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Heuristic-Driven Biases as Mental Shortcuts in Investment Management Activities: A Qualitative Study

Abstract

Purpose **–** This study uses a qualitative approach to explore and clarify the mechanism by which heuristic-driven biases influence the decisions and performance of individual investors actively trading on the Pakistan Stock Exchange (PSX). It also aims to identify how to overcome the negative effect of heuristic-driven biases, so that finance practitioners can avoid the expensive errors which they cause.

Design/methodology/approach **–** This study adopts an interpretative approach. Qualitative data was collected in semi-structured interviews, in which the target population was asked open-ended questions. The sample consists of five brokers and/or investment strategists/advisors who maintain investors' accounts or provide investment advice to investors on the PSX, who were selected on a convenient basis. The researchers analyzed the interview data thematically.

Findings **–** The results confirm that investors often utilize heuristics, causing several heuristic-driven biases when trading on the stock market, specifically, reliance on recognition-based heuristics, namely alphabetical ordering of firm names, name memorability and name fluency, as well as cognitive heuristics, such as herding behavior, disposition effect, anchoring and adjustment, repetitiveness, overconfidence and availability biases. These lead investors to make sub-optimal decisions relating to their investment management activities. Due to these heuristic-driven biases, investors trade excessively in the stock market, and their investment performance is adversely affected.

Originality/value **–** This study provides a practical framework to explore and clarify the mechanism by which heuristic-driven biases influence investment management activities. The current study is the first to focus on links between heuristic-driven biases, investment decisions, and performance using a qualitative approach. Furthermore, with the help of a qualitative approach, the investigators also highlight some factors causing an increased use of heuristic variables by investors and discuss practical approaches to overcoming the negative effects of heuristics factors, so that finance practitioners can avoid repeating the expensive errors which they cause, which also differentiates this study from others.

Keywords – Cognitive heuristic-driven biases, Recognition-based heuristic biases, investment decisions and performance.

1. Introduction

Traditional economics and finance theories assume that individual investors are rational decision-makers who take all available information into account when making investment decisions (Ahmad & Wu, 2022). According to Fama (1970) and other believers in the fundamental theories of standard finance, markets are almost always efficient (Beaver, 1981; Gilson & Kraakman, 1984). In efficient markets, investors are considered rational, unbiased, and consistent actors who make optimal investment decisions without being influenced by their psyches or emotions (Shah et al., 2018). The implication of the efficient market hypothesis (EMH) is that no investor can beat the stock market because share prices reflect all the available information (Khan et al., 2021). According to EMH, stock market shares trade at a fair price, and it is impossible for investors to purchase undervalued stock or sell stock at a higher value due to market efficiency. The only way to outperform is to engage in risky investments (Fama, 1970).

It is a widely held belief that those who are engaged in the financial sector are very sensible people who deliberate over their decisions in a very careful and analytical manner. If this assumption were valid, all investors on any given financial market (for example, the stock exchange) would behave almost indistinguishably; the market would almost always be perfect; and share price fluctuations would be minimal, infrequent, and occur only in exceptional circumstances (Ahmad, Wu, & Abbass, 2022). But history has shown that investors do behave irrationally, almost no financial market is ever perfect, and fluctuations in share prices are hugely disproportionate to any new information (Ahmad, 2022). This phenomenon can only be explained by acknowledging the fact that individual investors do not always make rational decisions and, as a result, financial markets (a euphemism for all the investors collectively) are rarely close to perfect. The study of behavioral economics and finance can help us comprehend why different individuals (or groups of individuals) react differently to a given situation and how investors' widely different decision-making styles influence financial markets. According to behavioral economics and finance experts, all individuals are susceptible to certain behavioral biases that prevent them from making rational decisions and negatively affect investment decision-making, investment performance (Ahmad & Shah, 2022), and market efficiency (Shah et al., 2018).

Much of this research is based upon the idea that humans are "boundedly rational" (Simon, 1956). Simply put, a person's ability to process information is limited, making it hard for them to behave rationally (Itzkowitz & Itzkowitz, 2017). According to Tversky and Kahneman (1973), one way we deal with our limited information processing capability is through the use of heuristics that make decisions easier but limit the use of information. This might cause systematic errors in assessment and lead to satisfactory investment choices, but it does not maximize utility. Investors frequently use heuristics or shortcuts, causing several behavioral biases, when trading in the stock market, specifically suffering from recognition and cognitive heuristic biases that lead investors to make less-than-optimal choices. The leading cause of irrational decision-making is behavioral biases (Shefrin, 2007).

The investment decision-making process is still unclear; all the debate about its various aspects has not yet produced objective rules or theories. There is a positive relationship between the stock market and the economy; a decline in the stock market will have a negative impact on economic growth, and vice versa. Thus, individual investors' decisions on the stock market have a

significant effect on market trends, which in turn affect the economy. According to classical theories of traditional finance and economics, investors behave rationally but, in reality, investors exhibit irrational behavior. To understand and explain how investors behave in the market, it is essential to examine those behavioral determinants that affect their decision-making process and how these factors affect their investment performance. The basic motivation behind this current study is to discuss new perspectives on financial markets and provide an extensive outlook on the psychological fundamentals and their application to investment management activities.

