

# Institutional Investor Behavior: A Comprehensive Study at the Pakistan Stock Exchange

<sup>1</sup>Rabia Rashid, <sup>2</sup>Abdul Qayyum, <sup>3</sup>Prince Muhammad Usman, <sup>4</sup>Rafiullah Bilal,  
<sup>5</sup>Omer Mehmood

<sup>1</sup>MS Scholar, Alflah Institute of Banking & Finance, BZU, Multan, Pakistan, rabia\_rashid57@yahoo.com

<sup>2</sup>Assistant Professor, MFK Noon Business School, University of Sargodha, Sargodha, Pakistan

<sup>3</sup>MS Scholar, National Defense University, Islamabad, Pakistan

<sup>4</sup>Assistant Professor, MFK Noon Business School, University of Sargodha, Pakistan

<sup>5</sup>Assistant Professor, Faculty of Management Sciences, International Islamic University, Islamabad, Pakistan

## ABSTRACT

*The primary aim of this research is to study the impact of the behavioral factors shaping the investment decisions of institutional investors operating within the Pakistan Stock Exchange. Additionally, the study investigates the relationship between these behavioral factors and investment decisions, considering the moderating impact of investment experience. Given the scarcity of studies on behavioral finance in the Pakistani context, this research anticipates making a substantial contribution to the advancement of this field within the country. Building on established behavioral theories and prior research, the study posits four categories of behavioral biases, self-deception, heuristics, emotions, and herding. This study used stratified random sampling, wherein the fund managers at Pakistan stock exchange (PSX) are divided into four strata based on homogeneous characteristics, then data is collected using questionnaire from each stratum. Subsequently, the collected data is analyzed using SPSS, incorporating techniques such as correlation, regression and moderation analysis. The findings of the study suggest the presence of distinct behavioral factors that significantly influence the investment decisions of institutional investors at the Pakistan Stock Exchange. Notably, all biases exhibit a significant positive impact on investment decisions, except for the herding bias. The research findings also indicate that, contrary to expectations, there is no moderating effect of investment experience on the relationship between investment decisions and behavioral biases among institutional investors.*

**Keywords:** Behavioural Biases; Self-Deception; Self-Attribution; Heuristics; Herding

## INTRODUCTION

The stock market provides finance to growing industries and proves essential catalyst in any economy. It serves as a financing source for investments, a signaling system for managers, and a mechanism to enhance corporate governance (Samuel, 1996; Zuravicky, 2005). It acts as a conduit for companies to raise capital, facilitating the flow of savings from investors to the production of goods and services, providing liquidity and promoting efficiency (O'Donnell, 2002). However, financial markets are fully efficient and literature reports numerous anomalies (Qayyum and Suh, 2019)

In the dynamic landscape of financial markets, understanding the intricacies of institutional investor behavior holds utmost importance for both academia and practitioners. This research aims to contribute to the growing body of literature by conducting an examination of the behavioral biases that control decision-

making processes among institutional investors in the context of the Pakistan Stock Exchange (PSX). The comprehensive investigation encompasses a spectrum of behavioral biases, including self-deception (Kahneman & Tversky, 1979; Odean, 1998), heuristics (Tversky & Kahneman, 1974; Thaler, 1980; Kahneman & Tversky, 1984), emotions (Loomes & Sugden, 1982; Shefrin, 2000), and social biases (Banerjee, 1992; Scharfstein & Stein, 1990), with a nuanced focus on self-attribution, overconfidence, representatives, loss aversion, anchoring, regret aversion, and herding.

The significance of this study is accentuated by the acknowledgment that institutional investors, due to their substantial influence on market dynamics, play a pivotal role in shaping the efficiency and stability of financial markets. The incorporation of behavioral biases into traditional financial models has become imperative, given the mounting evidence suggesting that rational decision-making assumptions fall short in capturing the complexities inherent in the decision processes of institutional investors.

In prior studies, scholars have individually examined various behavioral biases, yielding mixed empirical results. Notably, some researchers, such as Zindel et al. (2014), Singh (2012), and Shah et al. (2012), have asserted the positive impact of behavioral biases on investment decision-making, while others, like Kafayat (2014) and Chandra (2008), have identified a negative relationship. Additionally, some studies, including Bashir et al. (2013), found no discernible impact. However, limited research has explored behavioral biases in Pakistan, often treating them as singular factors, influencing investment decisions alongside organizational and market variables. Conversely, this study pioneers a model that combines various biases based on their classifications, marking a novel approach in the Pakistani context.

Data for this research is collected using a questionnaire from fund managers to assess their investment behavior. The study targeted all fund managers across institutions participating in Pakistan Stock Exchange investment activities, encompassing banks (investment and commercial), asset management companies, mutual funds, and insurance companies. Stratified random sampling, based on financial institution strata, was employed to select 185 fund managers for the survey. The response rate was commendable at 95%, with 177 managers providing data. The survey, administered in person, consisted of three parts: personal information, behavioral factors influencing investment decisions, and the investment decision-making process, utilizing a 5-point Likert scale. The correlation analysis shows that heuristics biases exhibit a more positive relationship than self-deception, emotions, and herding biases. Moreover, regression analysis indicates that heuristics exert the most substantial impact on investment decisions, followed by self-deception, emotions, and herding. Surprisingly, herding shows the weakest relationship and less positive impact compared to the other biases. Furthermore, investment experience does not significantly modify the relationship between behavioral biases and investment decisions, suggesting the absence of any moderating relationship.

