in the stock markets, which results in more capital inflow for the businesses. This results in an improved economy, an increase in employment, and more money circulation, among others (Celebi & Hönig, 2019). Investment is based on the risk and returns model, which itself is a complex procedure (Holthausen, 1981). The major reason for this increased complexity is that investment decision is made in the presence of various individual and institutional investors who exhibit different types of risk aptitude, behavioural patterns, and emotions (Shaik et al., 2022). Thus, the investment performance depends on the investors' DM (Zahera & Bansal, 2018). It is believed that DM has implications in relation to investment and money, which results in gains and losses. Therefore, behavioural factors are supposed to have a direct association with DM (Zahera & Bansal, 2018). For instance, overconfidence (OC) bias leads investors towards irrational decisions and might lead investors towards overtrading, wherein the investor has to pay too much brokerage cost along with taxes (Trinugroho & Sembel, 2011). In contrast, herding behaviour, representative bias, and money worship attitude, among others, also lead to deviating from correct and optimal decisions and, thus, the outcome of poor investment returns (Hassan et al., 2017). Thus the overall individual investment performance generates low or even negative returns (Barber & Odean, 2013).

The majority of research in behavioural finance, which is the composition of investors' intelligence or mental etiquettes and finance, analyses investors' DM processes through the lens of emotion and psychological considerations. It says that investors' actions are not always logical (Leković, 2020). Their choices are not always based on some logic or reason; rather, sometimes, they act illogically and unreasonably (Babajide & Adetiloye, 2012). Their decisions are based on the sentiments of individuals and their intellect. The mental mistakes of investors affect their etiquette or behaviours. Some of the behavioural factors are overconfidence, or potentiality (potential to initiate mental information to get defined goals) and financial literacy, the ability to have information and expertise and to use that potentiality to attain financial goals. Judgment and mental potentialities or capabilities, activities are conducting to attain a specific goal or result (Combrink & Lew, 2020). The current study is conducted to find out the aspects of behavioral finance that may affect investors' decision-making.

Problem Statement

The performance of an investment is based on investors' decisions. In the literature, researchers and scholars have identified various factors, such as psychological factors (Wanyoike, 2016), stock market factors (Kengatharan & Kengatharan, 2014), social factors (Borgers et al., 2015), and financial literacy (Lebdaoui et al., 2021) which have a significant impact on investment performance. Evidence suggests that these behavioural factors disrupt market functioning (Rieger et al., 2020). Under the behavioural influence, investors overreact or underreact to information, use rules of thumb to trade, sell winners and retain losers during uncertain times, follow herding behaviour, and bring the noise to the market. These behavioural biases not only cause markets to behave inefficiently but also result in small investors' demise from rational

decisions. It is believed that irrational decisions lead to poor decisions and ultimately result in poor investment performance, subject to which the investors generate low or negative returns (McDevitt et al., 2016). However, if the factors impact the investment performance negatively, then investors will be capable of opting for informed decisions that will enhance their investment performance (Howlett et al., 2008). Thus it is vital to explain this avenue. Further, most research studies performed in this background have taken either a single or two factors. For example, Mettawa et al. (2019), in this study, used behavioural factors and found overreaction and underreaction, Investor sentiment, herd behaviour, and OC significantly impacts the investment decisions of investors. However, up to researchers' knowledge, there is no such study available that tested all the factors, i.e., psychological factors, stock market factors, social factors, and financial literacy, in one model. Additionally, studies investigating the mediating role of investors' decisions and investment performance are scarce. Therefore, there is a need to investigate the impact of all these factors together in one model.

Research Objectives

The research objectives are given as follows,

1. To determine the impact of psychological factors on investment performance

2. To determine the impact of stock market factors on investment performance

3. To determine the impact of social factors on investment performance

4. To determine the impact of financial literacy on Investment performance

5. To determine the impact of decision-making on Investment performance

6. To find the mediating role of investors' decisions between psychological factors and investment performance

7. To find the mediating role of investors' decisions between stock market factors and investment performance

8. To find the mediating role of investors' decisions between social factors and investment performance

9. To find the mediating role of investors' decision between financial literacy and investment performance

Significance of the Study

The purpose of this research is to find the impact of psychological factors, market factors, social factors, and financial literacy on the investment performance of individual investors. There is a plethora of research available in the context of developed market studies; however, studies in developing countries like Pakistan are scarce (Zahera & Bansal, 2018). Thus the findings of the current thesis are helpful for understanding which factors affect retail investors' investment performance. Thus, the study will be helpful for investors to understand the mistakes they make while making investment decisions. Since this study explores the impact of various allied factors in a comprehensive model, therefore, this study is helpful for researchers and academicians in formulating new behavioural models.

Contribution of the Study

The current study contributes to the behavioural finance literature by exploring the behaviour of investors from a developing country, Pakistan. Previously, most of the studies have focused only on testing the impact of psychological biases on investment decisions (Mettawa et al. 2019). However, up to researchers' knowledge, there is no such study available that tested all the factors, i.e., psychological factors, stock market factors, social factors, and financial literacy, in one model. The impact of all behavioural factors has not been studied in a combined comprehensive model. This study fills this gap as it tests the empirical relation of four behavioural factors with investment performance. Moreover, it also takes into account the

mediating role of investors' decisions with respect to behavioural factors and investment performance, which, up to researchers' knowledge, has not been explored as yet.

LITERATURE REVIEW

Financial theories have been developed in finance, assuming that human beings make rational decisions. Kubilay and Bayrakdaroglu (2016) discovered that investors take decisions based on the financial model to avoid risk. On the other hand, if we look at the practical situation, we see that investors make irrational decisions most of the time (Kumar & Goyal, 2015). According to the theorist of behavioural finance, investors' decisions are affected by behavioural factors. These aspects based on behavioural finance's key themes include psychological factors, stock market factors, social influence factors, and financial literacy.