This study integrates the academic disciplines of cognitive psychology and research into heuristic-driven biases with investment management practices. Thus, the article makes several contributions to the behavioral economics and finance paradigm. Firstly, this article contributes to the extant literature demonstrating the effect of heuristic-driven biases, such as cognitive and recognition heuristic biases, on individual investors' investment management activities (investment decision-making and investment performance) by using a qualitative approach. The current research explains how and why investors' behavior deviates from rationality and why they make irrational decisions about investment management. To the best of the authors' knowledge, the current study is the first of its kind, exploring and clarifying the mechanism by which heuristic-driven biases influence individual investors' investment management activities using a qualitative approach. Second, with the help of a qualitative approach, the investigators also highlight some factors causing an increased use of heuristic variables by investors and articulate practical strategies to deal with the adverse effects of heuristic variables, so that finance professionals do not make the expensive mistakes that happen because of heuristic biases, which also differentiates this study from others. Third, "most studies focus on well-developed financial markets and very little is known about investors' behavior in emerging markets like Pakistan" (Ahmad & Shah, 2022). The present study also contributes to filling this gap in the literature.

Three theories support the research phenomenon, namely (a) bounded rationality theory, (b) prospect theory, and (c) heuristics theory. The theory of bounded rationality, as described by Simon in 1955, asserts that decision-makers are incapable of making rational decisions due to the limited information they possess, the cognitive limitations of their minds, and the limited time they have to make a decision. Thus, even decision-makers who want to make optimal decisions are compelled to make decisions that are satisfying, rather than maximizing or optimizing decisions in complex situations, considering their data processing and cognitive limitations. One way we deal with our limited information processing capability is through the use of heuristics, which might cause systematic errors in judgment and lead to satisfactory investment choices, but do not maximize utility. Prospect theory, explained by Kahneman and Tversky (1979), contends that individuals make decisions based on gains and losses rather than final outcomes, set reference points, and make decisions accordingly. Different individuals place different values on gains and losses. This value is derived from a reference point. According to heuristics theory, decision-makers use heuristics to avoid the risk of losses in uncertain situations. Heuristics are rules of thumb that help people make quick decisions in complex and uncertain situations (Ritter, 2003) by reducing the complexity of estimating probabilities and forecasting values to more superficial judgments (Kahneman & Tversky, 1974). Heuristics enable humans to make decisions more quickly than processing information rationally. In general, these heuristics are convenient and

useful when time is limited (Waweru et al., 2008), but sometimes they lead to behavioral biases (Kahneman & Tversky, 1974; Ritter, 2003).

Due to bounded rationality, investors frequently use heuristics to reduce the risk of loss in uncertain situations, causing several behavioral biases when trading in the stock market; specifically they suffer from cognitive heuristic biases, such as the disposition effect, herding, availability, representativeness, overconfidence, and anchoring, as well as recognition heuristic biases, namely alphabetical ordering, name memorability, and name fluency; these biases lead investors to deviate from rational assessments of investment opportunities and optimal preparedness strategies for their investment management activities. When investors use heuristics, they reduce the mental effort in the decision-making process; however, this leads to judgmental errors (Ahmad & Shah, 2022) and, as a result, anomalies persist in the market. Due to these anomalies, investors make irrational investment decisions, and their investment performance decreases (Ahmad, Wu, & Abbass, 2022). Many investigators in behavioral economics assert that these heuristics can influence financial decision-making and the forecasting of financial variables, such as earnings or material profit (Abarbanell & Bernard, 1992), as well as the behavior of financial markets (Debondt & Thaler, 1985). These behavioral patterns are typically detrimental to an investor's portfolio performance and are inadequately explained by conventional finance. But behavioral economics and finance provide a better explanation and understanding of why investors trade, how they choose portfolios, how they perform (Subrahmanyam, 2008), and why markets become inefficient.

The remaining paper proceeds as follows: In the next section, the authors discuss prior studies concerning the relationship between heuristic-driven biases and investment management activities (i.e., investment decision-making and performance). In the third section, the authors describe the data collection and analysis method. The results of the paper and discussion are presented in Section 4. The contribution of this research to the field of behavioral economics and finance is highlighted in Section 5. Section 6 demonstrates the conclusions and implications of the results of this paper. In Section 7, the authors suggest avenues for future research.