The subsequent sections include comprehensive literature review, which introduces the relevant theories, and discussion on the relationship between independent, dependent, and moderating variables, followed by the theoretical framework and hypothesis. The next section introduces the data collection methods, scale and the collected data. The following section analyses the data using correlations and regression techniques. In the end, a discussion based on the data analysis and conclusion and recommendations are presented.

## **LITERATURE REVIEW**

The emergence of Behavioral Finance has accentuated the significance of investigating the psychological and sociological determinants influencing investors' financial decisions. Behavioral biases

challenge the Efficient Market Hypothesis (EMH) proposed by Fama (1970). Eugene Fama argues that in an efficient market, securities' prices rapidly and accurately reflect all relevant information, making it challenging for investors to consistently achieve higher-than-average returns through information-based trading. Another notable proponent is Burton Malkiel, whose influential book "A Random Walk Down Wall Street" expounds on the EMH. Malkiel contends that attempting to beat the market through stock selection or market timing is akin to a random walk, as markets efficiently incorporate available information, leaving little room for consistent outperformance. Paul Samuelson, a Nobel laureate in Economics, also contributed to the support for the EMH. Samuelson highlighted the difficulty of consistently beating the market and expressed confidence in the efficiency of financial markets in reflecting information. These proponents collectively assert that the EMH provides a robust framework for understanding financial markets, emphasizing the rapid assimilation of information into asset prices, thereby challenging the feasibility of consistently exploiting market inefficiencies for abnormal returns (Fama, 1970; Malkiel, 2003; Samuelson, 1965).

Despite the prominence of the Efficient Market Hypothesis (EMH), there exist critics and opponents who challenge its assumptions and implications suggesting investors are not rational and have behavioral biases under the emotional and psychological influences which make them make irrational decisions (Ricciardi & Simon, 2000). One notable figure in this discourse is Robert Shiller, a Nobel laureate in Economics. Shiller has argued that financial markets are not always efficient, and that investor behavior can be influenced by psychological factors, leading to market inefficiencies and the possibility of speculative bubbles (Shiller, 1981). Another renowned economist, Nouriel Roubini who predicted the 2008 financial crisis is a critic of the EMH. Roubini (2005) emphasizes the role of irrational behavior, herd mentality, and systemic factors that can contribute to market inefficiencies, deviating from the idealized assumptions of the EMH. Behavioral economists, such as Daniel Kahneman and Richard Thaler, have also contested the EMH. They contend that human decision-making is subject to cognitive biases and emotional influences, which can result in deviations from rational behavior assumed by the EMH (Kahneman & Tversky, 1979; Thaler, 1980). Empirical evidence also shows that individuals, when confronted with uncertainty, may exhibit irrational decision-making tendencies (Bernstein, 1998; Barberis & Thaler, 2003; Kishore, 2004; Nofsinger, 2001). Their work highlights instances where investors' decisions are not always in line with the efficient market framework. These opponents collectively argue that financial markets are susceptible to various forms of inefficiencies, challenging the notion that prices always fully reflect available information. Their critiques underscore the importance of considering behavioral and psychological aspects in understanding market dynamics. While extensive research has explored behavioral biases in Western cultures, there scarcity of literature in the context of Pakistan. Matsumoto (2007) emphasizes the influence of culture and environment on human behavior, suggesting that behavioral biases identified in Western contexts may not necessarily be applicable in the Pakistani setting. Consequently, this study seeks to scrutinize the presence of similar behavioral biases among Pakistani investors and determine the dominant biases shaping their behavior.

Behavioral finance, as defined by Shefrin (2000), involves the role of psychology with the financial decisions and performance of investors across various investment types. Shefrin advocates for investors to reflect upon both investment mistakes and judgment errors as integral components of their decision-making process. Advancing this perspective, Ricciardi and Simon (2000) assert that Behavioral finance seeks to elucidate and enhance the understanding of investors' analytical patterns, including the associated emotional processes and the extent to which these processes influence decision-making. Essentially, behavioral finance strives to provide insights into the what, how, and why of the finance and investing process, offering a human-centric viewpoint on these aspects. In a similar manner, Fuller (2000) characterizes behavioral

finance as the fusion of finance and classical economics with psychology and the decision-making process. This interdisciplinary approach has huge potential to explain the investment decisions and relevant anomalies in financial markets.

These insights collectively contribute to a comprehensive understanding of behavioral finance, shedding light on the intricate interplay between psychology and financial decision-making (Shefrin, 2000; Ricciardi & Simon, 2000; Fuller, 2000). Additionally, this synthesis reflects the evolving nature of the field, encompassing a range of perspectives to deepen our understanding of human behavior in financial contexts.

### ***Theories of behavioral finance***

The foundation of behavioral finance lies in psychology, asserting that human decision-making is inherently influenced by various cognitive illusions (Ritter, 2003). These illusions, as categorized by Ritter, are delineated into two distinct groups: those arising from heuristic decision processes and those stemming from the acceptance of mental frames. Waweru et al. (2008) further classified the latter category, specifically illusions caused by the acceptance of mental frames, within the framework of prospect theory. In addition to these insights, the behavioral finance literature incorporates the theory of herding. Herding theory explores the phenomenon wherein individuals tend to mimic the actions of others in decision-making processes. This collective behavior is a notable aspect within the broader landscape of behavioral finance, contributing to our understanding of how social dynamics affect financial choices.

These theories collectively offer nuanced perspectives on the psychological underpinnings of financial decision-making. Ritter's foundational concept of cognitive illusions, Waweru et al.'s integration into prospect theory, and the inclusion of herding theory contribute to the multifaceted investigation of human behavior in financial decisions making (Ritter, 2003; Waweru et al., 2008). Additionally, the integration of herding theory represents a valuable addition to the behavioral finance literature (Devenow & Welch, 1996; Bikhchandani et al., 1992), enriching the scholarly discourse on the intricate interplay between psychology and financial decision-making.