Psychological Factors

Bakar and Yi (2016) have documented that psychological factors affect individual investors' investment decisions. They studied the Malaysian stock market and investigated the impact of psychological factors (conservatism (CON), overconfidence (OC), regret aversion (RA), and herding) on the investors' DM. They used multiple regression techniques and found evidence that overconfidence (OC), regret aversion (RA), and conservatism affect investors' decisions. Ngoc (2014) investigated individual investors' psychological and behavioural factors in the stock market of Ho Chi Minh. The data from 188 investors were collected through a questionnaire. They found that investors do mental accounting in their minds to avoid loss and regret in the future. Moreover, anchoring is also a psychological factor in which investors take decisions based on initial or past values. This also affects the DM of investors, and then investment performance is affected.

Dominic and Gupta (2020) undertook research to find the effects of psychological variables on investment DM. The study focused on investigating psychological variables or biases. In addition to that, his research also examined the impact of Gamblers' Fallacy, Herd Behaviour, Anchoring, and OC. The results showed that almost all psychological factors are important in investment DM. The findings revealed that it is good to have a little bit of OC in an investor, which will ultimately lead to gaining risk-taking abilities, while minimal OC will lead to risk aversion. Hence copping up with OC bias can surely affect the investment decision. Pompian (2006) contended that overconfidence bias is an aspect of the heuristic theme of behavioural finance. OC is the belief of an individual in his capabilities, leading to the wrong DM. In his study, the author says that people overvalue and undervalue their capabilities while making decisions. These kinds of people are affected by OC bias. Gill et al. (2018) examined the reasons influencing the behaviours which relate to their investment decision. A total of 400 questionnaires were distributed, and from these, 313 were used for the analysis part. The results revealed a positive relationship between OC and DM, but the relationship became negative after incorporating the effect of the mediating role of information asymmetry. The OC relationship with investment DM was also positive, and it remained positive even after adding the mediation effect. According to a study by Parveen et al. (2022), OC and heuristic are cognitive biases that affect the DM of the stock market. Investors with OC under uncertainty depend on a representative heuristic for taking decisions. Investors commit a mistake by overestimating their knowledge and relying on past trends and considering past performances as the best indicators for the measurement of a company's performance.

Zhang and Sussman (2017) defined mental accounting as a process in which people assign categories to their expenses and give funds to these categories. Based on these categories, budgeting is made, and investment decisions are taken accordingly. Armansyah (2021) conducted a study in Indonesia and collected data from 250 respondents from the Indonesian market. The focus of the study is to check the relationship between mental accounting and investors' DM. On the basis of regression analysis, they contended that mental accounting significantly affects the investor's investment decisions. Khan (2017) investigated the perception of the investor about the investment decision. Under loss aversion (prospect

theory), investors make decisions to avoid the loss, and this bias affects investor decisions. Ainia and Lufti (2019) undertook a study to see the influence of risk tolerance, risk perception, loss aversion, and OC on investment DM. The sample size for data collection was 400 workers from Surabaya and Jombang, East Java. For the analysis of data, PLS-SEM was applied. A negative impact of risk perception on DM is discovered, while risk tolerance and OC influence DM positively. This particular study provided an overview of handling risk in investment and avoiding the effects of behavioural biases in investment DM.

Stock Market Factors

Waweru et al. (2008) investigated the influence of market knowledge on DM. Findings suggest that this factor is significantly related to investors' DM. Barber and Odean (2013) studied the association between stock market events and investors' DM and found that stock market events influence investors' decisions irrespective of their results. Some stocks grab investors' attention based on their preferences of investors, which can change their investment decision by the investors. Some investors invest in stocks based on their recent performance, and some investors tend to invest based on the popularity of the stocks. Moreover, investors' decisions are affected as to how the company, the stocks of which are traded, gives its customers preference. It changes the opinion of investors about the company. Some investors like to invest in companies that give customers more preference, while some do not like to invest in such companies. The dividend policy of a company affects the investors' DM because it changes the opinion of investors about the company. Some investors give more value to the right to share, and some give more value to dividends, due to which the decision of investors changes accordingly. In general, we can say that market factors are not directly behavioural factors. Still, they change investors' behaviour and opinion while making the decisions, which ultimately results in a change in investment performance (Khan et al., 2015).

Balkhi et al. (2020) carried out a study to find out the factors which influenced the stock market investors' behaviour during the pandemic in Pakistan. Multiple individual investors were approached for data collection. After detailed analysis, it was found that the most significant and crucial factors influencing investment decisions in PSX related to losing aversion, fear of losses, getting rich quickly, expectations of dividends and corporate earnings, previous trends related to the performance of firms' stock, gut feeling on the economy, suggestions of majority shareholders and opinions of brokers, friends and family. The findings of the study would definitely help in comprehending the general behavioural trends of investors and, secondly, to recognize the sufficient routes which may enhance the performance of the Pakistan Stock Market. Investors give under-reaction to price change and sometimes over-reaction to price change (Bakhtiari et al., 2019). Agarwal et al. (2016) proved in their study that investors look at past trends before making investment decisions.

Social Factors

Investors are many times influenced by their social circle. Our emotions are linked with the people around us. Lucey et al. (2005) investigated the influence of feelings on investors' DM. Most research studies have been carried out on behavioural theory-related emotional and psychological factors, but many other factors may influence investment decisions, like social influence. Moreover, during social interactions, people observe others, which can lead to herding behaviour. "Herding" is defined as a situation in which individuals decide to follow and copy others' behaviours and actions instead of behaving independently (Baddeley, 2010). Herding is mostly used in stock markets because herding investors make their decisions keeping in view the decision of the masses. In contrast, rational and informed investors ignore others and base their decisions on rational factors. Herding investors have similar reactions as the ancient men who remained in groups, benefiting and supporting each other (Caparrelli et al., 2004). Moreover, some investors who invest a large sum of capital tend to follow others to avoid the risks they feel when investing in their thinking. The investment cost may also increase in herding because the investors have to change the decision to follow the masses, and the cost may increase to gain abnormal returns.