2. Literature review

2.1 Heuristic-driven biases in investment decision-making and performance

An individual investor is a person who manages their own money in order to achieve personal financial goals. They trade only for their own account rather than for a financial institution. Several studies have been conducted to study the relationship between heuristic-driven biases and the decisions and performance of individual investors; some of them found that heuristic-driven biases have a significant positive effect on the decision-making and performance of individual investors. For example, Toma (2015) investigated the impact of behavioral bias on individual investors' decisions at the Romanian Stock Exchange and found that heuristic-driven biases, such as representativeness bias, disposition effect, and overconfidence bias, positively affect investment decisions. He suggested that behavioral heuristics such as representativeness, can help individual investors get higher returns. Ikram (2016) examined the influence of behavioral determinants on the decisions of individual investors trading on the Islamabad Stock Exchange. He discovered that heuristic-driven biases, such as availability and representativeness, positively influenced their investment decisions, indicating that individual investors tend to invest in the stock market using behavioral heuristics. Jain, Walia, and Gupta (2020) investigated the influence of behavioral biases

on the decisions of individual equity investors, using the fuzzy analytic hierarchy process. Their results show that individual equity investors trading in the stock market suffer from behavioral tendencies, such as herding, regret aversion, mental accounting, overconfidence, loss aversion, representative, availability, and anchoring biases. Also, they demonstrated that overconfidence, loss aversion, and herding seem to be important psychological biases that affect how investors make decisions when trading on the stock market. Metawa, Hassan, Metawa, and Safa (2019) studied individual and institutional investors actively trading on the Egyptian Stock Market; their findings also show that investors exhibit herd behavior and overconfidence bias. Similarly, Madaan and Singh (2019) assert that investors on the National Stock Exchange of India trade excessively because of herding and overconfidence bias.

Rehan and Umer (2017) explored the possible effects of emotional and cognitive biases on the decision-making of individual investors trading on the PSX. Their results show that psychological biases, like regret aversion, risk aversion, representativeness, overconfidence, and anchoring, have a significant positive effect on the decisions of individual investors, but that availability and mental accounting are not significant predictors of investment decisions. Moreover, in their study, Chhapra, Kashif, Rehan, and Bai (2018) also describe the investment behavior of individual investors at the PSX. Their results show that overconfidence bias and herding have a positive effect on investment decisions made by individual investors in Pakistan. Similarly, Qasim, Hussain, Mehboob, and Arshad (2019) contend that overconfidence bias and herding behavior significantly influence the investment decision-making processes of individual investors in the PSX. Nalurita, Leon, and Hady (2020) found that investment decisions are significantly influenced by loss aversion, regret aversion, and market factors and that the locus of control appears to be a moderating factor in these relationships.

Work by Parveen, Satti, Subhan, and Jamil (2020) suggests that representativeness significantly affects investment decisions, and overconfidence appears to mediate this relationship. A study by Pandey and Jessica (2019) demonstrates that behavioral biases significantly influence reinvestment intention, and that investment satisfaction appears to positively mediate this relationship. Metawa et al. (2019) explored the role that certain behavioral factors play in the process of making financial decisions. Their results show that investor sentiment, herd behavior, overreaction, underreaction, overconfidence, and overconfidence all have a significant positive effect on financial decision-making. Pea and Gómez-Meja (2019) studied the association between optimism, anchoring, and stock market forecasts. Their results suggest that optimism and anchoring significantly influence the forecast of the stock market index. Khan (2020) examined the impact of cognitive heuristic-driven biases, namely mental accounting, disposition effect, and herding bias, in investment decisions, taking financial literacy as a moderator. The study's findings show that cognitive heuristic-driven biases significantly influence investment decision-making positively. Madaan and Singh (2019) elaborate on the mechanism by which behavioral biases, such as overconfidence, anchoring, herding, and disposition, influence the investment decisions of individual investors. The findings indicate that behavioral biases, specifically overconfidence and herding, have a significant positive impact on investment decisions.

The study by Rauf, Khurshid, and Afzal (2018) indicates that overconfidence and loss aversion are significant predictors of equity investors' investment decisions and performance. Parveen and Siddiqui (2018) show that anchoring and the disposition effect positively affect investment returns, while overconfidence has a negative influence. Another study by Parveen and Siddiqui (2017) investigated the influence of heuristic biases on stock market returns. They used annual data for the period from 2005 to 2014, collected from the financial reports of 184 non-

finance companies listed at the PSX. Hypotheses were tested using logit regression. The study's findings indicate that heuristic-driven biases have a significant positive impact on stock market returns. Katper Azam, Karim, and Zia (2019) investigated the impact of behavioral biases on investment decisions, using sociodemographic variables as moderators. Their results indicate that behavioral biases are significantly associated with investment decisions and sociodemographic factors appear to moderate these relationships. Tin and Hii (2020) studied how heuristic-driven biases affect the investment performance of debt securities; they found that availability and representativeness are significant predictors of investment performance, but anchoring and overconfidence are not. Khan et al. (2021) have also examined the impact of certain heuristic factors, such as representativeness bias and availability bias, on the decision-making of individual investors trading at the PSX. They found that heuristics have a significant positive impact on investment decision-making.