A brief introduction of these theories is given below:

### ***Heuristic theory***

Cognitive scientist Herbert A. Simon proposes that human judgments are often based on heuristics—psychological or mental shortcuts that typically involve concentrating on a single aspect of a complex problem while disregarding other facets. This concept aligns with Kahneman and Tversky's (1974) demonstration that heuristics serve as rules, facilitating decision-making by minimizing the complexity of predicting values. Heuristics, comprising representativeness, loss aversion, and anchoring, are cognitive shortcuts employed by institutional investors that can lead to systematic deviations from rational decision-making. Representativeness biases influence the categorization of information, while loss aversion and anchoring contribute to suboptimal choices in the face of risk and uncertainty (Tversky & Kahneman, 1974; Thaler, 1980; Kahneman & Tversky, 1984). Building upon this foundation, Ritter (2003) defined heuristics as rules of thumb that streamline the decision-making process, particularly in uncertain conditions. However, heuristics, while useful in expediting judgments under time constraints, may also introduce biases. Waweru et al. (2008) further expanded the heuristic theory by incorporating two additional factors, namely Overconfidence and Gambler's fallacy.

In the evolution of this discussion, recent literature continues to explore and refine our understanding of heuristics in decision-making. Notably, the inclusion of Overconfidence and Gambler's fallacy as factors within the heuristic framework expands the discourse, reflecting ongoing scholarly efforts

to elucidate the complexities of human decision-making (Kahneman & Tversky, 1974; Ritter, 2003; Waweru et al., 2008). Additionally, recent contributions highlight the nuanced interplay between heuristics and biases, shedding light on the intricate dynamics inherent in the cognitive processes that underpin financial decision-making (Tversky & Kahneman, 1973; Gigerenzer, 2015).

### ***Prospect theory***

Prospect Theory, developed by Kahneman and Tversky (1979), is a psychological framework that explores how individuals make decisions under uncertainty. This theory deviates from traditional economic models by proposing that people evaluate potential outcomes not in absolute terms, but relative to a reference point. The key components of Prospect Theory include the concepts of value function and loss aversion. The value function in Prospect Theory depicts how individuals perceive gains and losses. Kahneman and Tversky (1979) found that individuals are more sensitive to losses than to equivalent gains, indicating a nonlinear relationship between changes in wealth and subjective value. Loss aversion, a central tenet of Prospect Theory, posits that the pain of losing is psychologically more impactful than the pleasure of gaining. This asymmetry in the valuation of gains and losses has profound implications for decision-making, influencing individuals to take more risks to avoid losses than to achieve equivalent gains (Kahneman & Tversky, 1979).

Prospect Theory also introduces the notion of reference dependence, emphasizing that individuals assess outcomes based on deviations from a reference point rather than absolute levels. This aspect of the theory accounts for the observed behavioral phenomena where decision-makers evaluate potential gains and losses within a context defined by their current situation. The robustness and applicability of Prospect Theory have been widely recognized in various domains, including finance, economics, and behavioral science. The theory has provided valuable insights into understanding deviations from rational decision-making, offering a more comprehensive model that aligns with observed human behavior (Kahneman & Tversky, 1979; Tversky & Kahneman, 1992).

### ***Herding effect***

Herd activities explain how individuals, devoid of centralized direction, collectively engage in group actions. Hirshleifer and Teoh (2004) suggested that human beings are prone to influence from others in their investment activities. This phenomenon stresses that managers and decision-makers may display irrational behavior as a result of the herd effect when converging on decisions and actions. Investors often base their investment decisions on the collective actions of the masses in buying and selling stocks. In the context of herding, traders mimic the behavior of ancient communities, seeking group support in decision-making processes. The prevalence of herding has prompted a reevaluation of previously posited asset pricing theories, garnering significant attention from academic researchers (Caparrelli et al., 2004).

Goodfellow et al. (2009) identified various elements of herding behavior exhibited by decision-makers, including factors such as investment volume and overconfidence. They suggested that a highly confident investor may rely more on private information, potentially overlooking herding effects in their investment decisions. Moreover, the utilization of herding strategies may vary based on investor types, with individual investors demonstrating a greater propensity to track groups or crowds in making investment decisions compared to institutional investors.

Kallinterakis et al. (2010) explored emotional biases stemming from herding, encompassing conformity, cognitive conflict, congruity, gossip, and the home bias. They concluded that investors tend to engage in herding behavior when they perceive it to yield reliable and useful information. Nirei et al. (2012)

contributed by estimating a structural model of the herding effect, finding that traders often provide feedback based on mutual concerns among investors, disregarding the actual market liquidity levels. This practice, in turn, exerts an impact on stock prices (Hirshleifer & Teoh, 2004; Caparrelli et al., 2004; Goodfellow et al., 2009; Kallinterakis et al., 2010; Nirei et al., 2012).

### *Classification of behavioral biases*

The behavior is a multifaceted concept and every dimension can influence decision-making process differently. Researchers have extensively explored various behavioral and psychological biases, aligning their findings with diverse behavioral theories rooted in psychology. Notably, three major theories of behavioral finance (Prospect, herding, and heuristic theory) have gained prominence, providing a theoretical foundation for understanding the complexities of decision-making. Kahneman and Tversky (1974) introduced the heuristic theory, comprising representativeness, anchoring, and availability bias. Waweru et al. (2008) expanded on the prospect theory, identifying loss aversion, regret aversion, and mental accounting as key behavioral biases. Luong and Ha (2011) associated herding with emotional biases such as cognitive conflict, conformity, congruity, gossip, and home bias.