Agrawal et al. (2016) examined the association between investors' DM and herding behaviour using the ordinary least squares method. It was found that herding behaviour significantly influences investors' decisions in Pakistan. The research of Adiputra et al. (2021) seeks to establish the herding impact, OC, and self-monitoring on investment decisions during the covid period. The target population was people who earned income and experienced the pandemic phase. The results of the research disclose that herding, OC, and self-inspection have certain effects on investment decisions during this phase of covid. Barno et al. (2020) studied the behaviour factors which influence the investment decisions of Nigerian investors. Data consist of 383 responses obtained by using stratified random sampling. The findings indicated that herding behaviour is significantly associated with investing choices (P = 0.450 < 0.05).

Financial Literacy

Al-Tamimi (2009) has explored the impact of financial literacy (FL) on investor decisions in the UAE and found that FL influences investors' decisions. FL is an individual's ability to use different financial skills like financial management, budgeting, and investment. Any individual who does not possess these skills is called a financial illiterate. FL has been studied by many entities, like government and private organizations. They aimed to measure the FL level of their population. The level of FL changes with experience, gender, income, age, and people's Education (Al-Tamimi, 2009). Gaikar and Lakhani (2020) did research on the financial investment of urban inhabitants. The purpose is to explore the link between numerous demographic characteristics and the financial investment of urban inhabitants. The data is obtained by a structured questionnaire sent to 405 samples from India. They posit that financial literacy is an important factor. Agarwal and Mazumder (2013) studied the influence of cognitive ability on financial choices. It was revealed that persons with better overall exam scores and those who scored high in math are adept at making financial choices with fewer errors.

THEORETICAL AND RESEARCH METHODOLOGY

This section describes the operational definition of the variables selected for the study.

Psychological Factors

Psychological factors affect individual investors' DM in stock markets. "Cognitive errors", "psychological biases", and "fundamental heuristics" affect the investment DM process and investment performance (Baker & Nofsinger, 2010).

Overconfidence: This bias is defined by Pompian (2011) as people overvaluing and undervaluing their capabilities while making decisions. The questionnaire adopted for this study is taken from (Ul Abdin et al., 2017).

Mental accounting: Zhang and Sussman (2017) defined mental accounting as a process in which people assign categories to their expenses and give funds to these categories. The items in the questionnaire are taken from the study of Cao et al. (2021).

Loss aversion: Under loss aversion (prospect theory), investors make decisions to avoid the loss, and this bias affects investor decisions. The items in the questionnaire are taken from the study of Cao et al. (2021).

Stock Market Factors

Investors make some decisions based on stock market factors. Sometimes, investors give under-reaction to prices, and sometimes they give over-reaction to prices based on the past trend in price changes, news regarding information of the market, fundamentals of the underlying stock, the company's customer preferences, and the right dividend preferences of the company (Waweru et al., 2008).

Herding: "Herding" is defined as a situation in which individuals decide to follow and copy others' behaviours and actions instead of behaving independently (Baddeley, 2010). The items in the questionnaire are taken from the study of Cao et al. (2021).

Past trend of stocks: It is determined by how the stocks have performed in recent years. The items in the questionnaire are taken from the study of Cao et al. (2021).

Social Influence

Social connections with peers and family have an impact on investment decisions (Shive, 2010). People move in society and collect knowledge. People also interact and discuss with each other about investment opportunities and form an opinion during their discussion based on logic or following others. The opinion formed during the interaction forms the basis of DM.

Brokers' recommendation: It is defined as the investor's decision being based on the stocks which are being recommended by the broker. Since it is assumed that the broker has more knowledge about the market, investors believe their recommendation will be fruitful. The items of the questionnaire are taken from the study of Shanmugham and Ramya (2012).

Friends and family: It is defined as the investor's decision being based on the stocks which are being recommended or bought by friends and family. The items of the questionnaire are taken from the study of Shanmugham and Ramya (2012).

Financial Literacy

Financial literacy is the mathematical ability and knowledge of financial terms by the investor or any individual. Financial literacy comes with experience and knowledge. Financial literacy is high for older adults. It can also be enhanced by the people having a resource to utilize to obtain financial information. The information can be used to avoid the risk of making uninformed decisions. Wealthy individuals can find information using their resources to make informed decisions (Makarov & Schornick, 2010). This plays an important role in making successful decisions, so it should be enhanced to make better decisions (Awais et al., 2016).

Financial education: It is defined as the educational background of the investor, whether he has basic or technical knowledge about the stock market and investment. The items of the questionnaire are taken from the study of Van Rooij et al. (2011).

Financial experience: It is regarded as whether the investor has some previous experience in regard to finance and investment. The items of the questionnaire were adopted from the study of (Van Rooij et al., 2011).

Investors Decision Making

Investors' DM is computed in terms of the risk that he is ready to take while making the investment in the stock market, as used by Baker and Yi (2016). Investor's investment DM is mediating variable, which signifies what influences the investors to make decisions.

Investment Performance

Investment performance is the dependent variable of the study, which postulates the abilities of the investor to generate returns. Generally, this performance is measured through secondary data (Lin & Swanson, 2003). However, in the current thesis, this information is gathered through structured questions following Oberlechner and Osler (2008). These questions are regarding the rate of returns they have earned.