Adielyani and Mawardi (2020) discovered that herding behavior, risk tolerance, and overconfidence all have a significant positive affect on stock investment decisions. The paper by Ahmad, Wu, and Abbass (2022) indicates that recognition-based heuristic biases, like name memorability, alphabetical order, and name fluency, have a significant positive impact on individual investors' decision-making and a negative effect on their investments' performance. From an economic point of view, these results suggest that individual investors with recognition heuristic-driven biases generate high trading volumes on the stock market, which negatively impact their investment performance. Ahmad (2022) concludes that individual investors consistently make irrational decisions when trading stocks because they rely on cognitive heuristic-driven biases, like anchoring, availability, representativeness, mental accounting, overconfidence, disposition effect, underconfidence, gambler's fallacy, and herding. Due to these behavioral heuristics, investors tend to underestimate downside risk and trade excessively, which can have a negative impact on their returns and market efficiency. He also discovered that cognitive heuristics can lead to underinvestment behaviors, due to the fact that investors who are susceptible to cognitive heuristic-driven biases sometimes overestimate the downside risk. As a result, these investors generate low trading volumes, which is also detrimental to investment management activities and market efficiency. Ahmad and Wu (2022) investigated the presence of herding behavior on the PSX and its impact on investment management and market efficiency. Their study shows that individual investors exhibit herding behavior on the PSX and trade excessively due to herding, negatively impacting their investment performance and market efficiency.

Adielyani and Mawardi (2020) conclude that overconfidence, risk tolerance, and herding behavior have a positive and significant effect on stock investment decisions. Similarly, Afriani and Halmawati (2019) show that cognitive dissonance, overconfidence, and herding are strong predictors of stock investment decisions. Furthermore, Karimi (2020) demonstrated that psychosocial factors have a significant impact on investor financial decisions. Sattar, Toseef, and Sattar (2020) found that behavioral biases are the most important predictors of investment decisions. Alrabadi et al. (2018) explored the link between psychological biases and investment performance of investors trading at the Amman Stock Exchange. The outcomes suggest that behavioral biases, such as herding, representativeness, availability, overconfidence, and familiarity, significantly influence investment performance. Psychological biases, i.e., disposition effect, loss aversion, and confirmation, also positively affect investment performance, but the p-value did not reach a high significance value. Siraji (2019) examined the role of heuristic-driven biases in the investment performance of investors trading at the Colombo Stock Exchange and

demonstrated that representativeness, availability, overconfidence, and anchoring have a significant relationship with investment performance, whereas the gambler's fallacy has a negligible association with investment performance.

Raheja and Dhiman (2019) investigated the impact of behavioral biases on investment decisions through the lens of risk tolerance. Their findings indicate that behavioral biases are significantly linked to investment decisions. Similarly, Malik, Hanif, and Azhar (2019) investigated the impact of overconfidence on investment decisions using risk tolerance as a mediator. The study's findings show that overconfidence has a significant positive effect on investment decisions and that risk tolerance mediates the relationship between overconfidence and investment decisions. Ramalakshmi, Pathak, Jos, and Baiju (2019) explored the mechanism by which cognitive heuristic biases affect investment decisions. Their findings indicate that representativeness, herding, overconfidence, and regret aversion significantly impact investment decisions. Candraningrat and Sakir (2019) found that the disposition effect and overconfidence are significantly related to investment decisions. Irshad et al. (2016) revealed a significant positive association between representativeness bias and investment decisions. Khan (2015) found that availability bias has a significant positive effect on the investment decisions of individual investors.

Some investigators disagree with the assertion that heuristic-driven biases positively influence the decisions and performance of individual investors. This school of thought is the motivating idea for this research. Individual investors with heuristic-driven biases do not evaluate risks in a rational way, so they make trading mistakes or the wrong trading decisions. Several studies indicate that heuristic-driven biases negatively affect individual investors' investment decision-making and performance. The research by Shah, Ahmad, and Mahmood (2018) suggests that cognitive heuristics, like overconfidence, representativeness, availability, and anchoring, lead individual investors to make irrational decisions when trading on the stock market. According to Ahmad and Shah (2022), when individual investors use heuristics, their technical knowledge and reasoning abilities are damaged, leading to errors in judgment. Consequently, they make irrational decisions, which have a negative impact on their investment performance. Dangol and Manandhar (2020) also assert that anchoring, availability, overconfidence, and representativeness are heuristic-driven biases that lead to irrational decisions.

Ahmad (2021b) used a systematic literature review to explore recognition-based heuristic-driven biases and their influence on investment management activities. The investigation shows that using recognition-based heuristics to build an investment strategy does not always lead to higher returns for investors. The majority of stock traders make irrational decisions due to recognition-based heuristic biases, such as name fluency, name memorability, and alphabetical ordering. Due to these biases, investors choose risky investments and trade excessively, which negatively impacts their returns. Furthermore, ul Abdin, Farooq, Sultana, and Farooq (2017) seek to highlight the effects of heuristic-driven biases, such as representativeness, availability, overconfidence, and anchoring, on individual investors' investment decisions and performance. The overall results of their study indicate heuristics are the cause of stock market anomalies, resulting in irrational decision-making that negatively affects the investment performance of investors. Rasheed, Rafique, Zahid, and Akhtar (2018) have also studied heuristic-driven biases and their consequences on the decisions of individual investors. Their study shows that heuristic-driven biases significantly cause investors to deviate from rational decision-making. Similarly, Itzkowitz and Itzkowitz (2017) demonstrated that, during stock trading, investors use recognition-based heuristics such as name fluency (Anderson & Larkin, 2012; Green & Jame, 2013), name

memorability (Grullon et al., 2004), and alphabetical ordering (Itzkowitz et al., 2015) and consequently make irrational investment decisions.