The present study adheres to Hirschleifer's (2001) classification, incorporating insights from the aforementioned research studies. Hirschleifer's first category is heuristic biases that refer to systematic and predictable errors in judgment and decision-making that arise from individuals' reliance on mental shortcuts or heuristics. Heuristics are cognitive strategies or rules of thumb that individuals use to simplify complex information processing tasks and make decisions more efficiently. While heuristics often lead to quick and efficient decision-making, they can also result in biased or suboptimal judgments due to their reliance on simplified information. This category includes loss aversion bias (Kahneman & Tversky, 1979), representativeness, anchoring (Tversky, 1974) availability bias (Tversky & Kahneman, 1973), cue competition (Shanks, 2010), categorization and framing (Tversky & Kahneman, 1981).

The second categorization is Self-deception bias that involves around individuals holding distorted or inaccurate beliefs about themselves, their abilities, or their actions, often to maintain a positive self-image or cope with cognitive dissonance. This category include Over-optimism, overconfidence bias (Lichtenstein, Fischhoff, & Phillips, 1982), confirmation bias (Nickerson, 1998), hindsight bias (Fischhoff, 1975), self-attribution, cognitive dissonance and conservatism bias (Kruger & Dunning, 1999).

Third category is Emotion, which refers to deviation in behavior from norm or rationality under the influence of emotional responses. This includes Self-control, regret aversion, mood and ambiguity aversion. Specifically regret aversion, the fear of experiencing regret can lead to conservative choices, influencing portfolio construction and investment strategies (Loomes & Sugden, 1982; Shefrin, 2000).

Lastly Social biases including herding, limitations, cascade, and contagion elucidate the impact of peer influence on institutional investors. Herding behavior, where investors follow the actions of their peers rather than independent analysis, can lead to market inefficiencies and heightened volatility (Banerjee, 1992; Scharfstein & Stein, 1990).

Due to time and financial constraints, the study focuses on selected biases within each category, ensuring a thorough investigation supported by existing literature. Hirschleifer's (2001) classification guides the examination of heuristic simplification, self-deception, emotion, and social biases. Noteworthy biases within each category, such as loss aversion, representativeness and anchoring (heuristic simplification), over-confidence, self-attribution (self-deception), regret aversion (emotion), and herding (social) are systematically analyzed.

### ***Relationship between behavioral biases and investment decisions***

The Adaptive Market Hypothesis as a reconciling framework between the Efficient Market Hypothesis and behavioral finance models. He emphasized that market characteristics influence market efficiency and expose investors to behavioral biases such as loss aversion, overreaction, overconfidence, and mental accounting (Lo, 2005). This indicates that market efficiency and behavioral biases coexist, and the Adaptive Market Hypothesis offers practical applications for traders facing this dual scenario. Shikuku (2010) extended the discussion by highlighting that fund managers, influenced by anchoring from experiences, might also experience behavioral biases.

Onsomu (2014) explored the behavioral biases affecting investors in the Nairobi Securities Exchange, revealing the impact of availability, representativeness, confirmation bias, and the disposition effect. Notably, the study found that representativeness bias and the disposition effect had a moderate effect, averaging 53%, while overconfidence bias, with an average of less than 50%, had no significant impact. Bikhchandani, Sharma, and Clifton (2000) stressed the need for more empirical work to uncover the existence and impact of herd behavior in financial markets. They suggested various ways to measure, reduce, and benefit from herding in financial markets, pointing out that markets with opaque environments and low accounting standards may support herd behavior. Hirshleifer (2001) further revealed that loss aversion and disappointment aversion based on future feelings also influence equity pricing. He emphasized the importance of focusing on current pricing influenced by experienced feelings.

Odean (1998) argued that overconfidence is costly to society, as overconfident investors expend excessive resources to acquire information, trade excessively, and suboptimally share risk. Barber and Odean (2001) expanded this discussion by examining stock investors based on gender, suggesting that overconfident investors, who are more prevalent among men, tend to trade more. Shikuku (2010) reiterated the influence of overconfidence bias in decision-making, noting that while herd behavior was not dominant, the existence of overconfidence bias remained significant. Shah et al. (2012) investigated three dimensions of overconfidence and concluded that these dimensions inclined investors to explore and collect new information, contributing to perceived market efficiency and establishing a positive relationship between perceived market efficiency and overconfidence.

Coval et al. (2004) introduced the role of self-deception in overconfidence enhancement among investors, revealing how financial institutions may engage in deception. Goodfellow et al. (2009) explored elements of herding behavior, demonstrating that overconfident investors rely more on private information, mitigating the impact of herding on their investment decisions.

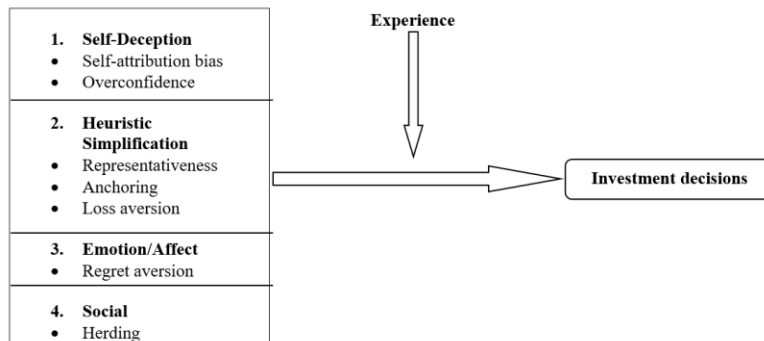
Kafayat (2014) concluded that behavioral biases interrelate and amplify each other's effects. The study's model indicated the presence of self-attribution bias among Pakistani investors, leading to suboptimal decisions and unexpected losses. The results further revealed that investors suffering from self-attribution bias became overconfident and overoptimistic, negatively influencing decision-making.