Theoretical Framework

Despite the widespread popularity of the rational behaviour of investors following the efficient market hypotheses, many studies like Hirshleifer and Shumway (2003) have reported the prevalence of irrational behaviour. The findings of the previous studies have reported instances of incompetence, irrationality and inconsistent patterns of human behaviour reflected in the decision, which eventually had an impact on the way that uncertain choices are being made (Muhammad & Abdullah, 2009; Lu et al., 2020). Following these lines of argument, many researchers have argued that human flaws are predictable and consistent, so the efficient market hypotheses fostering the rational behaviour of investors are not supported widely, and it

becomes imperative to acknowledge the weakened notion of rational behaviour (Singh, 2012). The present research uses this prospect theory as the foundation of the theoretical framework, which consists of factors that are different from rational investment behaviour.

The present research is based on prospect theory which supports the irrational DM premise. This theory states that every individual values gain and loss in a different manner hence the decisions of individual investors are made as per the perceived gains, and perceived losses are not always considered (Kahneman & Tversky, 1979). Following the theoretical and conceptual arguments given in above, it is evident that investment DM is influenced by many other factors which are not considered important. The framework of this study considers how several beliefs and preferences of investors can influence the investors' decisions, and this has been done under the variable name psychological behaviour of individual investors (Hunjra et al., 2012). These factors are also explained in heuristics theory, known as the "rules of thumb". Within behavioural finance, the market factor theory is also relevant, which says that investment DM is also influenced by market factors (DeBondt & Thaler, 1995). As per the market changes, the investors keep on irrationally reacting to the market factors. Considering this, the current research also incorporates certain market-based factors to study investment DM holistically. Another important theoretical justification of behavioural finance and irrational investment DM behaviour has been provided through the behavioural disposition of social influence. Being a social beings, retail investors' decisions are widely influenced by social factors. Investors keep on discussing their investment decisions with their social circle, including family members, colleagues, friends, family members, and others, and their opinions influence the DM of investors (Gill et al. 2018). The imitation theory of financial markets also states similar arguments that investors keep imitating their social circle; hence their investment DM is also similar to the investment DM of the crowd to which they belong (Borgers et al., 2015). Since investment performance is dependent on the investors' DM (Zahera & Bansal, 2018), therefore, this study considers decision-making as a mediating variable and investment performance as the dependent variable. Figure 1 provides the conceptual framework of the current study.
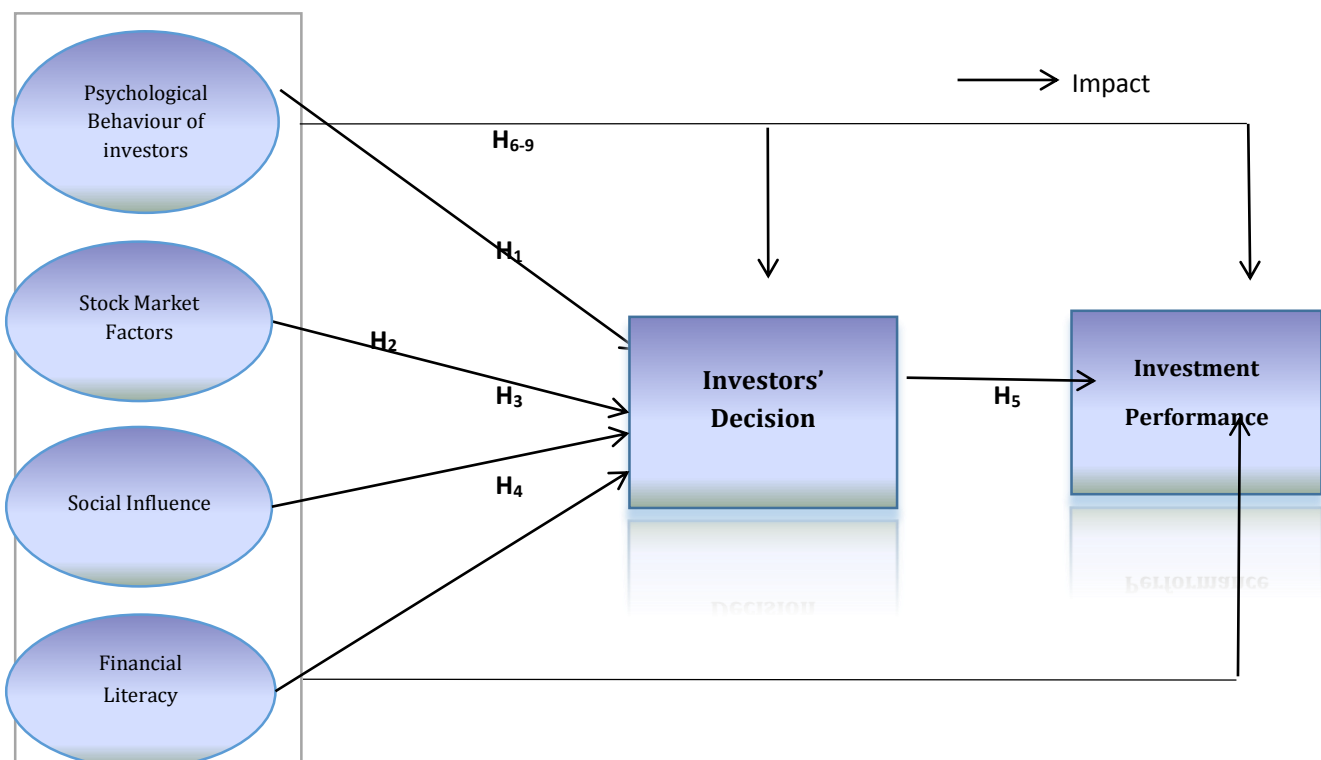

Figure 1. Conceptual Framework (Developed on Hypothesis); author's own source.

Data and Sampling

The data is collected through survey analysis. In this research, the sampling frame cover investors who have broker account in the Pakistan stock exchange, Lahore. As per Garver and Mentzer (1999), the minimum requirement of the sample size should be 300. Therefore, 400 structured questionnaires were distributed on the basis of convenience sampling.

