



Addis Ababa University College of Business and Economics

School of Commerce

Department of Accounting and Finance

MSc in Corporate Finance

**THE EFFECT OF BEHAVIORAL FACTORS ON REAL ESTATE
INVESTMENT DECISION IN ADDIS ABABA ETHIOPIA**

By: Kassahun Workneh

June, 2025

Addis Ababa, Ethiopia

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INVESTMENT DECISION IN ADDIS ABABA ETHIOPIA**

**(A Thesis Submitted to Department of Accounting and Finance for the
Partial Fulfillment of the Required for the Award of MSc in Corporate
Finance)**

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GSE/3694/14

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June, 2025

Addis Ababa, Ethiopia

DECLARATION

I hereby declare that this study entitled “The effect of behavioral factors on real estate investment decision in Addis Ababa, Ethiopia” is my original work prepared under the guidance of my advisor Tesfa Nega (Ph.D). This paper is submitted in partial fulfilment of the requirement for the award of MSc in corporate finance and it has not been previously submitted to any diploma or degree in any college or university. I would like also to confirm that all the sources of materials used in this study are duly acknowledged.

By: Kassahun Workneh

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LETTER OF CERTIFICATION

This is to certify that Kassahun Workneh carried out his study on the topic entitled “The effect of behavioral factors on real estate investment decision in Addis Ababa, Ethiopia”. This work is original in nature and suitable for submission for the award of the MSc in corporate finance.

Dr. Tesfa Nega
(The research advisor)

Signature

Date

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LIST OF ABBREVIATIONS

ANC:	Anchoring
AVA:	Availability
CFI:	Comparative Fit Index
EMH:	Efficient Market Hypothesis
ETB:	Ethiopian Birr
FOMO:	Fear of missing out
GAM:	Gambler's fallacy
GDP:	Gross Domestic Product
HER:	Herding
INV:	Investment decision
LOS:	Loss aversion
MEN:	Mental accounting
NBE:	National Bank of Ethiopia
OVE:	Overconfidence
OLS:	Ordinary Least Squares
REG:	Regret aversion
REP:	Representativeness
USD:	United State Dollar

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ABSTRACT

This study investigates how behavioral factors influence individual real estate investment decisions in Addis Ababa, Ethiopia. It focuses on three objectives: assessing heuristic based biases, examining prospect theory based biases, and evaluating the impact of herding behavior on individual real estate investors' investment decision in Addis Ababa, Ethiopia. The study, grounded in behavioral finance theories, adopts a positivist philosophy and employs a quantitative approach with explanatory and descriptive research designs. Data were collected from 140 individual real estate investors using a structured Likert-scale questionnaire, validated through a pilot study and Cronbach's Alpha. Using descriptive statistics and multiple regression analysis, the study examines nine behavioral biases: gambler's fallacy, representativeness, availability, anchoring, overconfidence, mental accounting, regret aversion, loss aversion, and herding. Results show that gambler's fallacy, availability, overconfidence, regret aversion, and herding negatively affect investment decisions, often resulting in suboptimal decision, while representativeness, anchoring, mental accounting, and loss aversion have a positive influence and are associated with more favorable investment outcomes. The findings underscore the significant role of behavioral biases in shaping real estate investment decisions, highlighting the need for investor awareness and informed policy interventions. It recommends that investors incorporate behavioral awareness into decision making and urges policymakers, especially the Ministry of Urban and Infrastructure Development, to design education programs that mitigate the impact of cognitive biases and reduce noise trading in Ethiopia's real estate sector.

Keywords: Behavioral Finance, Real Estate Investment, Heuristics, Prospect Theory, Herding Behavior, Investment Decisions, Addis Ababa

CHAPTER ONE

1. INTRODUCTION

1.1 Background of the Study

Behavioural finance, as defined by Sewell (2010), explores the influence of psychological factors on the financial decision making of individuals and groups, and how these behaviours affect market outcomes. It provides insight into why and how markets may become inefficient, challenging the traditional financial assumption that all investors behave rationally. According to Shefrin (1999), behavioural finance acknowledges that market respondents often deviate from rationality due to various psychological and behavioural influences.

Traditional finance theories are built on the premise that investors are rational and operate in frictionless markets, always making logical choices. Models such as the Efficient Market Hypothesis (Fama, 1970), Modern Portfolio Theory (Markowitz, 1952), and the Capital Asset Pricing Model (CAPM) assume investors aim to optimize utility and make consistent, risk averse decisions. However, these theories fail to explain many real world anomalies and irrational investor behaviors. Behavioral finance emerged to address these gaps, recognizing that psychological factors such as emotions, heuristics, and social influences often lead individuals to make suboptimal investment decisions (Shefrin and Statman, 1985; Shleifer, 2000).

Real estate has long been a preferred investment avenue for many, offering the potential for stable income, portfolio diversification, and long-term capital growth (Avci and Erzurumlu, 2023). Investors typically commit capital to real estate with the goal of future financial returns, often at the cost of current consumption (Hacıevliyagil et al., 2022). These returns, however, are uncertain and subject to various risks. Real estate investment also offers other perceived benefits, such as protection from inflation, tax advantages, and enhanced social status (Jayanthi and Saravanakumar, 2022).