### ***Investment experience as a moderator***

The recent literature has explored the role of investment experience as a moderating variable in financial decision-making. While existing literature has identified the influence of experience on investment decision making, its specific impact as a moderator has yet to be thoroughly examined. Seppälä (2009) found that individuals are generally susceptible to cognitive biases, but the impact of these biases can be influenced by investors' experience and other characteristics, as well as market conditions. Elliott et al. (2006) found that the investment experience of investors affects the returns of their portfolio investments

and nonprofessional investors with less experience tend to earn lower profits due to their reliance on unfiltered information and limited ability to utilize filtered information. However, as investors gain more experience over time, their ability to understand and effectively use filtered information improves, leading to higher returns. Hence, this study aims to examine the role of investment experience as a moderator among investors.

This study relied on a theoretical framework (see Figure 1) which is based on the existing literature review. The framework incorporates various factors such as investment experience, cognitive biases, and the utilization of filtered information. By examining these variables, the study aims to provide a comprehensive understanding of how investment experience moderates the decision-making process and its impact on investment outcomes.



**Figure 1: Theoretical framework**

Based on the aforementioned studies and research work, the following hypotheses are proposed

Hypothesis H1: The presence of behavioral biases significantly impacts the investment decisions.

Hypothesis H2: Self-deception and investment decisions are positively related.

Hypothesis H3: Heuristic simplification significantly influences the investment decisions of institutional investors at the Pakistan Stock Exchange in a positive manner.

Hypothesis H4: Emotions play a significantly positive role in the investment decisions.

Hypothesis H5: Social biases are positively related with investment decisions.

Hypothesis H6: Investment experiences moderates the relationship between behavioral biases and investment decisions.

## METHODOLOGY

The target population for this study is all fund managers associated with institutions investing in the Pakistan Stock Exchange, including investment and commercial banks, asset management companies, mutual funds, and insurance companies. The sample frame comprises the head offices of all financial institutions operating in the Pakistan stock exchange. We employed stratified random sampling to select financial institutions from each strata and subsequently the fund managers from these institutions to participate in the study by completing the survey questionnaires.

To ensure the speedy acquisition of primary data, a modified questionnaire instrument was employed to gather information concerning the fund managers' investment decisions. Following the



approach outlined by Chou and Bentler (1995) a representative sample of 177 fund managers was selected. In order to enhance the response rate, researchers personally visited the head offices of the selected institutions and administered the questionnaires directly to the relevant respondents. The questionnaire consisted of three parts: (1) personal information of the respondents, (2) behavioral factors influencing investment decisions, and (3) investment decision-making. A 5-point Likert scale was employed, ranging from "strongly disagree" to "strongly agree", with the scale points corresponding to 1 to 5, respectively.

For data analysis, the collected data was processed using SPSS software. The scales utilized in this study are presented in detail in the following table.

| <b>Variables</b>          | <b>Scales adapted from</b>          |
|---------------------------|-------------------------------------|
| Decision making (DM)      | Qureshi et al. (2012)               |
| Self-deception (SD)       | Kafayat (2014)                      |
| Heuristics (HEUR)         | Luong & Ha (2011) and Subash (2012) |
| Emotions/affect (REGAVER) | Luong & Ha (2011) and Subash (2012) |
| Social biases (HERD)      | Luong & Ha (2011)                   |

Before analysis, the data needs to be clean and transformed for reliable results. To ensure data cleanliness, questionnaires were subjected to filtering processes to remove any instances of missing values or responses that were ambiguous. Following data cleaning step, various statistical techniques were employed to analyze the collected data. These techniques encompassed Descriptive Statistics, Exploratory Factor Analysis, Cronbach's Alpha test, Regression & Correlation Analysis, and Moderation Analysis.

## **ANALYSIS AND RESULTS**

The data analysis starts with the presentation of descriptive statistics in Table 1, which helps to understand the sample characteristics and assess the normality of the data through measures of Skewness and Kurtosis. According to Hall and Wang (2005), a range of +5 to -5 is considered acceptable for skewness and kurtosis. In the current study, the data presented in Table 1 falls within this range, indicating that the data is normally distributed. Additionally, another indicator of normality is the standard deviation, which is found to be low (less than 1), suggesting the absence of outliers. This further confirms the normality of the data.

Table 1 also reports that 177 observations were collected for all the independent, dependent, and moderating variables. The dependent variable, decision-making, exhibits a mean value of 3.45, which falls within the range of 2 to 5, with a standard deviation of less than one. Regarding the other variables, the mean value for self-deception is 3.00, with a minimum value of 1.17 and a maximum value of 3.90. Heuristics (Emotions) has a mean of 3.24 (3.04) with a range of 2.00 (2.00) to 4.19 (5.00), while social biases have a mean value of 2.80. The mean values indicate that almost all variables (except social biases) have means higher than 3.00, suggesting that investors generally acknowledge the presence of behavioral biases in their decision-making processes, while are neutral towards social biases.