Structural Equation Modelling

In the current study, the PLS-SEM methodology is used for the analysis using Smart PLS 3.0. Co-variance-based structural equation modelling (CB-SEM) is one of the preferred methods for investigating complicated interrelationships, especially in the context of observable and latent variables in the subject of complex interdependencies. More recently, the usage of PLS-SEM has increased significantly in management science disciplines (Sosik et al., 2009). When it comes to structural equation modelling, the fundamental advantage of using this method is that it has the tendency to deal with large models, which are comprised of multifocal constructs and structural routes.

RESULTS AND DISCUSSION

In this chapter, the focus is diverted toward testing the hypothesis and checking whether the objectives of the thesis are met. In this regard, first of all, descriptive statistics are provided, subsequent to which correlation is done to test the impact of behavioural factors, market factors, social factors, and financial literacy factors on DM and performance. Further, the mediating role of DM is tested too.

Data Background

The survey was conducted by personally visiting the brokerage houses in Lahore; 343 responses were received out of 400 distributed questionnaires. The response rate for the questionnaire survey is 68.6% which is a good response rate. Finally, a 313 individual investor's sample size was selected for the analysis (after 40 questionnaires were eliminated due to incomplete data). Table 1 represents the sample distribution details. In terms of gender distribution, only 2.88% were women, while 97.12% were males. This posits that most of the investors are male, and very few female investors put their money in the stock market. In terms of marital status, 3.195% of investors were divorced, 19.16% of investors were single, and 77.63% of the investors were married. This posits that most of the investors are married. Individual investors are predominantly over the age of 35, accounting for 48.59% of the total sample. The majority of the investors, i.e., 60.7%, hold master's degrees, while around 21.41% are Mphil qualified, while 8.63% are Ph.D. with professional qualifications owned by only 3.83% individuals. This posits that most of the investors are educated. The majority of the investors, i.e., 55.92% income, lie in 300,001 and above. The majority of the investors, i.e., 50.15%, had an experience of 3-5 years, whilst the lower percentage of experience was more than ten years.

Table 1. Sample distribution.

Gender				Male	Female
				97.12%	2.88%
Marital Status			Divorced	Single	Married
			3.195%	19.16%	77.63%
Income Level		<50,000	50,000-100,000	100,001-300,000	300,001 and above
		6.07%	12.14%	25.87%	55.92%
Experience	Less than 1 year	1 and under 3 years	3 and under 5 years	5 and under 10 years	More than 10 years
	6.07%	30.03%	50.15%	8.63%	5.12%
Age	18-20	21-25	26-30	31-35	>35
	7.98%	13.09%	19.16%	11.18%	48.59%
Education	Professional	Bachelor	Master	M.Phil	PhD
	3.83%	5.43%	60.7%	21.41%	8.63%

Estimation of Model: PLS-SEM

Hair et al. (2011) posit that the evaluation criteria of PLS-SEM are comprised of two stages. The first stage involves evaluating the measurement model, which is done by testing reliability, convergent validity, and discriminant validity. In contrast, the second stage includes testing collinearity diagnostics (VIF), size effect (f-square), Q-square, R-square, and path coefficient.

Evaluation of measurement model

The study follows a reflective-reflective model with six variables, i.e., psychological factors (overconfidence, loss aversion, mental accounting); market factors (Herding, past trends, fundamentals of underlying stocks); social influence (broker's recommendation, friends & family); financial literacy (financial education, financial knowledge); DM and performance.

Reliability measurement

The study's variables are assessed for reliability using Cronbach's Alpha. The criteria used to assess the validity of the constructs ensure their reliability. On the basis of inter-item correlation, Cronbach's Alpha may range from zero to one. The construct's reliability is judged to be appropriate when the value is greater than 0.60 (Hair et al., 2011). Table 2 posits that all the values are greater than the benchmark. Thus, the indicator reliability of the measurement model is assured.

Internal consistency reliability

Composite reliability and Cronbach's Alpha may be used to quantify internal consistency, according to Hair et al. (2011). As a rule of thumb, the value b/t 0.60 and 0.70 are considered acceptable, while a composite reliability value b/t 0.70 and 0.95 is considered adequate to good, as reported by Sarstedt et al. (2017). Measurements with extreme values (e.g., more than 0.95) are considered worrisome. The breakdown of the reliability of measuring scales as a whole is presented in the below table. Table 2 posits that all the values are greater than the benchmark. Thus, the indicator reliability of the measurement model is assured.

Table 2. Cronbach's Alpha.

Variables	Cronbach's Alpha	Composite Reliability
Social Factor	0.820	0.875
Brokers Recommendation	0.730	0.848
Family & Friends	0.678	0.859
Market Factors	0.733	0.847
Herding	0.643	0.807
Past Trends	0.687	0.828
Financial Literacy	0.768	0.843
Financial Education	0.730	0.847
Financial Experience	0.675	0.859
Psychological Factors	0.884	0.907
Overconfidence	0.797	0.881
Mental Accounting	0.818	0.892
Loss Aversion	0.600	0.788
Decision Making	0.731	0.848
Investment Performance	0.743	0.854

Convergent validity

The next step in evaluating the model is assessing its convergent validity. According to Sarstedt et al. (2017), this measure is used to identify the extent to which a particular construct converges and explains the variance of items. To test this, average variance extracted (AVE) is used, which is calculated by taking the mean of the squared loadings of reflective indicators. As a rule of thumb, if the value of AVE>0.50, the convergent validity is assured. Table 3 demonstrates the AVE value of all variables of the study, including psychological factors, which include overconfidence (OC), loss aversion (LA), and mental accounting (MA);

market factors (MF), including Herding (HRD), and past trends(PT); social factors includes; broker's recommendation (BR), friends & family (FF); and financial literacy includes; financial education (FE), financial experience (FEX); mediating variable decision making (DM) and dependent variable Investment performance (IP) have AVE value >0.50. Thus convergent validity is ensured.