The relationship between heuristic-driven biases and entrepreneurial strategic decision-making in the context of an emerging economy has been studied by Ahmad, Shah, and Abbass (2021). Their study found that heuristic-driven biases, such as overconfidence, representativeness, availability, anchoring, and adjustment, have a significant and detrimental impact on the strategic decisions made by entrepreneurs operating in emerging markets. According to Ahmad, Wu, Naveed, and Ali (2022), strategic decision-making is quite complex, necessitating extensive brainstorming. Most strategic decision-makers use cognitive heuristics, such as the disposition effect, self-attribution, and underconfidence, in attempting to avoid risky losses in uncertain situations like COVID-19, resulting in judgmental errors. Consequently, they make irrational choices, which negatively impact their strategic decision-making.

Ahmad (2021a) investigated whether PSX investors are susceptible to underconfidence. The primary objective is to determine whether underconfidence bias influences short- and long-term investment decisions. The findings indicate that investors who suffer from an underconfidence bias are unable to make rational short- and long-term decisions. According to Park et al. (2010), overconfidence can have a detrimental effect on investment decisions and performance. Moreover, Kengatharan and Kengatharan (2014) assert that overconfidence negatively impacts investment-related decisions and performance. Bashir et al. (2013) concluded that investors' overconfidence leads them to make irrational financial decisions. Waseem-Ul-Hameed, Razzaq, and Humanyon (2018) assert that individual investors deviate from rational decision-making and make poor investment decisions due to overconfidence bias. According to Akhtar (2020), overconfidence bias is negatively associated with investment performance in developing markets. Afi (2017) sheds light on the mechanism by which the disposition effect affects trading volume, stock volatility, and stock return and shows that there is a negative association between the disposition effect and trading volume, stock volatility, and stock return.

After reviewing the pertinent literature in a similar area, the authors have concluded that the relationship between heuristic-driven biases and investment management activities of individual investors appears to be quite controversial. Some researchers have concluded that heuristic-driven biases do not have any correlation with investment management activities; on the other hand, some scholars have shown a positive connection between heuristic-driven biases and investment management activities. Some investigators disagree with the view that heuristic-driven biases have no relationship and/or a significant positive relationship with individual investors' investment management activities. This opposing school of thought is the impetus for this study. Several researchers came to the conclusion that heuristic-driven biases have a significant negative relationship with investment management activities.

3. Research methodology

3.1 Sampling and data collection
Semi-structured interviews, in which open-ended questions were asked, were used for collecting qualitative data from the target respondents, who were brokers and/or investment strategists/advisors who maintained investors' accounts on the PSX; they were selected because this type of respondent can provide a deeper understanding about the stock market behavior. Before an interview, the authors contacted the respondent by email or phone to obtain consent. Then, the interview outline was sent. The interview was conducted on the basis of the question outline and was led by the respondent's answers; in-depth discussions were allowed to clarify the

mechanism by which heuristic-driven biases influence investment management activities and to discuss a practical approach to overcoming the adverse effects of heuristic factors, as well as discussing how heuristic factors can be positively utilized in investment management activities. The advantage of this type of interview is increased flexibility. The interviews started following the order of the interview outline but, according to the actual needs of the interview, the questions were adjusted or supplemented.

Five interviews were conducted using the snowball method technique, which allowed the investigators to collect data from brokers and/or investment strategists/advisors who helped identify another broker and/or investment strategist/advisor with similar characteristics and who in turn knew another broker and/or investment strategist/advisor with similar traits, and so on. A review of previous research into similar topics carried out in different contexts confirmed that a sample size of five is large enough to fulfill all the necessary statistical requirements for a qualitative-based study. In these studies, such as those of Le et al. (2011), Jaiyeoba and Haron (2016), and Jaiyeoba et al. (2018), the sample size ranged from two to eight. According to Malterud et al. (2015), just six to ten interviewees can provide sufficient information for an interview-based study if they cover a broad range of experience. Dworkin (2012) identified that the number of participants needed in qualitative research to achieve saturation might range from five to 50. Thus, a sample size of five is large enough to fulfill all the statistical requirements in a qualitative-based study.

3.2 Instrumentation for semi-structured interviews

As stated above, semi-structured interviews were used to collect qualitative data. This type of interview initially utilizes main questions, probing and follow-up questions, which may vary from interviewee to interviewee, depending on the specific responses given and themes introduced during the interview (Rubin & Rubin, 2011). The interview guide was developed based on the existing literature. The interviews were conducted using an outline, but were not limited to the following:

Q_1. Investors often utilize heuristics, causing several heuristic-driven biases when trading in the stock market, specifically, recognition-based heuristics, namely alphabetical ordering of firm names, name memorability, and name fluency, as well as cognitive heuristics, such as herding behavior, disposition effect, anchoring and adjustment, representativeness, overconfidence, and availability biases. These biases lead investors to make sub-optimal decisions when managing their investments. Due to these heuristic-driven biases, investors trade excessively in the stock market, and their investment performance is adversely affected. What is your opinion of this type of behavior? Does the market exhibit this type of behavior?

Q_2. What are the factors causing an increased use of heuristic variables by individual investors?

