

"Role of behavioral biases in the investment decisions of Pakistan Stock Exchange investors: Moderating role of investment experience"

Saima Aziz 

Shahid Mehmood 

 R

Muhammad Asif Khan 

 R

Anita Tangl 

AUTHORS

ARTICLE INFO

Saima Aziz, Shahid Mehmood, Muhammad Asif Khan and Anita Tangl (2024). Role of behavioral biases in the investment decisions of Pakistan Stock Exchange investors: Moderating role of investment experience. *Investment Management and Financial Innovations*, 21(1), 146-156.
doi:[10.21511/imfi.21\(1\).2024.12](https://dx.doi.org/10.21511/imfi.21(1).2024.12)

DOI

[http://dx.doi.org/10.21511/imfi.21\(1\).2024.12](https://dx.doi.org/10.21511/imfi.21(1).2024.12)

RELEASED ON

Friday, 02 February 2024

RECEIVED ON

Monday, 04 September 2023

ACCEPTED ON

Friday, 03 November 2023



LICENSE

This work is licensed under a [Creative Commons Attribution 4.0 International License](#)

JOURNAL

"Investment Management and Financial Innovations"

ISSN PRINT

1810-4967

ISSN ONLINE

1812-9358

PUBLISHER

LLC "Consulting Publishing Company "Business Perspectives"

FOUNDER

LLC "Consulting Publishing Company "Business Perspectives"



NUMBER OF REFERENCES

69



NUMBER OF FIGURES

1



NUMBER OF TABLES

4

© The author(s) 2024. This publication is an open access article.



BUSINESS PERSPECTIVES



LLC "CPC "Business Perspectives"
Hryhorii Skovoroda lane, 10,
Sumy, 40022, Ukraine
www.businessperspectives.org

Received on: 4th of September, 2023

Accepted on: 3rd of November, 2023

Published on: 2nd of February, 2024

© Saima Aziz, Shahid Mehmood,
Muhammad Asif Khan, Anita Tangl,
2024

Saima Aziz, Master of Science in
Finance, Management Sciences Faculty,
Business Department, National
University of Modern Language,
Pakistan.

Shahid Mehmood, Dr., Ph.D., Assistant
Professor, Faculty of Management
Sciences and IT, Department of
Management Sciences, Mohi-Ud-Din
Islamic University Niran Sharif,
Pakistan.

Muhammad Asif Khan, Dr., Ph.D.
in Finance, Assistant Professor,
Management Sciences Faculty,
Commerce Department, University of
Kotli, Pakistan. (Corresponding author)

Anita Tangl, Ph.D., Associate Professor,
John von Neumann University,
Hungary.



This is an Open Access article,
distributed under the terms of the
[Creative Commons Attribution 4.0
International license](#), which permits
unrestricted re-use, distribution, and
reproduction in any medium, provided
the original work is properly cited.

Conflict of interest statement:
Author(s) reported no conflict of interest

Saima Aziz (Pakistan), Shahid Mehmood (Pakistan), Muhammad Asif Khan (Pakistan),
Anita Tangl (Hungary)

ROLE OF BEHAVIORAL BIASES IN THE INVESTMENT DECISIONS OF PAKISTAN STOCK EXCHANGE INVESTORS: MODERATING ROLE OF INVESTMENT EXPERIENCE

Abstract

Despite many revolutionary asset pricing models developed over the past decades, traditional finance does not explain investor behavior very well. The purpose of this study is to examine the influence of behavioral biases on the investment decisions of investors of Pakistan Stock Exchange. In addition, the moderating influence of investment experience investigated in this study. The findings were reported using a sample of 230 individual investors, who make their own investments, typically through a mutual fund, bank, or internet broker. They make investments to achieve their unique investment objectives, such as saving for retirement, a child's education, or increasing their overall wealth. The influence of behavioral biases on investment decisions was calculated using regression analysis. Regression results show that beta and t-values are significant and have a significant impact on investment decisions. Regression findings show that Confirmation Bias, Gamblers Fallacy Bias, Negativity Bias, Bandwagon Effect Bias, Loss Aversion Bias, and Overconfidence Bias all have a substantial impact on Investment Decisions. Status quo prejudice and endowment bias have a favorable but minor influence on Investment Decisions. Investment Experience is regarded as an essential component that contributes to successful decision making under risk and uncertainty, however the results of this study show that moderating variables have a minor influence. According to the findings, the moderating variable had no effect on the connection between behavioral biases and investment decisions. And the reason for this is that behavioral biases persist regardless of investing experience.

Keywords

behavioral biases, investment experience, investment decisions, Pakistan Stock Exchange

JEL Classification

G41, G23, G11, H54

INTRODUCTION

Our everyday lives are built on the flexibility of our decisions. Some of them are simple, while others are complex and based on a multistep approach. People may be influenced by behavioral biases throughout the selection process, which might prevent them from making logical choices (Bashir, Azam, et al., 2013). Two characteristics are provided by Barberis and Thaler (2003) to explain an individual's reasonable behavior. First, the person must promptly revise outdated beliefs in light of new facts. Next, they must make decisions that are utilitarian theory-based normatively acceptable. Additionally, impartial future forecasting must demonstrate that a person's views are true. All financial theories are implemented on the assumption of rational investors and flawless markets.

There is little question that investors' decision-making processes are influenced by behavioral aspects. To eliminate ambiguities related to the final judgements investors make, investment decisions require a thorough understanding of behavioral elements (Madaan & Singh,

2019; Singh, 2012). There are theories that explain good investing choices as well as biases. The investment experience, nevertheless, has not previously been considered a moderating factor. The moderating variable can make it possible to pinpoint the role that investment experience plays in making effective investment choices. This study bridges the gap by identifying the behavioral biases that impact investment decisions to reduce prejudices and increase the quality of investment judgements. It also considers the moderating effect of investment experience.

1. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Given the importance of the relevant variables of the current study in the light of theory, a review of the literature related to the outlined topic is important.