Table 3. Average variance extracted.

Variables	Average Variance Extracted
Social Factor	0.584
Brokers Recommendation	0.650
Family & Friends	0.754
Market Factors	0.526
Herding	0.582
Past Trends	0.616
Financial Literacy	0.521
Financial Education	0.650
Financial Experience	0.753
Psychological Factors	0.525
Overconfidence	0.711
Mental Accounting	0.733
Loss Aversion	0.588
Decision Making	0.650
Investment Performance	0.633

Evaluation of Structural Model

To evaluate the structural model, the next step is assessing the Multicollinearity, ten testing the explanatory power of endogenous latent variables and then testing the predictive relevance, and lastly, testing the path coefficients (Sarstedt et al. 2017).

Multicollinearity diagnostics

The first step of evaluating the structural model is testing Multicollinearity among independent variables. Multicollinearity is tested through the variance inflation factor (VIF). As a rule of thumb, if the value of VIF>5.00, it is believed that there exists an extreme correlation between the two independent variables (Alin, 2010). Looking at the table, it is evident that none of the variable's VIF values is greater than 5.00. It postulates that there is no Multicollinearity in data as per Table 4.

Table 4. Variance Inflation Factor.

Variables	VIF
BR1	1.432
BR2	1.367
BR3	1.623
FF1	1.365
FF2	1.365
HRD1	1.265
HRD2	1.214
HRD3	1.322
PT1	1.271
PT2	1.506
PT3	1.352
FEX1	1.350
FEX2	1.350
FE1	1.340
FE2	1.482
FE3	1.642

OC1	1.539
OC2	1.851
OC3	1.813
MA1	1.649
MA2	2.048
MA3	1.897
LA1	1.322
LA2	1.115
LA3	1.289
DM1	1.420
DM2	1.405
DM3	1.524
IP1	1.782
IP2	1.728
IP3	1.276

Analysis of Path Co-efficient

Following the validation of the structural model using collinearity diagnostics, the next step is testing and evaluating relationships between constructs and validating the hypotheses of the study through path analysis. In order to determine the relevance of a path, PLS-SEM calculates t-values using the bootstrapping method (Sarstedt et al., 2017). It is customary to normalize the values of path coefficients between +1 and -1, with values close to +1 being suggestive of a direct and strong association and values close to -1 being indicative of a negative and strong relationship (Hair et al., 2011). The method of hypothesis validation using path analysis is shown in Table 5. Path coefficients, as well as t-statistics and p-values, are provided in this table. Three levels of significance were observed in the research, namely, $p < 0.10$, $p < 0.05$, and $p < 0.01$.

Reflective-reflective model with six variables, i.e., psychological factors (overconfidence, loss aversion, mental accounting); market factors (Herding, past trends, fundamentals of underlying stocks); social influence (broker's recommendation, friends & family); financial literacy (financial education, financial knowledge); decision making and investment performance are used in this research study. Figure 2 represents the graphical presentation of the study model. The first hypothesis, which states that there is a significant relationship between psychological factors and DM, is accepted (path coefficient = $p < 0.01$). This postulates that in the stock market of Pakistan, the psychological factors include overconfidence, loss aversion, and mental accounting. The results of this current research study are similar to the results of Bakar and Yi (2016), who documented that psychological factors affect individual investors' DM in stock markets. "Cognitive errors," "psychological biases," and "fundamental heuristics" affect the investment DM process. Similarly, Gill et al. (2018) found that overconfidence impacts the investment decision, which is in line with our study findings too. Adielyani and Mawardi (2020) also found psychological factors in investment decisions. Santi et al. (2019) explored the existence of mental accounting (MA) and its impacts on investment decisions and found the same results. Whilst Ainia and Lufti (2019) used loss aversion along with other factors and posited that these factors impact DM.

Similarly, hypothesis H_2, which states that there is a significant relationship between market factors and DM, is rejected at a 1% level of significance (path coefficient = $p < 0.01$), which postulates that individual investors do not consider herding, past trends, fundamental of underlying stocks for making investment decisions. These findings are against the finding of Balkhi et al. (2020), who carried out a study to find out the factors which influenced the stock market investors' behaviour during the Covid-19 pandemic in Pakistan. He posits that market factors are the most important determinant of investment decisions. The same was the findings of Pokharel (2020), who investigated the impact of stock market factors, heuristics, herding, and prospect factors on investment performance and found that stock market factors significantly impact investor decisions.