Q_3. Any suggestions concerning how to overcome the negative effect of heuristic-driven biases so that investors can avoid repeating the expensive errors which occur due to heuristic factors?

3.3 Data analysis method

In addition to writing notes, verbatim transcriptions of the interview audio recordings were also generated. The study utilized a thematic analysis methodology in accordance with the recommendations made by Attride-Stirling (2001) and Kripendorff (2004). The thematic analysis aimed to uncover themes and viewpoints relevant to the study issue (Braun & Clarke, 2006;

Creswell, 2009). The investigators utilized a word processor to transcribe the subject's spoken text (verbal expressions) and non-verbal expressions to achieve the required layout of transcription, while ensuring that the researcher's expertise did not impact the participants' opinions (Daymon & Holloway, 2010; Holliman & Rowley, 2014). The researchers distinguished distinct themes and other essential points by color-coding. Then, concerning the study questions, a new document for analysis was constructed by combining similarly color-coded sections. The 15-point criteria defined by Braun and Clarke (2006) served as a guide for thematic analysis. However, before the primary analysis, the researchers checked the validity and reliability of the data by comparing a participant's tape-recorded utterances with recorded notes to verify that they were consistent with the participant's responses. Typically, a researcher is required to record statements and return them to participants for confirmation but, for this study, the researchers implemented an instant check. Instant checks refer to the confirmation of the participants' assertions on the spot. This check was conducted due to the difficulty in scheduling a second meeting with the investment strategists/advisors and/or brokers who maintained investors' accounts at the stock market. Throughout the procedure, researchers avoided selecting evidence that matched their preconceptions (Kvale & Brinkley, 2009).

4. Empirical findings and discussion

The practical relevance of the role of heuristic-driven biases in investors' management activities is obtained through qualitative opinions furnished by some brokers who maintain the accounts of investors and investment strategists/advisors who have responded to open-ended questions. This qualitative data assists understanding in detail the mechanism by which heuristic-driven biases influence the investment management activities (investment decision-making and investment performance) of individual investors actively trading on the PSX. The opinions of some investment strategists/advisors and brokers who maintain the accounts of investors are discussed below.

Q$_1$. Investors often utilize heuristics causing several heuristic-driven biases when trading in the stock market, specifically reliance on the recognition-based heuristics, namely alphabetical ordering of firm names, name memorability and name fluency, as well as cognitive heuristics, such as herding behavior, disposition effect, anchoring and adjustment, repetitiveness, overconfidence, and availability biases. These lead investors to make sub-optimal decisions when managing their investments. Due to these heuristic-driven biases, investors trade excessively in the stock market, and their investment performance is adversely affected. What is your opinion of this type of behavior? Does the market exhibit this type of behavior? The following responses describe the interviewees' opinions:

80 to 85% of this type of behavior exists in the market; generally, investors purchase stock without looking at its fundamental value, buy stocks which their friends are buying, retain loss-making stocks while selling winning stocks. They start trading in the stock market without proper knowledge and research work and seek advice from their friends and colleagues who are already trading in the stock market and invest in the same stocks; ultimately such behaviors lead to losses. 80% of losers are investors who reinvest in the stock market by relying on fast and frugal reasoning to recover their losses but fail. As a result, they invest more, and their losses become higher and higher (Interviewee no. 1)

Yes, investors show these types of behavior in the stock market. They invest in different stocks following the behavior of the crowd, base their decisions on past performance, hear from a friend about a stock that achieved high returns and then invest in that stock, etc..... Due to this type of behavior, they make trading mistakes which lead to losses (Interviewee no. 2)

90% of people in the stock market buy stocks which their friends are buying and, for the time being, the stocks seem profitable but they end up losing because they would not sell at a due time (when the prices are high). They hold that stock and buy another from a concern with friends and colleagues; as the prices of that stock go up, they sell it. They buy and sell stock without looking at its fundamental value. They don't know why the stock price increases or decreases; they don't study the behavior of the market. they don't try to understand the past performance of the stock in which they are going to invest by reading the fundamental report which is available on the website. That is why investors invest in the stock market by relying on the mental shortcuts which reduce their profit or lead to losses (Interviewee no. 3)

Almost similar behavior exists in the stock market as you asked in the question (Interviewee no. 4)

Yes, when new investors enter the market, they invest by relying on fast and frugal rules (heuristics). They do not observe the behavior of the market before investing. They do not collect data related to the performance (whether it is overvalued or undervalued) of the stock in which they are going to invest, they don't even know about the stock's profit and loss. They don't study the background of the stock and engage in buying and selling the stock by following the actions of others. Only 8% to 10% investors in the market are those who perform proper analysis and do research work before investing and the other people invest in the stock market using heuristic factors namely herding, disposition effect, representativeness, anchoring, and name fluency, etc; as a result, they suffer from huge losses and the market becomes inefficient (Interviewee no. 5).

Q₂. What are the factors causing an increased use of heuristic variables by individual investors?