In 1955, American psychologist and economist Simon proposed the idea of rationality, contending that individuals often exhibit limited rationality. People find it extremely challenging to comprehend every notion in the complicated world; as a type of mental shortcut, they instead depend on simpler models that make sense to them. Behavioral biases are a variety of verdict discrepancies that occur under specific conditions and may lead to erroneous conclusions or irrationality (Bashir, Javed, et al., 2013).

Tversky and Kahneman (1971) suggested that investors may be misled by various behavioral biases, which may cause them to commit errors of cognition. This was the first-time psychological biases had been recognized. When confronted with challenging and unpredictable circumstances, people may make predictable, less-than-ideal judgements. These cognitive biases are characterized as regular mistakes in judgement. Behavioral biases are described by Chen et al. (2007) as the illogical behavior during decision making that will lead to an incorrect interpretation and conclusion.

Confirmation Bias (CB) was first demonstrated by Wason (1960). The work was expanded by Nickerson (1998). CB is the phenomenon of focusing on information that is confirming while ignoring information that is contrary. According to Baumann et al. (2012), CB causes misunderstanding between information and evidence and has an adverse impact on rational decision-making owing

to improper data computation. According to Jonas et al. (2001), people should support their judgements rather than come to contradicting conclusions based on the available information. When looking for new information, people tend to utilize it to reinforce their choices rather than changing their preconceived notions. When processing and using information for decision-making, people exhibit incomplete behavior (Nickerson, 1998).

The gamblers' fallacy has been characterized as a misinterpretation of the law of chance (Kahneman et al., 1991; Tversky & Kahneman, 1971). Gamblers' Fallacy Bias affected investors who are prejudiced in forecasting swings in stock values. Gamblers' Fallacy Bias is referred to as error in predicting the likelihood that an event would occur. The gamblers fallacy and how it affects judgement. According to their research, the gamblers' fallacy is more likely to be associated with individuals who have good cognitive abilities (Arshad, 2019; Sadiq, 2015; Xue et al., 2012; Yevdokimov et al., 2022; Danylyshyn et al., 2023).

Positive stimuli are less valuable than negative ones. People weigh a negative element of something more heavily than a favorable one (Vaish et al., 2008; Govender & David, 2023; Athief & Ma'ruf, 2023; Blikhar et al., 2023; Volosovych et al., 2023). Morewedge (2009) discussed the connection between negative bias and exogenous agents. Positive information is more frequently associated with internal forces than negative information. According to Hibbing et al. (2014), people react more strongly to negative occurrences because they are quieter and dominating than good events or stimuli. According to Baumeister et al. (2001), information processing stages are where negative bias occurs. The notion of attribution offers a rational justification for negative bias. Due to how attribution theory explains variations in information processing. According to this, some characteristics are far more significant than others while making decisions.

Samuelson and Zeckhauser (1988) were the first to identify status quo bias, which is characterized by doing nothing or sticking with current decisions. The status quo is a cognitive bias that causes people to favor their existing situation. According to Baumann et al. (2012), loss aversion is utilized as a benchmark for status quo bias. According to their research on the effects of status quo bias on decision making, people tend to remain with their initial choices rather than taking other options into account, which makes their choices more difficult. According to Mokhtar (2014), people are more at ease with possession than with modifying. Individuals experience status quo bias when faced with difficult decisions.

Bandwagon effect is explained by the rational-efficiency theory and fad theories. Luder started the bandwagon effect, often known as the Cromo effect. According to the Katz and Shapiro (1985) rational-efficiency hypothesis, investors are often driven to innovate because they anticipate receiving efficient returns. In contrast, theories of fad put out by Abrahamson (1991) stated that bandwagon behavior is confirmed by societal pressure to innovate (Fiol & O'Connor, 2003). They said that when other organizations or the market put pressure on people, people or organizations will join the bandwagon.

LAB was initially identified by Kahneman and Tversky (1979), Kahneman and Tversky (1979a), and Sha and Ismail (2021). The propensity to favor losses above gains of equal or greater magnitude is known as the LAB (Horák et al., 2022; Yasmin & Fardaous, 2023). According to Baumann (2012), loss averse investors do not take advantage of investing possibilities, especially when making significant selections. The phenomenon of loss aversion, which argues that people give losses greater weight than benefits when making decisions in risky and uncertain situations. Prospect theory's key component is loss aversion (Lovric, 2011). Risk-averse investors compare gains and losses to a reference point rather than net worth.

The illusion of control is the conviction that one can influence future events (Jabes, 2011; Kotieno, 2012; Jarrar, 2021). Similarly, Hung, Parker, and Yoong (2009) in their study not only examined individual risk-taking behavior but also determined

its factors. According to psychological research, investors' overconfidence leads to illogical judgments because overconfident people overestimate their influence over future developments while underestimating danger (Jabes, 2011).

EB is the tendency for people to value their possessions more highly than those of others (Adielyani & Mawardi, 2020; Lovric, 2011). Baker and Nofsinger (2002) examined the influence of the endowment effect on investment choices. They said that it depends on investors' capacity to hold their own assets (Yuan et al., 2023). And investors frequently overvalue the stocks they own. They also discovered that a new investor was more inclined to keep the money they had inherited. EB is the propensity for people to place a higher value on their bestowed possessions (Dervishaj, 2021). Assets gain value while they are owned, and people will pay more to keep them. Assets that have been acquired or inherited are also linked to endowment bias (Ahmad & Shah, 2020; Banerji et al., 2022; Mokhtar, 2014; Serpeninova et al., 2022; Nguyen, 2023).

According to research by Baker et al. (2019), individual investors in India are subject to a variety of behavioral biases, and financial literacy and demographic traits are linked to these biases. Mental accounting, representativeness, and overconfidence appear to be the most notable biases revealed by the sample of individual investors, according to the ranking of many behavioral biases (Rongyu, 2023). The findings of Parveen et al. (2020) suggest that overconfidence bias affects how the representational heuristic and investment decisions are related. Additionally, research demonstrates that the Pakistan Stock Exchange is immature and that investors lack the financial literacy necessary to disregard psychological influences already in place (Hasan et al., 2023).