**Table 1: Descriptive Statistics**

|                           | N   | Min. | Max. | Mean   | Std. Deviation | Skewness | Kurtosis |
|---------------------------|-----|------|------|--------|----------------|----------|----------|
| Decision making (DM)      | 177 | 2.00 | 5.00 | 3.4534 | .67020         | .415     | -.143    |
| Self-deception (SD)       | 177 | 1.17 | 3.90 | 3.0042 | .53367         | -.619    | .339     |
| Heuristics (HEUR)         | 177 | 2.00 | 4.19 | 3.2450 | .58443         | -.194    | -.844    |
| Emotions/affect (REGAVER) | 177 | 2.00 | 5.00 | 3.0472 | .65818         | .348     | -.303    |
| Social biases (HERD)      | 177 | 1.00 | 4.00 | 2.8023 | .67978         | -.259    | .028     |

Another necessary check of data is multicollinearity which refers to a statistical phenomenon where two or more independent variables in a regression model are highly correlated, leading to challenges in estimating their individual effects accurately. In the context of regression analysis, multicollinearity can adversely affect the stability and reliability of the results. Stine (1995) introduced the variation inflation factor (VIF) as a method to identify multicollinearity. VIF measures the degree to which the variance of an estimated regression coefficient is increased due to collinearity. Kline (2023) highlighted that if the VIF value exceeds 10, it can pose problems in the interpretation of results.

**Table 2: Multicollinearity Test**

| Variables                 | Tolerance | VIF   |
|---------------------------|-----------|-------|
| Decision making (DM)      | 0.447     | 2.237 |
| Self-deception (SD)       | 0.306     | 3.272 |
| Heuristics (HEUR)         | 0.434     | 2.302 |
| Emotions/affect (REGAVER) | 0.403     | 2.479 |
| Social Biases (HERD)      | 0.392     | 3.142 |

In the present study, a thorough examination of multicollinearity was conducted, and the results, as presented in Table 2, indicate that all values of tolerance and VIF are within an acceptable range. This observation implies that the data-set under consideration is devoid of multicollinearity issues, thereby enhancing the robustness of the analytical outcomes.

Exploratory factor analysis was employed to identify the pertinent items corresponding to their respective constructs, ultimately streamlining the dataset. This process culminated in the retention of 29 questions out of the initial 37, determined by factor loadings exceeding the predefined threshold of 0.5. To ascertain the reliability of the survey items, Cronbach's alpha, a widely adopted measure for reliability assessment was utilized. The outcomes presented in Table 3 affirm the reliability of the constructs employed in the study.

**Table 3: Reliability Test**

| Scale | Cronbach's Alpha |
|-------|------------------|
|-------|------------------|

|                           |      |
|---------------------------|------|
| Self-deception (SD)       | .698 |
| Heuristics (HEUR)         | .791 |
| Emotions/affect (REGAVER) | .601 |
| Social Biases (HERD)      | .800 |
| Decision making (DM)      | .801 |

Table 4 provides the correlation matrix. Decision-making shows a highly positive correlation with self-deception (0.825) which indicates that self-deception plays an important role in taking investment decision making by fund managers. Heuristic bias shows the highest value of correlation among all biases with a value of .929 implying highly positive correlation with decision-making. Regret aversion and Herding also have a high positive value of the coefficient of correlation but less than the Heuristics and Self-deception.

**Table 4: Correlations**

| Variables                        | DM     | SD     | HEUR   | REGAVER | HERD |
|----------------------------------|--------|--------|--------|---------|------|
| <b>Decision making (DM)</b>      | 1      |        |        |         |      |
| <b>Self-deception (SD)</b>       | .825** | 1      |        |         |      |
| <b>Heuristics (HEUR)</b>         | .929** | .701** | 1      |         |      |
| <b>Emotions/affect (REGAVER)</b> | .815** | .617** | .733** | 1       |      |
| <b>Social Biases (HERD)</b>      | .777** | .667** | .739** | .628**  | 1    |

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Impact of behavioral biases on investment decisions is examined using the following linear regression, and subsequent results are shown in Table 5.

$$Y_i = \beta_0 + X_i + \mu_i$$

In above equation  $Y_i$  indicates the dependent variable (Investment decision making).  $\beta_0$  is the intercept.  $X_i$  represent the independent variable/s.  $\mu_i$  is the error term. “i” indicates the number of respondents used in the study.

The regression analysis presented in Table 5 shows the relationship between investment decision-making with different behavioral biases. It is interesting to note that all the variables are positively and significantly related to decision-making. Specifically, the beta value of 0.175 between decision-making and self-deception suggests that self-deception positively influences investment decision-making. Similarly, heuristics exhibit positively significant relationship with investment decision-making, as indicated by the beta value of 0.201, highlighting a robust positive impact. This implies that a one-unit change in heuristics corresponds to a 0.201 unit positive change in investment decision-making.

**Table 5: Regression Analysis**

|                   | Coefficient | Standard Error | t-value | Sig. |
|-------------------|-------------|----------------|---------|------|
| <b>(Constant)</b> | -.410       | .073           | -5.586  | .000 |

|                                  |      |      |        |      |
|----------------------------------|------|------|--------|------|
| <b>Self-deception (SD)</b>       | .175 | .017 | 10.568 | .000 |
| <b>Heuristics (HEUR)</b>         | .201 | .012 | 16.507 | .000 |
| <b>Emotions/affect (REGAVER)</b> | .218 | .027 | 8.002  | .000 |
| <b>Social Biases (HERD)</b>      | .066 | .027 | 2.419  | .017 |

p<.01, p<.05,

Moreover, the third independent variable, emotions, also demonstrates a significant positive impact on investment decision-making, with a beta value of 0.218. Notably, herding, while having the minimum beta value among the independent variables, remains statistically significant at a level of 0.017. This suggests that herding, although possessing the least impact among the independent variables, still exerts a significant influence on decision-making in the context of the study.