Individual investors often use heuristic factors when they are trading in the stock market because they lack knowledge of market fundamentals. They also suffer from heuristic-driven biases when they intend to maximize their profit within a short period. Another reason investors rely on heuristics is when they are unable to get all the information needed for decision-making, or they may not be able to do so at the time a decision must be made. Even if all the information is available, they may not be able to complete the optimization calculation on time (Interviewee no. 1)

Individual investors use heuristics because they are not aware of how to evaluate the stock performance and might not have the resources to seek help from others. Some investors suffer from heuristic-driven biases due to the limitations of time (Interviewee no. 2)

Normal investors start trading without any research into the stock performance, which stock is overpriced, and which stock is underpriced; that is why they invest in the stock market using heuristic factors. Another reason investors invest in the stock market relying on heuristics is the instability in the stock market (Interviewee no. 3)

In order to avoid exhaustive research work, investors often use heuristics when trading in the stock market (Interviewee no. 4)

Normally people want to gain maximum returns within a short period, that is why they rely on heuristic factors. (Interviewee no. 5).

Q₃. Any suggestions concerning how to overcome the negative effect of heuristic-driven biases so that finance practitioners can avoid repeating the expensive errors which occur due to heuristic factors?

Experience diminishes the inadvertent consequences played by heuristic-driven biases. With the passage of time and experience, investors can learn how to overcome the negative effect of heuristic biases, but they cannot completely eliminate the negative effect of heuristic factors (Interviewee no. 1)

To specify the algorithm for investing in the stock market before trading and to employ it dispassionately; in this way they can, to some extent, overcome the negative effect of heuristic factors (Interviewee no. 2)

Conduct a proper analysis of investment opportunities, develop quantitative investment criteria, and establish investment objectives and constraints (Interviewee no. 3)

There is a need to create awareness among individual investors regarding market fundamentals and they should evaluate the performance of stock before investing. They can get awareness by reading newspapers, magazines, seeking investment advice from financial strategists/advisors' reports, family members, friends, traders in the stock market, online forums, and online search (Interviewee no. 4)

Before investing, investors should study the market behavior, evaluate the performance of stock sectors vise and do proper research. In this way they can avoid suffering from heuristic-driven biases (Interviewee no. 5).

The overall results obtained from the qualitative data revealed that 85% to 90% of investors enter the stock market without proper knowledge of market fundamentals and without researching whether the stocks in which they are going to invest are underpriced or overpriced. These investors make no attempt to understand the stock's past performance, such as by reading the fundamental report which is available on the website. Thus, they often use heuristics factors when trading in the stock market. Specifically, reliance on recognition-based heuristics, namely alphabetical ordering of firm names, name memorability and name fluency, as well as cognitive heuristics, such as herding behavior, disposition effect, anchoring and adjustment, repetitiveness, overconfidence, and availability biases, lead investors to make less than optimal decisions about their investment management activities. Due to these heuristic-driven biases, investors trade excessively in the stock market, and their investment performance is adversely affected.

By using a qualitative approach, the investigators also highlighted some factors causing an increased use of heuristic variables by investors and discussed practical approaches to overcoming the negative effects of heuristics factors, so that finance practitioners can avoid repeating the expensive errors which they cause, as listed and discussed below.

The results show that individual investors lack knowledge of market fundamentals and start trading without proper research into stocks' performance, which stock is overpriced, and which stock is underpriced. They have no awareness of how to evaluate stocks' performance and might

not have the resources to seek help from others, as they intend to maximize their profit within a short period. Due to all these reasons, they invest in the stock market by using heuristic factors. Many investors rely on heuristics when they are unable to get all the information needed for decision-making, or they may not be capable of doing so at the time a decision must be made. Even if all the information is available, they may not be able to complete the optimization calculation on time. The stock market is highly volatile and investors have limited time to conduct a proper analysis regarding investment opportunities; all these factors lead them to make trading decisions relying on mental shortcuts.

In order to overcome the negative effect of heuristic-driven biases, investors follow guiding principles provided by brokers who maintain investors' accounts and investment strategists/advisors. Individual investors need to gain awareness of market fundamentals before investing in the stock market and they can do this by reading newspapers and magazines, seeking investment advice from financial strategists'/advisors' reports, family members, friends, traders in the stock market, online forums, and online searches. In this way they can, to some extent, overcome the negative effect of heuristic-driven biases. Investors can overcome the negative effect of heuristic-driven biases by maintaining self-discipline, following the guiding principles of investment, seeking information relevant to the company to learn about their business activities before investing or putting resources in a company, getting advice from the investment team and occasionally from other portfolio managers, as well as talking about their investment intentions with friends. Investors should conduct a proper analysis of investment opportunities, develop quantitative investment criteria, establish investment objectives and constraints, and make investment decisions accordingly; in other words they should specify the algorithm for investing in the stock market in advance and employ it dispassionately. Experience also diminishes the inadvertent consequences played by heuristic-driven biases. With the passage of time through experience, investors can learn how to overcome the negative effect of heuristic biases.