Taylor (1975) investigated how age and investing experience affected judgements since it is thought that experience might improve decision-making skills. People gain knowledge of the market and improve their ability to forecast outcomes as they gain experience. Elliott et al. (2008) utilized non-professional investor information seeking behavior and their effect on their portfolio choices on their decision making while portfolio

results as a moderating variable. The study's findings demonstrate how professional investors' decision-making skills are improved by experience. These investors acquire and filter information to help them choose their portfolios and generate greater returns. McGuire (2004) investigated how prior experience affects making wise decisions. And the outcome demonstrated that experience had a significant influence on investors' decision making in the future.

The study by Korniotis and Kumar (2011b) found that older and more seasoned investors tend to rely on common sense rather than investing expertise. Factors that influence them most cognitively and emotionally (Korniotis & Kumar, 2009, 2011a). Decisions are influenced by education as well. Their choices will be more influenced by behavioral biases if they have less education. Haigh and List (2005) conducted research on the actions of seasoned professional stock market investors. They looked at the variations in behavior between students and professionals and discovered that professionals had higher behavioral biases than do students.

Shavit et al. (2010) provided physical proof of loss aversion only when a change was expressed in nominal value rather than change in percentages. The findings are somewhat consistent with the loss aversion phenomenon (and shed additional light on its underlying mechanism). More importantly, these results support the current theory by suggesting that loss aversion may be more apparent when the investor values the information (related to investments) supplied to them more highly (Toma et al., 2023).

According to Kida et al. (2010), more seasoned decision-makers could anticipate having access to a wide range of mutual funds, which is customary in practice. More seasoned investors were less inclined to invest when given a choice set with fewer options when these expectations were not met in the small set scenario. These results highlight the importance of the paradox of choice phenomena for more seasoned investors.

Based on the above, it can be concluded that until now there has not been any fund of literature research that would consider the moderating effect

of investment experience. Therefore, the aim of the study is to clarify how behavioral biases affect investors' financial decision making.

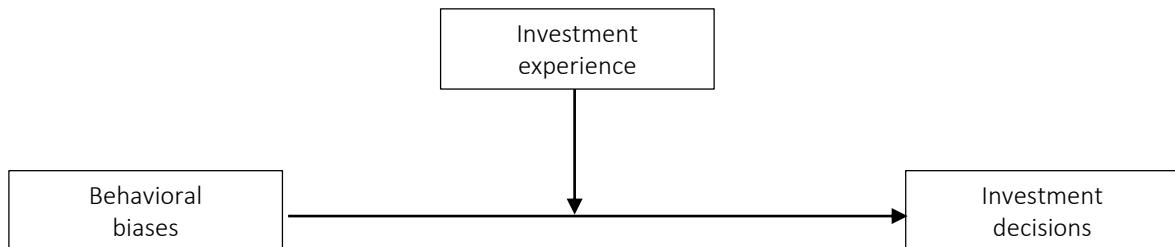
- H1: There is an impact of behavioral biases (Confirmation bias, Negativity bias, Status Quo, Bandwagon effect bias, Loss Aversion bias, Overconfidence bias, Endowment bias, and Gambler's Fallacy bias) on investment decisions.*
- H2: There is an impact of investment experience on the relationship between individual biases and investment decisions.*
- H3: There is a significant relationship between behavioral biases.*

2. METHODOLOGY

The study's theoretical foundation is shown in Figure 1. The independent variable under consideration is investment decisions, while the moderating variable is investment experience. The study's independent variables are the behavioral biases (confirmation bias, negativity bias, status quo, bandwagon effect, loss aversion, overconfidence bias, endowment bias, and gambler's fallacy bias).

Data collection for subsequent processing and analysis was done using the quantitative research approach to meet the study goals. Individual investors serve as the analysis's unit. Information was gathered from individual stock market investors in Islamabad. A total of 350 questionnaires were issued, and 292 of them were returned, yielding an 83.4% response rate, and 230 of them were in usable condition.

There were two sections to the questionnaire. Age, gender, experience in financial institutions, and educational background are just a few examples of the demographic statistics that are covered in the first section. The second section was made up of questions about each characteristic measured that were used to determine how each person makes investment decisions and how they behave in various situations. Each variable's questions and scale information are explained in depth.

**Figure 1.** Theoretical framework

Confirmation Bias: The CB Scale (Sahi et al., 2013) was a 7-item scale created to evaluate a fundamental aspect of thinking, information processing, and belief persistence. Responses to questions were scored on a 5-point Likert scale with 1 representing “strongly disagree” and 5 representing “strongly agree.”

Gamblers Fallacy Bias: The GFB was a 7-item scale developed by Sahi et al. (2013) to measure resistance to predictions of random occurrences and prior events. Responses to questions were scored on a 5-point Likert scale.

Negativity Bias: The NB (Sahi et al., 2013) was a 6-item measure meant to examine information rating, specifically negative perception. Responses to items were graded on a 5-point Likert scale ranging from 1 to 5.

Status Quo Bias: The status quo bias (Sahi et al., 2013) was a 7-item measure meant to evaluate status determination while protecting stock reputation. Responses to items were graded on a 5-point Likert scale.

Bandwagon Effect Bias: The bandwagon effect bias (Sahi et al., 2013) was a 7-item measure meant to assess choice trust and decision authority. Responses to items were graded on a 5-point Likert scale.

Loss Aversion Bias: The loss aversion bias (Sahi et al., 2013) was a 7-item measure developed to examine portfolio monitoring, loss realization, and risk tolerance. Responses to items were graded on a 5-point Likert scale.

Overconfidence Bias: The overconfidence bias (Sahi et al., 2013) was a 7-item measure meant to examine intuition, self-attribution, and knowledge accuracy. Responses to items were graded on a 5-point Likert scale.

Endowment Bias: The EB (Sahi et al., 2013) was a four-item measure created to assess the attractiveness of possessions, overvaluing ownership. Responses to items were graded on a 5-point Likert scale.