The alternate hypothesis H3, which posits the significance of social factors and DM, and H4, which postulates that financial literacy is significantly related to DM, is also accepted (path coefficient = p<0.01). The same was the findings of Agrawal et al. (2016), who examined the association between investors' DM and herding behaviour and found a significant association. This posits that financial education and financial knowledge are not significantly associated directly with investment performance; in fact, it impacts the DM, which ultimately impacts the investment performance, as evident that DM is significantly associated with investment performance (path coefficient = p<0.01). Baihaqqy (2020) described that the increase in the economic marketplace and the ageing population in Indonesia have resulted in a new understanding of investment. Basically, someone's financial literacy is in line with investment decisions because someone already understands the level of risk and the level of return obtained in the future.
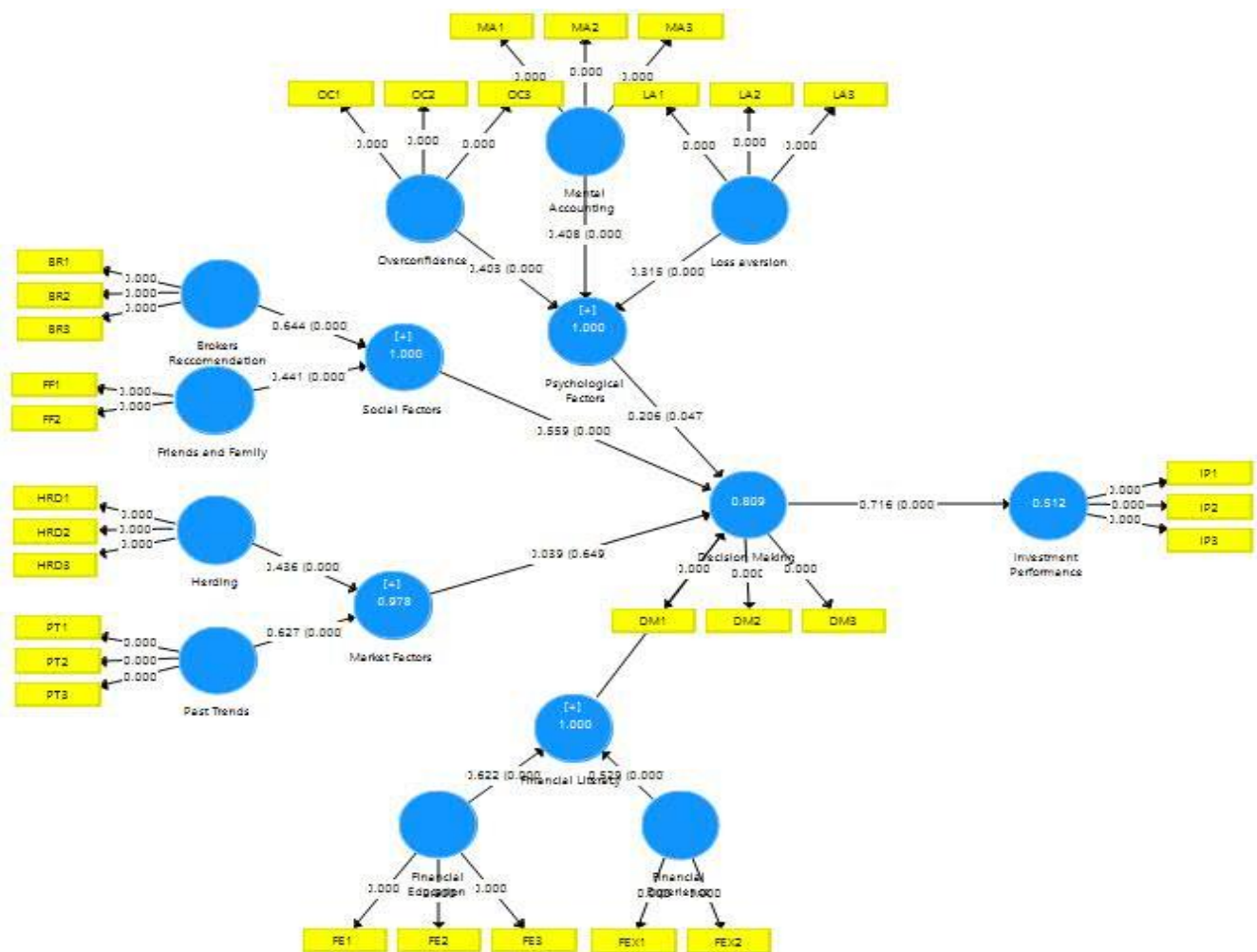

Figure 2. Conceptual model.

Table 5. Path analysis.

Hypothesis		T Statistics (|O/STDEV|)	P Values	Decision
H1	PF -> DM	1.993	0.047	Accepted
H2	MF -> DM	0.455	0.649	Rejected
H3	SOC -> DM	7.371	0.000	Accepted
H4	FL -> DM	2.272	0.024	Accepted
H5	DM -> IP	13.23	0.000	Accepted

Mediation analysis

The basic model of the study is that psychological factors, market factors, social factors, and financial literacy are the independent variables that impact the DM of investors, which acts as a mediator, and ultimately DM impacts investment performance. Thus mediation effect of DM is required to be tested. Traditionally, the mediation method developed by Baron and Kenny (1986) has dominated the literature. However, this technique has been criticized for its limited explanatory power and stepwise approach (Hayes, 2009), among other reasons. The use of PLS for mediation analysis, on the other hand, was favoured by Nitzl et al. (2016) since it allowed for the testing of mediation in a single model as well as the calculation of both direct and indirect effects at once. With several mediators in the model, the PLS method of mediation might also be used. As a result, in this study, the PLS technique was employed for mediation. The indirect path coefficients of the model are shown in Table 6.

The first path of the model depicts the mediating role of DM on the impact of psychological behaviour and investment performance. The direct path coefficient was found significant; similarly, the direct relationship between DM and investment performance was also found to be significant. Similarly, the mediation analysis also showed a significant relationship. This ensures that there is partial mediation. The second path of the model depicts the mediating role of DM on the impact of market factors and investment performance. The direct path coefficient was found insignificant. Similarly, the mediation analysis also showed no significant relationship, which posits that market factors do not impact decision-making, and there is no mediation. The third path is of social factors being mediated by DM with that of investment performance. The direct relationship between social factors and investment performance was significant; similarly, mediation analysis showed a significant relationship. This posits that DM significantly mediates the relationship between social factors and investment performance. Lastly, the mediating role of DM is tested to study its influence on financial literacy and investment performance. The p-value is positive and significant, which shows evidence of mediation in the relationship.

Table 6. Mediation analysis.