5. Contributions to the field of behavioral economics and finance

This study contributes to the existing body of literature on behavioral economics and finance from various perspectives. Firstly, this article contributes to the extant literature demonstrating the effect of heuristic-driven biases, namely cognitive and recognition heuristic biases, on the investment management activities (investment decision-making and investment performance) of individual investors using a qualitative approach. The current research explains how and why investors' behavior deviates from rationality and why they make irrational decisions about investment management. To the best of the authors' knowledge, the current study is the first of its kind, exploring and clarifying the mechanism by which heuristic-driven biases influence the investment management activities of individual investors actively trading on the PSX, using a qualitative approach. Second, due to the qualitative approach, the investigators have highlighted factors causing an increased use of heuristic variables by investors and discussed practical approaches to overcoming the negative effects of heuristics factors so that finance practitioners can avoid repeating the expensive errors which they cause, which also differentiates this study from others. Third, "most studies focus on well-developed financial markets and very little is known about investors' behavior in emerging markets like Pakistan" (Ahmad & Shah, 2022). The present study also contributes to filling this gap in the literature.

6. Conclusion and implications

Nowadays, all types of investor face the challenging task of making decisions regarding investment management activities. Investors are typically confronted with volatile financial conditions and heightened levels of uncertainty. This instability makes the decision-making process more complicated than at any other time. In rapidly evolving situations, it is challenging to utilize all available opportunities and resources well and make decisions related to investment management using all available information to be a rational business actor. By the time decisions are made, the opportunity has most likely passed. Under conditions of environmental uncertainty and complexity (turbulence), investors frequently fall prey to heuristic-driven biases, specifically cognitive and recognition heuristic biases, which negatively impact their investment management activities, including investment decision-making and investment performance. The idea for this investigation was derived from the existing literature on behavioral economics and finance and tested using an interpretive approach.

The results of this study demonstrate that often-used heuristic factors when trading in the stock market, specifically, reliance on recognition-based heuristics, namely alphabetical ordering of firm names, name memorability, and name fluency, as well as cognitive heuristics, such as herding behavior, disposition effect, anchoring and adjustment, repetitiveness, overconfidence, and availability biases, lead investors to make less than optimal decisions concerning their investment management activities. Due to these heuristic-driven biases, investors tend to perceive that markets are inefficient, trade excessively in the stock market, and their investment performance is adversely affected. These results are consistent with bounded rationality theory and prospect theory, which holds that decision-makers use heuristics to avoid the risk of losses in uncertain situations but that leads to errors in judgment; as a result, investors make irrational decisions, which may cause the market to overreact or underreact – in both situations the market becomes inefficient.

This study shows that individual investors lack knowledge regarding market fundamentals and start trading without proper research into stocks' performance, which stock is overpriced, and which stock is underpriced. They have no awareness of how to evaluate the stocks' performance and might not have the resources to seek help from others, as they intend to maximize their profit within a short period. Due to all these reasons, they invest in the stock market using heuristic factors. Many investors rely on heuristics when they are unable to get all the information needed for decision-making, or they may not be able to do so by the time a decision must be made. Even if all the information is available, they may not be capable of completing the optimization calculation on time. Stock markets are very volatile, and investors have limited time to analyze investment opportunities properly: All these factors lead investors to make trading decisions by relying on mental shortcuts.

In order to overcome the negative effect of heuristic-driven biases, individual investors need to learn about market fundamentals before investing in the stock market and they can do so by reading newspapers, and magazines, seeking investment advice from financial strategists/advisors' reports, family members, friends, traders in the stock market, online forums, and online searches. In this way, to some extent, they can overcome the negative effect of heuristic-driven biases. Investors also can overcome the negative effect of heuristic-driven biases by maintaining self-discipline, following the guiding principles of investment, seeking information relevant to a company and its business activities before investing or putting resources in it and getting investment advice from the investment team and occasionally from other portfolio managers, as well as talking about their investment intentions with friends. Thus, investors can

conduct a proper analysis of investment opportunities, develop quantitative investment criteria, establish investment objectives and constraints, and make investment decisions according. Experience also diminishes the inadvertent consequences of heuristic-driven biases; with the passage of time and acquisition of experience, investors can learn how to overcome the negative effects of heuristic biases.

This study has important theoretical as well as practical implications for finance practitioners, such as investors in the stock exchange, financial strategists/advisors in investment firms, portfolio managers, financial planners, investment bankers, traders/ brokers at the stock exchange, and financial analysts. But most importantly, the term also includes all those who manage corporate entities and are responsible for making financial decisions and academia. The study is a good reference point for investors, finance managers, financial brokers, and other financial decision-makers to deliberate and examine financial market trends before making investment decisions. It provides important information about the effect of heuristic-driven biases on investment management activities and provides a solution to overcome the adverse effects of heuristic variables, so that finance professionals do not make the expensive mistakes that they cause. It is beneficial for investors who would like to invest in the stock market, to get help from this study.

7. Directions for future research

This research employs a qualitative approach to investigate the influence that heuristic-driven biases have on the activities associated with investment management, particularly in Pakistan. Therefore, it is imperative for investigators to substantiate the results of this study with a greater diversity of respondents from other countries. It is also recommended that future research studies use mixed methods (i.e., sequential explanatory design and/or sequential exploratory design) to examine the role of heuristic-driven biases in investment management to better acknowledge and acquaint readers with this area of study and other significant aspects of investment decision-making and performance.

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