Investment Decisions: The ID was a 12-item scale developed to measure risk acceptance level, stock marketability, investment objectives, and projected returns (Sahi et al., 2013). Responses to items were graded on a 5-point Likert scale.

Investment Experience: The ratio scale was used to assess IE. Investors describe a certain percentage for their IE.

The Islamabad Stock Exchange's higher authorities officially granted authorization to distribute the investor research surveys. Visitors to various offices of the Islamabad Stock Exchange in Islamabad were used to approach participants. The study was explained to the participants, and their formal informed permission was obtained. Additionally, they received assurances about the privacy of their data and were informed that the information would only be used for research. The freedom to stop participating at any point while filling out the surveys was also guaranteed to the respondents. One-on-one interviews were used to deliver the questionnaires. The questions were completed by participants in a 30- to 35-minute window. They received a warm thank-you and appreciation for their significant contribution later.

3. RESULTS AND DISCUSSION

The descriptive statistics are shown in Table 1. A total of 230 responses were used to analyze data and provide results. The table displays the least and maximum response values for each variable. The minimum and maximum levels are 1.50 and

2.70, respectively. The standard deviation values range from 0.455 to 0.598, whereas the mean values range from 3.69 to 3.97.

Table 1. Descriptive statistics for the investment decision model

Variable	N	Min	Max	Mean	Std. Dev
CB	230	2.57	5.00	3.97	0.545
GFB	230	2.57	5.00	3.70	0.510
NB	230	1.50	5.00	3.69	0.582
SQB	230	2.71	5.00	3.77	0.550
BB	230	1.71	5.00	3.72	0.598
LAB	230	2.00	5.00	3.79	0.591
OB	230	2.37	5.00	3.70	0.563
EB	230	2.20	5.00	3.79	0.581
ID	230	2.41	4.83	3.78	0.455
IE	230	0.00	1.00	0.20	0.398
Valid N list wise	230				

Note: CB = Confirmation Bias, GFB = Gamblers Fallacy Bias, NB = Negativity Bias, SQB = Status Quo Bias, BB = Bandwagon effect Bias, LAB = Loss Aversion Bias, OB = Overconfidence Bias, EB = Endowment Bias, ID = Investment Decisions, and IE = Investment Experience.

Table 2 shows the correlation coefficients between independent variables as well as the relationship between independent variables and dependent variables. According to the table, each independent variable has a substantial link with each other. The value of correlation for CB is .436 sig at .000, for GFB it is .413 sig at .000, for NB it is .389 sig at .000, and for SQB it is .306 sig at .000. The BB has a value of .380 sig at .000, LAB has a value of .422 sig at .000, OB has a value of .367 sig at .000, and EB has a value of .373 sig at .000. For IE, the value of r is .144 sig at .029. There is a

substantial positive correlation between all independent factors and the dependent variable (investment decisions).

CB = Confirmation Bias, GFB = Gamblers Fallacy Bias, NB = Negativity Bias, SQB = Status Quo Bias, BB = Bandwagon effect Bias, LAB = Loss Aversion Bias, OB = Overconfidence Bias, EB = Endowment Bias, ID = Investment Decisions, IE = Investment Experience.

Table 3. Regression analysis (N = 230)

Variables	Model 1		Model 2
	β	t	p (Moderating)
CB	.184	2.956	.2943
GFB	.139	2.260	.9115
NB	.109	1.670	.9681
SQB	.016	.265	.9872
BB	.169	2.851	.8767
LAB	.119	1.777	.4059
OB	.163	2.822	.1740
EB	.077	1.209	.9029
Durbin Watson Statistics		1.69	
F		17.475	
ΔR^2		.387	

Note: CB = Confirmation Bias, GFB = Gamblers Fallacy Bias, NB = Negativity Bias, SQB = Status Quo Bias, BB = Bandwagon effect Bias, LAB = Loss Aversion Bias, OB = Overconfidence Bias, EB = Endowment Bias, ID = Investment Decisions, and IE = Investment Experience.

The value of R square is .387, or 38.7%, suggesting that 38.7% of the variance in investment choice is assigned to chosen independent variables of the model, with some additional factors also contributing to investment decision explanation. The Durbin-Watson number is also within the per-

Table 2. Correlational statistics for the investment decision model

Variables	1	2	3	4	5	6	7	8	9	10
IE	—									
CB	.198**									
GFB	.179**	.343**								
NB	.111	.345**	.359**							
SQB	.098	.326**	.316**	.166*						
BB	.114	.252**	.318**	.188**	.339**					
LAB	.112	.387**	.355**	.522**	.286**	.332**				
OB	.126	.252**	.281**	.277**	.278**	.215**	.226**			
EB	.106	.415**	.323**	.324**	.410**	.259**	.367**	.278**		
ID	.144*	.436**	.413**	.389**	.306**	.380**	.422**	.367**	.373**	—

Note: *p < .05. ** p < .01. ***p < .001.

Table 4. Hypothesis testing results

S/NO.	Statement of Hypotheses	Results
1	<i>H1:</i> There is an impact of behavioral biases (Confirmation bias, Negativity bias, Status Quo, Bandwagon effect bias, Loss Aversion bias, Overconfidence bias, Endowment bias, and Gambler's Fallacy bias) on investment decisions	Supported
2	<i>H2:</i> There is an impact of investment experience on the relationship between individual biases and investment decisions	Not Supported
3	<i>H3:</i> There is a significant relationship between behavioral biases	Supported

missible range, since it is near to 2, suggesting that there is no autocorrelation in the data.