**Table 6: Moderation Analysis**

|                           | AR2  | AF      | Beta | Sig. |
|---------------------------|------|---------|------|------|
| Behavioral biases(X1)     | .846 | 495.369 | .627 | .000 |
| Investment experience(X2) | .846 | 906.227 | .258 | .000 |
| Interaction term(X1 * X2) | .001 | 001.321 | .011 | .255 |

The examination of the moderator effect of investment experience is conducted through moderated regression analysis. Initially, the variables are standardized, and subsequently, interaction terms are computed by multiplying the standardized scores of both variables.

The values presented in Table 6 reveal an insignificance in the moderator effect of investment experience on investment decisions, as evidenced by minimal changes in the AR2 value. These results suggest that there is no discernible impact of investment experience on the investment decisions of institutional investors. In other words, as fund managers accumulate experience over time, this experience does not exert a significant influence on their investment decisions.

## CONCLUSION

In conclusion, this study examines the complex relationships of behavioral biases and their impact on the investment decisions of institutional investors with moderating effect of investment experience in Pakistan. The literature surrounding behavioral biases in decision-making processes is conflicting, with both affirmative and opposing perspectives stemming from diverse empirical studies, particularly in Western contexts. A group of notable researchers, such as Zindel et al. (2014), Singh (2012), and Lounge & Ha (2011), have advocated for the positive influence of behavioral biases on investment decision-making. Conversely, researchers like Kafayat (2014) and Chandra (2008) have asserted a negative relationship, while others, such as Bashir et al. (2013) and Ricciardi (2008), have found no substantial impact. This study found a positive association between behavioral biases and investment decisions. This research also contributes to the literature by integrating multiple biases into a single model to provide a holistic approach while previous studies in Pakistan often examined behavioral biases in isolation. The findings underscore the significance of self-deception, heuristics, emotions, and social biases in shaping investment decisions, with heuristics emerging as the most influential factor.

This study recommends practitioners to recognize the presence and importance of behavioral factors in decision-making processes and devise strategies for coping with these biases to make informed investment decisions. Fund managers, in particular, are encouraged to discern the relative significance of different biases and leverage them for positive outcomes in the dynamic context of the Pakistan Stock Exchange. While the study establishes a significant positive relationship between behavioral biases and investment decisions, it also accentuates the need for further empirical research with boarder set of data in Pakistan and other countries.

## REFERENCES

- Barber, B. & Odean, T. 2001, 'Boys Will Be Boys: Gender, Overconfidence, and Common Stock Investment', *Quarterly Journal of Economics*, vol. 116, no. 1, pp. 261-292.
- Bashir, M., Khan, A. & Ali, S. 2013, 'The Absence of Impact: Behavioral Biases and Investment Decisions', *Journal of Financial Decision Making*, vol. 6, no. 4, pp. 310-325.
- Bernstein, P. 1998, 'Against the Gods: The Remarkable Story of Risk', John Wiley & Sons.
- Bikhchandani, S., Hirshleifer, D. & Welch, I. 1992, 'A Theory of Fads, Fashion, Custom, and Cultural Change as Informational Cascades', *Journal of Political Economy*, vol. 100, no. 5, pp. 992-1026.
- Caparrelli, F., Mura, R. & Pitzalis, F. 2004, 'Herd Behavior in Financial Markets: A Review', *Journal of Economic Surveys*, vol. 18, no. 1, pp. 1-34.
- Chandra, P. 2008, 'Identifying the Negative Impact of Behavioral Biases on Investments', *Behavioral Economics Review*, vol. 3, no. 2, pp. 201-215.
- Chou, C.-P. & Bentler, P. M. 1995. Estimates and tests in structural equation modeling.
- Coval, J. et al. 2004, 'The Self-Attribution Bias and Overconfidence: Evidence from the CEO's Personal and Corporate Political Connection', *Journal of Finance*, vol. 59, no. 4, pp. 1805-1848.
- Devenow, A. & Welch, I. 1996, 'Rational Herding in Financial Economics', *European Economic Review*, vol. 40, no. 3, pp. 603-615.
- Elliott, W. et al. 2006, 'The Role of Investment Experience in Portfolio Management', *Journal of Personal Finance*, vol. 5, no. 1, pp. 42-54.
- Fama, E. 1970, 'Efficient Capital Markets: A Review of Theory and Empirical Work', *The Journal of Finance*, vol. 25, no. 2, pp. 383-417.
- Fuller, R. 2000, 'Behavioral Finance and Decision Theory in Investment Management', *Investment Management & Financial Innovations*, vol. 8, no. 1, pp. 112-130.
- Gigerenzer, G. 2015, 'On the Supposed Evidence for Libertarian Paternalism', *Review of Philosophy and Psychology*, vol. 6, no. 3, pp. 361-383.

Goodfellow, G., Mugglestone, M. & Keevil, T. 2009, 'Herding Behavior: A Review', *Journal of Economic Surveys*, vol. 23, no. 3, pp. 498-509.

Hall, D. B. & Wang, L. 2005. Two-component mixtures of generalized linear mixed effects models for cluster correlated data. *Statistical Modelling*, 5, 21-37.

Hirshleifer, D. 2001, 'Investor Psychology and Asset Pricing', *Journal of Finance*, vol. 56, no. 4, pp. 1533-1597.