Direct real estate investment includes holdings such as land, houses, and apartments (Sharmila Devi and Perumandla, 2023). These assets are typically traded in private markets characterized by high transaction costs, decentralized trading, and pricing inefficiencies (Parrikar, 2018). Despite these challenges, real estate remains popular due to its perceived stability and return potential. Sharmila Devi and Perumandla (2023) also suggest that declining interest rates and stock market volatility have driven investors to shift from traditional financial instruments to tangible assets like real estate. As such, real estate investment is one of the most significant financial decisions individuals make and often involves complex psychological and cognitive processing (Wangzhou et al., 2021).

In Ethiopia, real estate has become a prominent investment sector (Immanuel and Andualem, 2023). The land lease auction system in Addis Ababa has led to skyrocketing property prices, with some land parcels selling for up to 187 times the official floor price. Recent bids reaching up to USD 12,630 per square meter reflect a sharp upward trend in land value. When compared globally, countries like France, Israel, and Taiwan also exhibit high property costs for example, France has an average price of USD 14,808 per m². By contrast, developed land in South Africa and Egypt sells for USD 1,700 and USD 831 per m², respectively (Negatu, 2023). Notably, the quoted Ethiopian prices are for undeveloped land, making the trend even more remarkable.

The question of whether a real estate bubble is forming in Ethiopia is complex. Local investors operate under unique circumstances, with limited investment alternatives and restricted access to mortgage loans. Real estate is often viewed as a hedge against inflation rather than a purely commercial investment. Many property purchases rely on personal savings or family support, rather than institutional financing. As a result, the risk of large scale foreclosures, common in other countries during market crashes, is relatively low in Ethiopia (Negatu, 2023).

While there is growing interest in the behavioural aspects of investment decisions, most empirical research has focused on stock markets, often overlooking real estate as an alternative asset class. Studies by Lam et al. (2023), Cascao et al. (2022), Kinatta et al. (2022), Pandey and Jessica (2017), Hoxha and Hasani (2023), and others have examined

behavioural influences on investment decisions, generally supporting key concepts of behavioural finance. However, their findings remain inconclusive and sometimes contradictory, especially regarding which behavioural factors most significantly impact decision making.

This underscores the need for further investigation particularly in markets like Ethiopia's, where individual investors play a central role in real estate activity. This study fills a critical gap by empirically examining the effects of heuristics, prospect theory biases, and herding behaviour on real estate investment decisions in Addis Ababa, Ethiopia. It offers valuable insights in the context of one of Africa's fastest growing economies, where the real estate sector is rapidly expanding.

1.2 Background on Real Estate Investment in Ethiopia

The real estate and construction sectors are among the most dynamic components of Ethiopia's economy, jointly contributing approximately 12.5% to the nation's Gross Domestic Product (GDP). Of this contribution, the real estate sector alone accounts for around 60%, with the construction industry comprising the remainder (Natnael, 2018).

These sectors have experienced an average annual growth rate of 25% in recent years, significantly outpacing the national GDP growth rate of 10%. This robust expansion, especially in major urban centres such as Addis Ababa, has been driven by increasing domestic and foreign investor interest, spurred by rising housing demand and rapid urbanization.

The liberalization of Ethiopia's economy in 1991 marked a turning point in encouraging private sector participation. In the years since, successive government initiatives have fostered a conducive investment climate for real estate development (Immanuel and Andualem, 2023). As a result, real estate has emerged as an increasingly attractive investment avenue, supported by favourable policy frameworks and macroeconomic stability.

According to the 2024 Financial Stability Report by the National Bank of Ethiopia, the national economy has maintained strong momentum; with real GDP growth sustained at nearly 6.0% annually well above the Sub Saharan Africa average of 3.3% in 2023 and a projected 4.0% in 2024. These trends reflect the government's continued commitment to private sector led growth, particularly in the real estate domain.

Addis Ababa, Ethiopia's capital and largest urban centre, exemplifies this growth trajectory. The city's population increased from 3.38 million in the 2007 census to nearly 4 million by 2017, driven by consistent annual population growth. Although national censuses planned for 2017 and 2018 were postponed due to security concerns, Addis Ababa remains a focal point of economic activity and demographic expansion. With its unique chartered city-state status, Addis Ababa functions both as a city and a regional state and holds the distinction of being the largest city in the world located within a landlocked country.

The commercial significance of real estate in Ethiopia is underscored by the proliferation of investment firms in the sector. As noted by Immanuel and Andualem (2023), approximately 630 real estate investment companies operate across the country, 125 of which are headquartered in Addis Ababa. Collectively, these firms represent a registered investment capital of 3.5 billion Ethiopian birr (ETB). Over the past two decades, the sector has played a pivotal role in Ethiopia's domestic economic development, with real estate revenues showing consistent annual growth (Fortune, 2018).

In Addis Ababa alone, approximately 5.5 million square meters of land have been allocated to real estate developers through various mechanisms, including public auctions, negotiated leases, and in some cases, free land grants. Land prices at auction are determined via competitive bidding, with plots awarded to developers offering the highest price per square meter. These land allocation strategies have significantly shaped the spatial and economic landscape of the city.