Table 3 model 1 shows that the F value for the investment choice model is 17.475 sig at.000. Table 3 model 1 shows that CB has a positive and significant impact on investment decisions ($\beta = 2.956$, $p < 0.01$). The results of the GFB show a favorable association between the GFB and ID ($\beta = 2.260$, $p < 0.01$). NB and ID had a substantial positive relationship ($\beta = 1.670$, $p < 0.01$). The study's results, however, do not confirm the idea that status quo bias and investment choices are significantly linked ($\beta = .265$, $p > 0.05$). According to the bandwagon statistics ($\beta = 2.851$, $p < 0.01$), the BB has a statistically significant impact on investment choices. According to the statistics of aversion bias, LAB has a significant and positive influence on investment decisions ($\beta = 1.777$, $p < 0.01$). Similarly, the findings for the overconfidence bias ($\beta = 2.822$, $p < 0.01$) demonstrate a favorable and major influence of overconfidence bias on investment choices, while the findings for the endowment bias ($\beta = 1.209$, $p > 0.05$) demonstrate no significant influence of endowment bias on choices in investments. All variables have values greater than 1.96, except for SQB, LAB, NB, and EB. However, the values of NB and LAB are significant at the 0.01 significance level, whereas the values of SQB and EB are insignificant, indicating no impact on investment decisions. All other independent variables, on the other hand, have positively and significantly influenced the ID.

The outcomes of the moderating factors are shown in Table 3 model 2. According to the data for CB ($p > 0.01$), investing experience is not a moderating factor that significantly affects the relationship between CB and ID. The fallacy bias for gamblers ($p > 0.01$) demonstrates that moderation has no appreciable influence

on financial choices. IE had little influence on moderation, according to the results for NB ($p > 0.01$), SQB ($p > 0.01$), BEB ($p > 0.01$), LAB ($p > 0.01$), OB ($p > 0.01$), and EB ($p > 0.01$).

The regression findings show that beta and t-values are significant and have a significant influence on investment decisions. Alternative hypotheses for decision bias based on beta coefficients are accepted, but null hypotheses for SQB and EB are not refuted. The outcomes of this research investigation are compatible with current literature and decision theories. According to Bashir, Azam, et al. (2013) behavioral biases such as CB, LAB, and OB have a significant influence on investing decisions. The findings agree with those of Gholizadeh et al. (2013) and Bashir, Azam, et al. (2013). The findings of Reb and Connolly (2007) and Apicella et al. (2014) are congruent with this study's findings, demonstrating that endowment bias has no substantial influence. According to the statistics presented by Subash (2012), experienced investors may easily avoid the GFB. The results of this study contradict his findings. The role of moderating factors has also been investigated in this study. Investment experience is seen as a moderating impact in the relationship between biases and investment decisions. Although insignificant, the results of moderating factors were reported (IE). The findings corroborate those of Gholizadeh et al. (2013) and Park et al. (2010). The moderating variables had no influence on the relationship between behavioral biases and investment decisions, according to the findings. And the reason for this is that either the education offered by financial academics in the context of investing is insufficient, or relevant knowledge is insufficient and out of date, resulting in financial academics having no impact. Behavioral biases are unaffected by investment experience.

CONCLUSION

The overall objective of the current study was to determine the impact of behavioral biases on investment decisions of the investors in different companies registered at the Pakistan Stock Exchange. The research study considered Confirmatory bias, Negativity Bias, Status Quo Bias, Gamblers Fallacy Bias, Overconfidence Bias, Bandwagon effect Bias, Loss Aversion Bias, and Endowment Bias for assessing investment decisions. The results revealed that some of the chosen biases have an influence on the investment decisions of Pakistan Stock Exchange investors. However, the findings show that Status quo bias and Endowment bias do not play a significant role in investors' investment decisions. Furthermore, a moderating role of investment experience has been tested between the relationships of all biases and investment decisions of investors for Pakistan Stock Exchange. Investment experience is found as a factor that can provide more strength to the relationships of several biases and the decision. As per findings of the study, when investors have more behavioral biases, they will have good investment decisions. Investment experience also play a vital role for the decisions of investors.

This study illuminates several aspects of behavioral finance and behavioral biases. This study also highlights the link between judgement biases and investing decisions. The study's conclusions can be used by policymakers to design logical protocols for investors to follow when making judgements. Policymakers of Pakistan Stock Exchange can develop better plans and more successfully enforce them if they understand the behavior of their investors. In this study, the moderating effect is crucial. So far, no study has been discovered that investigates the moderating impact of investment experience on the link between choice biases and investment decisions. The study contributes to the corpus of knowledge by providing empirical evidence of the moderating impact.

Only primary data were obtained to assess the study, however secondary data is more valuable than simply responding to surveys since the brokerage firms are not developed enough to give secondary data. The study might be repeated in the future with secondary data to provide more trustworthy results.

This study is also constrained by time and geography. It is recommended to conduct the same study on two additional stock exchanges (Lahore Stock Exchange and Karachi Stock Exchange) and compare the results of these studies in the future.

AUTHOR CONTRIBUTIONS

Conceptualization: Saima Aziz, Shahid Mehmood, Anita Tangl.

Data curation: Saima Aziz, Shahid Mehmood.

Formal analysis: Muhammad Asif Khan.

Funding acquisition: Anita Tangl.

Investigation: Anita Tangl.

Software: Muhammad Asif Khan.

Supervision: Muhammad Asif Khan, Anita Tangl.

Validation: Muhammad Asif Khan.

Writing – original draft: Saima Aziz, Shahid Mehmood, Muhammad Asif Khan, Anita Tangl.

Writing – review & editing: Saima Aziz, Muhammad Asif Khan, Anita Tangl.