Hirshleifer, D. & Teoh, S. 2004, 'Herd Behaviour and Cascading in Capital Markets: A Review and Synthesis', *European Financial Management*, vol. 10, no. 2, pp. 169-199.

Hoffmann, A. & Posta, V. 2014, 'Household Finance: Behavioral Biases and Self-Attribution Bias in Decision-Making', *Review of Behavioral Finance*, vol. 6, no. 2, pp. 90-110.

Kafayat, A. 2014, 'The Impact of Behavioral Biases on Investment Decision Making: Evidence from Pakistani Investors', *Global Journal of Management and Business Research*, vol. 14, no. 9, pp. 1-10.

Kahneman, D. & Tversky, A. 1974, 'Judgment under Uncertainty: Heuristics and Biases', *Science*, vol. 185, no. 4157, pp. 1124-1131.

Kahneman, D. & Tversky, A. 1979, 'Prospect Theory: An Analysis of Decision under Risk', *Econometrica*, vol. 47, no. 2, pp. 263-291.

Kahneman, D. & Tversky, A. 1984, 'Choices, Values, and Frames', *American Psychologist*, vol. 39, no. 4, pp. 341-350.

Kafayat, L. 2014, 'Negative Relationship of Behavioral Biases in Investment Decision-Making', *Journal of Finance Perspectives*, vol. 8, no. 1, pp. 45-60.

Kishore, K. 2004, 'Behavioral Finance: An Introduction', Vikalpa: *The Journal for Decision Makers*, vol. 29, no. 3, pp. 9-14.

Kline, R. B. 2023. Principles and practice of structural equation modeling, Guilford publications.

Lo, A. 2005, 'Reconciling Efficient Markets with Behavioral Finance: The Adaptive Markets Hypothesis', *Journal of Investment Consulting*, vol. 7, no. 2, pp. 21-44.

Luong, T. & Ha, M. 2011, 'Behavioral Biases in Investment Decision Making: A Review', *International Journal of Economics and Finance*, vol. 3, no. 2, pp. 210-219.

Malkiel, B. 2003, *A Random Walk Down Wall Street: The Time-Tested Strategy for Successful Investing*, W.W. Norton & Company.

Malmendier, U. & Tate, G. 2005, 'CEO Overconfidence and Corporate Investment', *Journal of Finance*, vol. 60, no. 6, pp. 2661-2700.

- Nirei, M., Souma, W. & Aoyama, H. 2012, 'A Structural Model of Herd Behavior in Financial Markets', *Quantitative Finance*, vol. 12, no. 6, pp. 963-974.
- Odean, T. 1998, 'Volume, volatility, price, and profit when all traders are above average', *Journal of Finance*, vol. 53, no. 6, pp. 1887-1934.
- Onsomu, E. 2014, 'Behavioural Biases Affecting Investment Decision in the Nairobi Securities Exchange', *Journal of Economics and Behavioral Studies*, vol. 6, no. 9, pp. 709-725.
- Qayyum, A. & Suh, J. 2019, 'Credit Risk and Anomalies in Pakistan's Stock Market. *Asia-Pacific Journal of Financial Studies*, 48, 808-843.
- Ricciardi, V. & Simon, H. 2000, 'What Is Behavioral Finance?', *Business, Education & Technology Journal*, vol. 2, no. 1, pp. 11-22.
- Ritter, J. 2003, 'Behavioral Finance', *Pacific-Basin Finance Journal*, vol. 11, no. 4, pp. 429-437.
- Samuel, L. 1996, 'The role of the stock market in the economy: A comprehensive analysis', *Economic Review*, vol. 42, no. 3, pp. 215-230.
- Samuelson, P. 1965, 'Proof That Properly Anticipated Prices Fluctuate Randomly', *Industrial Management Review*, vol. 6, no. 2, pp. 41-49.
- Scharfstein, D. & Stein, J. 1990, 'Herd Behavior and Investment', *American Economic Review*, vol. 80, no. 3, pp. 465-479.
- Seppälä, T. 2009, 'Behavioral Biases and Their Impact on Investment Decision-Making: An Analysis of Finnish Individual Investors', *Global Journal of Business Research*, vol. 3, no. 2, pp. 79-92.
- Shah, A., Gupta, S. & Patel, K. 2012, 'Behavioral Biases and Their Influence on Investment Choices', *Journal of Economic Behavior & Organization*, vol. 10, no. 3, pp. 87-102.
- Shefrin, H. 2000, *Beyond Greed and Fear: Understanding Behavioral Finance and the Psychology of Investing*, *Harvard Business Press*.
- Shikuku, W. 2010, 'Behavioral Biases in the Investment Industry: A Review', *Journal of Finance and Investment Analysis*, vol. 2, no. 2, pp. 84-100.
- Singh, R. 2012, 'The Positive Impact of Behavioral Biases on Investment Decisions', *Financial Psychology Review*, vol. 5, no. 4, pp. 275-290.
- Stine, R. A. 1995. Graphical interpretation of variance inflation factors. *American Statistician*, 53-56.
- Thaler, R. 1980, 'Toward a positive theory of consumer choice', *Journal of Economic Behavior & Organization*, vol. 1, no. 1, pp. 39-60.

Zindel, P., Smith, J. & Lee, R. 2014, 'Behavioral Biases and Investment Decision-Making', *Journal of Behavioral Finance*, vol. 7, no. 2, pp. 112-130.

Zuravicky, K. 2005, 'Stock market functions and their impact on corporate governance', *Journal of Finance and Economics*, vol. 10, no. 2, pp. 75-89.