Hypothesis		T Statistics (|O/STDEV|)	P Values	Decision
H6	PF -> DM -> PER	1.862	0.063	Accepted
H7	MF -> DM -> PER	0.453	0.650	Rejected
H8	SOC -> DM -> PER	6.926	0.000	Accepted
H9	FL -> DM -> PER	2.257	0.024	Accepted

Discussion

The results of this current research study are similar to the results of Bakar and Yi (2016), who documented that psychological factors affect individual investors' DM in stock markets. "Cognitive errors," "psychological biases," and "fundamental heuristics" affect the investment DM process. Similarly, Gill et al. (2018) found that overconfidence impacts the investment decision, which is in line with our study findings too. Mawardi (2020) also found that psychological factors are associated with investment decisions. Santi et al. (2019) found that mental accounting is related to investment performance. Whilst Ainia and Lufti (2019) posit that loss aversion, along with other factors, is related to DM. So, the results of the current study are in line with the existing literature.

Similarly, the findings of the study posit that social factors are associated with DM and IP, which is in line with the findings of Agrawal et al. (2016), who examined the association between investors' DM and herding behaviour and found a significant association. Whilst financial literacy is also found to have a significant association with DM and investment performance, which is in line with the findings of Baihaqqy (2020), who described the increase in the economic marketplace and the ageing population in Indonesia as having resulted in a new understanding of investment. Basically, someone's financial literacy is in line

with investment decisions because someone already understands the level of risk and the level of return obtained in the future.

In contrast, the current study postulates that there is no significant relationship between market factors and DM. Thus arguing that individual investors do not consider herding, past trends, and fundamentals of underlying stocks for making investment decisions. These findings are against the finding of Balkhi et al. (2020), who carried out a study to find out the factors which influenced the stock market investor's behaviour during the Covid-19 pandemic in Pakistan. He posits that market factors are the most important determinant of investment decisions. The same was the findings of Pokharel (2020), who investigated the impact of stock market factors, heuristics, herding, and prospect factors on investment performance and found that stock market factors significantly impact investor decisions.

CONCLUSIONS AND RECOMMENDATIONS

In summary, in this research study, Cronbach-alpha and composite reliability tests are used to check the reliability of the questionnaire. The result confirms the internal consistency of the data. Whilst to test the validity of the questionnaire, a convergent validity measure is used by AVE. The findings of AVE confirm the convergent validity of the tool used for the study, i.e., questionnaire. Further, for model assessment, the variance inflation factor (VIF) is checked, which confirms the absence of Multicollinearity in the data. Further, 13 hypotheses were tested. Nine hypotheses were related to direct path analysis with independent and dependent variables only. Out of these 13 hypotheses, only two hypotheses were rejected, which include the influence of social factors and financial literacy on investment performance. Whilst all other hypotheses were accepted. Further, the key goals of the study were to test the mediating role of DM with that of psychological factors, market factors, social factors & financial literacy (independent variables), and investment performance (dependent variable). The findings of mediation analysis using PLS-SEM posit that there exists a mediation effect in all factors considered in the study. These findings are in line with the prospect theory, which posits that investors are not always rational when investing.

A proper understanding of these behavioural biases will assist retail investors in improving their investment decisions and performance in the form of high returns, which in turn will assist the developing secondary market in Pakistan in flourishing and creating more opportunities not only for current investors but also for attracting foreign investors to the country in the long term. In order to reach this goal, the government and other relevant authorities should take the initiative to undertake training programmes to educate investors about their behavioural features, allowing them to perform better in the market as a result of their knowledge. Overall, this programme will help to boost the country's economic position while also increasing the market's overall efficiency and effectiveness. Beyond ordinary investors, the results will be of interest to stock mutual fund managers and corporate and investment bank executives who are responsible for forecasting and analyzing the mood of the PSX stock market, among other parties.

Future Implications

This subject seems to be promising and exciting since it offers a simple and interesting method of reaping the advantages of the studied topic. Although there is a plethora of research conducted on this topic, however, there is still room for more research. Thus future researchers can look to explore the following research areas. First and foremost, the study should focus on all the participants in the market, including those who invest directly and those who do so via financial intermediaries such as mutual funds. Second, there is a great deal of room for research on the variances in the investment behaviour of investors based on characteristics such as demographics and seasonality. The meteorological and seasonal circumstances that vary from area to region and have an impact on the DM capability of investors are essential variables to investigate. Since this study only considered investors of Lahore due to time shortage. Third, the target demographic may be segmented into a variety of categories based on the investor's previous experience, employment, financial requirements, and other variables. Fourth, there is a paucity of research on

behavioural finance in developing countries, while established economies such as the United States, the United Kingdom, and Europe have conducted extensive research and trials to get a thorough knowledge of investors' behaviour. Because the economies of developing nations such as Pakistan are still emerging, there is a great deal of scope for the investigation of a broad range of investment patterns, investor behaviours, and the ways in which these variables influence asset pricing. These prospects present a variety of advanced topics that may be investigated in the near future as a result of the options provided. Finally, there are just a few pieces of literature on certain biases, such as conservatism, recency, self-attribution bias, the home money effect, and the endowment effect, among others. In these areas, there is a need for further in-depth investigation.

Limitations of the Research Study

The study sample size is restricted to 313 participants who are situated only in the city of Lahore. Despite the fact that this sample size is sufficient and meets the requirements of the statistical techniques, a greater sample size in the future study may result in more accurate findings at PSX. Secondly, since the research study is carried out over a period of time during which the secondary market may see certain volatility, the purchasing habits and preferences of investors may shift. The influence of such oscillations cannot be captured by this study. Third, only the behavioural patterns of retail investors in making investment choices in stock market shares are taken into consideration in the research. In this case, institutional investors are not considered. Fourth, the research study reveals that certain behavioural aspects and preferences of retail investors might influence their choice to invest in a certain stock of a publicly-traded company on the Pakistan Stock Exchange (PSX) and, as a result, can influence their investment performance.

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