REFERENCES

1. Abrahamson, E. (1991). Managerial fads and fashions: The diffusion and rejection of innovations. *Academy of Management Review*, 16(3), 586-612. <https://doi.org/10.2307/258919>
2. Adielyani, D., & Mawardi, W. (2020). The influence of overconfidence, herding behavior, and risk tolerance on stock investment decisions: The empirical study of millennial investors in Sema-

- rang City. *Jurnal Maksipreneur: Manajemen, Koperasi, dan Entrepreneurship*, 10(1), 89-101. <http://dx.doi.org/10.30588/jmp.v10i1.691>
3. Ahmad, M., & Shah, S. Z. A. (2020). Overconfidence heuristic-driven bias in investment decision-making and performance: mediating effects of risk perception and moderating effects of financial literacy. *Journal of Economic and Administrative Sciences*, 38(1), 60-90. <https://doi.org/10.1108/JEAS-07-2020-0116>
 4. Apicella, C. L., Azevedo, E. M., Christakis, N. A., & Fowler, J. H. (2014). Evolutionary origins of the endowment effect: Evidence from hunter-gatherers. *American Economic Review*, 104(6), 1793-1805. Retrieved from <https://www.aeaweb.org/articles?id=10.1257/aer.104.6.1793>
 5. Arshad, I. (2019). *Investment intentions model of Pakistani investors*. Retrieved from <https://etd.uum.edu.my/8415/>
 6. Athief, F.H.N., & Ma'ruf, A. (2023). Tracing the asymmetry of religiosity-based loyalty of Islamic bank depositors. *Banks and Bank Systems*, 18(1), 1-13. [https://doi.org/10.21511/bbs.18\(1\).2023.01](https://doi.org/10.21511/bbs.18(1).2023.01)
 7. Baker, H. K., & Nofsinger, J. R. (2002). Psychological biases of investors. *Financial Services Review*, 11(2), 97-116. Retrieved from <https://go.gale.com/ps/i.do?p=AO NE&u=googlescholar&id=GALE|A149166064&v=2.1&it=r&sid=A ONE&asid=76a27d17>
 8. Baker, H. K., Kumar, S., Goyal, N., & Gaur, V. (2019). How financial literacy and demographic variables relate to behavioral biases. *Managerial Finance*, 45(1), 124-146. <https://doi.org/10.1108/MF-01-2018-0003>
 9. Banerji, J., Kundu, K., & Alam, P. A. (2022). The Impact of Behavioral Biases on Individuals' Financial Choices under Uncertainty: An Empirical Approach. *Business Perspectives and Research*, 22785337221098287. <http://dx.doi.org/10.1177/22785337221098287>
 10. Barberis, N., & Thaler, R. (2003). A survey of behavioral finance. *Handbook of the Economics of Finance*, 1, 1053-1128. Retrieved from <https://www.nber.org/papers/w9222>
 11. Bashir, T., Azam, N., Butt, A. A., Javed, A., & Tanvir, A. (2013). Are behavioral biases influenced by demographic characteristics & personality traits? Evidence from Pakistan. *European Scientific Journal*, 9(29). Retrieved from <https://core.ac.uk/display/328023864>
 12. Bashir, T., Javed, A., Usman, A., Meer, U. I., & Naseem, M. M. (2013). Empirical testing of heuristics interrupting the investor's rational decision making. *European Scientific Journal*, 9(28). Retrieved from <https://core.ac.uk/download/pdf/236418178.pdf>
 13. Baumann, L., Prokoph, S., Gabriel, C., Freudenberg, U., Werner, C., & Beck-Sickinger, A. G. (2012). A novel, biased-like SDF-1 derivative acts synergistically with starPEG-based heparin hydrogels and improves eEPC migration in vitro. *Journal of Controlled Release*, 162(1), 68-75. <https://doi.org/10.1016/j.jconrel.2012.04.049>
 14. Baumann, S. (2012). *How to amend biased risk perception in enterprise risk management*. Retrieved from <https://opus4.kobv.de/opus4-hwr/frontdoor/index/index/docId/66>
 15. Baumeister, R. F., Bratslavsky, E., Finkenauer, C., & Vohs, K. D. (2001). Bad is stronger than good. *Review of General Psychology*, 5(4), 323-370. <https://doi.org/10.1037/1089-2680.5.4.323>
 16. Blikhar, M., Ostapenko , O., Khomyshyn , I., Ostapenko , L., & Vinichuk, M. (2023). "Transformation" of hired labor as one of the conditions for reforming labor legislation of ukraine: economic and legal dimension. *Financial and Credit Activity Problems of Theory and Practice*, 1(48), 351-361. <https://doi.org/10.55643/fcaptp.1.48.2023.3969>
 17. Chen, G., Kim, K. A., Nofsinger, J. R., & Rui, O. M. (2007). Trading performance, disposition effect, overconfidence, representativeness bias, and experience of emerging market investors. *Journal of Behavioral Decision Making*, 20(4), 425-451. <https://doi.org/10.1002/bdm.561>
 18. Danylshyn, B., Bondarenko, O., Gudz, M., Ptashchenko, O., Mohylova, A., & Radkevych, L. (2023). Marketing Tools to Increase Regional Investment Attractiveness. *Review of Economics and Finance*, 21, 1101-1108. Retrieved from https://refpress.org/wp-content/uploads/2023/08/Radkevych_REF.pdf
 19. Dervishaj, B. (2021). Psychological Biases, Main Factors of Financial Behaviour-A Literature Review. *European Journal of Medicine and Natural Sciences*, 4(1), 27-44. Retrieved from <https://revistia.com/index.php/ejmn/article/view/5038>
 20. Elliott, W. B., Hodge, F. D., & Jackson, K. E. (2008). The association between nonprofessional investors' information choices and their portfolio returns: The importance of investing experience. *Contemporary Accounting Research*, 25(2), 473-498. <http://dx.doi.org/10.2139/ssrn.817044>
 21. Fiol, C. M., & O'Connor, E. J. (2003). Waking up! Mindfulness in the face of bandwagons. *Academy of Management Review*, 28(1), 54-70. <https://doi.org/10.2307/30040689>
 22. Gholizadeh, M. H., Shakerinia, I., & Sabet, S. Z. (2013). The role of behavioral biases on Investment Decisions Case studies: Tehran stock. *International Research Journal of Applied and Basic Sciences*, 4(4), 819-824. Retrieved from <https://paper.researchbib.com/>
 23. Govender, K., & David, E. (2023). Experience and satisfaction: Exploring students' perceptions of private and public higher education services. *Problems and Perspectives in Management*, 21(2), 371-382. [https://doi.org/10.21511/ppm.21\(2\).2023.36](https://doi.org/10.21511/ppm.21(2).2023.36)
 24. Haigh, M. S., & List, J. A. (2005). Do professional traders exhibit myopic loss aversion? An experimental analysis. *The Journal of Finance*, 60(1), 523-534. <https://doi.org/10.1111/j.1540-6261.2005.00737.x>
 25. Hasan, A., Riaz, Z., & Nakpodia, F. (2023). Explicating the contextuality of corporate governance through ownership structure and

- family management: evidence from an emerging economy. *Corporate Governance: The International Journal of Business in Society*. <https://doi.org/10.1108/CG-08-2022-0332>
26. Hibbing, J. R., Smith, K. B., & Alford, J. R. (2014). Differences in negativity bias underlie variations in political ideology. *Behavioral and Brain Sciences*, 37(3), 297-307. <https://doi.org/10.1017/s0140525x13001192>
27. Horák, M., Kukučková, S., & Dobeš, K. (2022). Exploring behavioral barriers and interventions in retirement savings: Findings from online focus groups among university students. *Investment Management and Financial Innovations*, 19(2), 154-166. [https://doi.org/10.21511/imfi.19\(2\).2022.13](https://doi.org/10.21511/imfi.19(2).2022.13)
28. Hung, A., Parker, A. M., & Yoong, J. (2009). *Defining and measuring financial literacy*. Retrieved from https://www.rand.org/content/dam/rand/pubs/working_papers/2009/RAND_WR708.pdf
29. Jabes, K. (2011). *The Effect of Investors Psychology on Investment Decision Making: The Case of Nairobi Securities Exchange*. Retrieved from <http://erepository.uonbi.ac.ke/handle/11295/9656>
30. Jarrar, A. (2021). The association between cognitive biases and the quality of strategic decision making: Evidence from Jordanian banks. *Banks and Bank Systems*, 16(2), 1-11. [https://doi.org/10.21511/bbs.16\(2\).2021.01](https://doi.org/10.21511/bbs.16(2).2021.01)
31. Jonas, E., Schulz-Hardt, S., Frey, D., & Thelen, N. (2001). Confirmation bias in sequential information search after preliminary decisions: an expansion of dissonance theoretical research on selective exposure to information. *Journal of Personality and Social Psychology*, 80(4), 557. <https://doi.org/10.1037/0022-3514.80.4.557>
32. Kahneman, D., & Tversky A. (1979). *Prospect theory: an analysis of decision under risk* (pp. 263-292). <https://doi.org/10.2307/1914185>
33. Kahneman, D., & Tversky, A. (1979a). *On the interpretation of intuitive probability: A reply to Jonathan Cohen*. [https://doi.org/10.1016/0010-0277\(79\)90024-6](https://doi.org/10.1016/0010-0277(79)90024-6)
34. Kahneman, D., Knetsch, J. L., & Thaler, R. H. (1991). Anomalies: The endowment effect, loss aversion, and status quo bias. *Journal of Economic Perspectives*, 5(1), 193-206. Retrieved from <https://www.aeaweb.org/articles?id=10.1257/jep.5.1.193>
35. Katz, M. L., & Shapiro, C. (1985). Network externalities, competition, and compatibility. *The American Economic Review*, 75(3), 424-440. Retrieved from https://neconomides.stern.nyu.edu/networks/phdcourse/Katz_Shapiro_Network_externalities_competition_and_compatibility.pdf
36. Kida, T., Moreno, K. K., & Smith, J. F. (2010). Investment decision making: do experienced decision makers fall prey to the paradox of choice? *The Journal of Behavioral Finance*, 11(1), 21-30. <https://doi.org/10.1080/15427561003590001>
37. Korniotis, G. M., & Kumar, A. (2009). Do behavioral biases adversely affect the macro-economy? SSRN, 1330147. <http://dx.doi.org/10.2139/ssrn.1216163>
38. Korniotis, G. M., & Kumar, A. (2011a). Do behavioral biases adversely affect the macro-economy? *The Review of Financial Studies*, 24(5), 1513-1559. <http://dx.doi.org/10.2139/ssrn.1216163>
39. Korniotis, G. M., & Kumar, A. (2011b). Do older investors make better investment decisions? *The Review of Economics and Statistics*, 93(1), 244-265. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=767125
40. Kotieno, J. G. O. (2012). *The effect of investor psychology on investment decision making: the case of Nairobi Securities Exchange*. Retrieved from <http://erepository.uonbi.ac.ke/handle/11295/9656>
41. Lovric, M. (2011). *Behavioral finance and agent-based artificial markets*.
42. Madaan, G., & Singh, S. (2019). An analysis of behavioral biases in investment decision-making. *International Journal of Financial Research*, 10(4), 55-67. <http://dx.doi.org/10.5430/ijfr.v10n4p55>
43. McGuire, E. (2004). *Investment Decisions: A Study of the Role Played by Past Experiences*. Retrieved from <https://repository.upenn.edu/server/api/core/bitstreams/2bc9cc88-67f5-4b5b-bd2d-eb65a0d7e365/content>
44. Mokhtar, A. I. (2014). Behavioral finance: investor psychology perspective. *Journal of Finance and Investment Analysis*, 3(2), 41-60. Retrieved from <https://www.sciencpress.com/>
45. Morewedge, C. K. (2009). Negativity bias in attribution of external agency. *Journal of Experimental Psychology: General*, 138(4), 535. <https://doi.org/10.1037/a0016796>
46. Nguyen, M. T. N. (2023). Examining contagion effects between global crude oil prices and the Southeast Asian stock markets during the COVID-19 pandemic. *Investment Management and Financial Innovations*, 20(1), 77-87. [https://doi.org/10.21511/imfi.20\(1\).2023.08](https://doi.org/10.21511/imfi.20(1).2023.08)
47. Nickerson, R. S. (1998). Confirmation bias: A ubiquitous phenomenon in many guises. *Review of General Psychology*, 2(2), 175-220. <http://dx.doi.org/10.1037/1089-2680.2.2.175>
48. Park, J., Konana, P., Gu, B., Kumar, A., & Raghunathan, R. (2010). *Confirmation bias, overconfidence, and investment performance: Evidence from stock message boards* (McCombs research paper series no. IROM-07-10). Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1639470
49. Parveen, S., Satti, Z. W., Subhan, Q. A., & Jamil, S. (2020). Exploring market overreaction, investors' sentiments and investment decisions in an emerging stock market. *Borsa Istanbul Review*, 20(3), 224-235. <https://doi.org/10.1016/j.bir.2020.02.002>
50. Reb, J., & Connolly, T. (2007). Possession, feelings of ownership and the endowment effect. *Judgment and Decision Making*, 2(2), 107-114. Retrieved from <https://psycnet.apa.org/doi/10.1017/S1930297500000085>

51. Rongyu, H. (2023). *Validity verification of Mental Accounting in Public Goods Payment*. Retrieved from <https://econpapers.repec.org/paper/wapwpaper/2213.htm>
52. Sadiq, M. (2015). *The Effects of Influential Behavioural Factors on Investors Decision Making in Stock Market of Pakistan*. Retrieved from <http://eprints.utm.my/54751/1/MisbahSadiqPFM2015.pdf>
53. Sahi, S. K., Arora, A. P., & Dhameja, N. (2013). An exploratory inquiry into the psychological biases in financial investment behavior. *Journal of Behavioral Finance*, 14(2), 94-103. <https://doi.org/10.1080/15427560.2013.790387>
54. Samuelson, W., & Zeckhauser, R. (1988). Status quo bias in decision making. *Journal of Risk and Uncertainty*, 1, 7-59. Retrieved from <https://link.springer.com/article/10.1007/BF00055564>
55. Serpeninova, Y., Lehenchuk, S., Mateášová, M., Ostapchuk, T., & Polishchuk, I. (2022). Impact of intellectual capital on profitability: Evidence from software development companies in the Slovak Republic. *Problems and Perspectives in Management*, 20(2), 411-425. [https://doi.org/10.21511/ppm.20\(2\).2022.34](https://doi.org/10.21511/ppm.20(2).2022.34)
56. Sha, N., & Ismail, M. Y. (2021). Behavioral investor types and financial market players in Oman. *The Journal of Asian Finance, Economics and Business*, 8(1), 285-294. <http://dx.doi.org/10.13106/jafeb.2021.vol8.no1.285>
57. Shavit, T., Giorgetta, C., Shani, Y., & Ferlazzo, F. (2010). Using an eye tracker to examine behavioral biases in investment tasks: An experimental study. *Journal of Behavioral Finance*, 11(4), 185-194. <http://dx.doi.org/10.1080/15427560.2010.526536>
58. Singh, S. (2012). Investor irrationality and self-defeating behavior: Insights from behavioral finance. *Journal of Global Business Management*, 8(1), 116. Retrieved from <https://www.proquest.com/openview/92b3e92b051473b0916f85dc2308bdde/1.pdf?pq-orignsite=gscholar&cbl=406316>
59. Subash, R. (2012). *Role of behavioral finance in portfolio investment decisions: Evidence from India*. Retrieved from <https://dspace.cuni.cz/handle/20.500.11956/43150>
60. Taylor, R. N. (1975). Age and experience as determinants of managerial information processing and decision making performance. *Academy of Management Journal*, 18(1), 74-81. <https://doi.org/10.2307/255626>
61. Toma, F.-M., Cepoi, C.-O., Kubinschi, M. N., & Miyakoshi, M. (2023). Gazing through the bubble: an experimental investigation into financial risk-taking using eye-tracking. *Financial Innovation*, 9(1), 1-27. <https://doi.org/10.1186/s40854-022-00444-4>
62. Tversky, A., & Kahneman, D. (1971). Belief in the law of small numbers. *Psychological Bulletin*, 76(2), 105. Retrieved from <http://stats.org.uk/statistical-inference/TverskyKahneman1971.pdf>
63. Vaish, A., Grossmann, T., & Woodward, A. J. P. B. (2008). *Not all emotions are created equal: the negativity bias in social-emotional development*. <https://doi.org/10.1037/F0033-2909.134.3.383>
64. Volosovych, S., Sholoiko, A., & Shevchenko, L. (2023). Cryptocurrency market transformation during pandemic COVID-19. *Financial and Credit Activity Problems of Theory and Practice*, 1(48), 114-126. <https://doi.org/10.55643/fcappt.1.48.2023.3949>
65. Wason, P. C. (1960). On the failure to eliminate hypotheses in a conceptual task. *Quarterly Journal of Experimental Psychology*, 12(3), 129-140. <https://doi.org/10.1080/17470216008416717>
66. Xue, G., He, Q., Lei, X., Chen, C., Liu, Y., Chen, C., Lu, Zh.L., Dong, Q., & Bechara, A. (2012). *The gambler's fallacy is associated with weak affective decision making but strong cognitive ability*. <https://doi.org/10.1371/journal.pone.0047019>
67. Yasmin, F., & Ferdaous, J. (2023). Behavioral biases affecting investment decisions of capital market investors in Bangladesh: A behavioral finance approach. *Investment Management and Financial Innovations*, 20(2), 149-159. [https://doi.org/10.21511/imfi.20\(2\).2023.13](https://doi.org/10.21511/imfi.20(2).2023.13)
68. Yevdokimov, Y., Melnyk, V., Melnyk, L., Dehtyarova, I. (2022). Socio-economic innovations in systems analysis: environmental and economic aspects. *International Journal of Environmental Technology and Management*, 25(1-2), 134-153. <http://dx.doi.org/10.1504/IJETM.2022.120713>
69. Yuan, X., Qin, M., Zhong, Y., & Nicoleta-Claudia, M. (2023). Financial roles in green investment based on the quantile connectedness. *Energy Economics*, 117, 106481. <https://doi.org/10.1016/j.eneco.2022.106481>