1.3 Statement of the Problem

A growing body of research has examined the systematic errors investors make when making financial decisions. Many investors overly focus on market signals and financial analyses, often leading to flawed judgments and distorted decision-making. Behavioural finance attempts to explain how emotional and psychological factors influence investment choices (Subrahmanyam, 2007).

A compelling example is drawn from a prominent Ethiopian real estate developer, who shared his experience with the researcher, also serving as his financial advisor. Despite his extensive involvement in real estate and business, this developer made a critical decision based primarily on peer influence and prevailing market trends. He committed a substantial portion of his assets and took on large loans to expand his real estate projects across multiple sub cities in Addis Ababa. While he managed to complete several housing developments, he is now facing difficulties in selling the properties as anticipated. As a result, his bank has issued a final warning regarding loan default, threatening legal action unless repayment terms are met. This situation exemplifies the divergence between classical economic assumptions and actual investment behavior observed in Ethiopian real estate markets.

Statman (2019) observed that many investors are influenced by cognitive and emotional biases, often leading them to purchase overpriced properties and take on unsustainable mortgage obligations. Although behavioural finance has been critiqued for its lack of systematic rigor compared to traditional finance particularly in areas such as portfolio construction and asset pricing it offers valuable insights into the inconsistencies between theoretical models and actual investor behaviour.

In Ethiopia, real estate is not only a financial asset but also a deeply emotional investment, symbolizing stability and success. However, an emerging trend is raising concern while property values continue to increase; rental yields remain disproportionately low, often falling below 3% (Negatu, 2023). This mismatch between asset prices and their income generating potential has raised alarms among financial experts regarding the long term sustainability of the market. Persistently low rental yields

suggest inflated property values, potentially indicating speculative activity that could lead to a market correction or even a bubble. Despite Ethiopia's unique market conditions including limited investment options, strong cultural preferences for real estate, and self-funded property purchases the principles of sound property valuation remain applicable. Ideally, rental yields should align with or exceed borrowing costs. The current divergence points to underlying vulnerabilities that may be temporarily obscured by restricted mortgage access and informal financing methods.

Empirical studies, such as Hoxha and Hasani (2023), confirm that investor behaviour significantly influences real estate investment outcomes. Many investors demonstrate a lack of self-discipline and rely heavily on personal biases rather than objective analysis, often resulting in irrational decisions.

In the Ethiopian context, there is a notable scarcity of empirical studies exploring the behavioural aspects of real estate investment. Traditional finance theories often fail to account for the emotional and psychological drivers of investor behaviour. Furthermore, behavioural finance itself has been criticized for lacking a unified theoretical framework, which limits its broader application. The aforementioned real world example of an emotionally driven investment decision, made in a market where rental yields are lower than prevailing mortgage interest rates, underscores the need for a deeper understanding of these behaviours. Most existing behavioural finance studies primarily focus on stock markets, with limited application to real estate investment decisions.

This study draws on prospect theory (Kahneman and Tversky, 1979), heuristics theory (Tversky and Kahneman, 1974), and herding theory (Banerjee, 1992), all of which suggest that investor decisions are frequently shaped by cognitive biases rather than rational evaluations. Accordingly, the study aims to investigate the impact of behavioral biases namely, gambler's fallacy, representativeness, availability, anchoring, overconfidence, mental accounting, regret aversion, loss aversion, and herding on real estate investment decisions in Addis Ababa, Ethiopia.

1.4 Research Questions

In view of the problems, the central question of this study is: What are the effects of behavioral factors on real estate investors' investment decision in Addis Ababa, Ethiopia? Specifically, the following sub-questions were raised:

- i. How do heuristic based behavioral factors affect investment decision among real estate investors in Addis Ababa, Ethiopia?
- ii. How do prospect based behavior factors affect investment decision among real estate investors in Addis Ababa, Ethiopia?
- iii. To what extent herding behavioral factor affect investment decision among real estate investors in Addis Ababa, Ethiopia?

1.5 Objective of the Study

The general and specific objectives of the study are presented as follows:

1.5.1 General Objective

The main objective of this study is to have a comprehensive picture of behavioral factors and its effect on investment decision among real estate investors in Addis Ababa Ethiopia.

1.5.2 Specific Objectives

The specific objectives of the study are:

- i. To examine the effect of heuristic based behavioral biases (gambler's fallacy, representativeness, availability, anchoring and overconfidence) on real estate investors' investment decision in Addis Ababa, Ethiopia.
- ii. To analyze the effect of prospect based behavior biases (mental accounting, regret aversion and loss aversion) on real estate investors' investment decision in Addis Ababa, Ethiopia.
- iii. To investigate the effect of herding behavior on real estate investors' investment decision in Addis Ababa, Ethiopia.

1.6 Research Hypothesis

To answer the specific research questions and to attain the study aims, the following hypotheses in their alternative forms were tested on which different behavioral variables drawn from the reviewed literatures and which are appropriate with the statement of the research issue. The significance level is considered as 0.05 or 5%. The study has the following nine hypotheses.

H1: Gambler's fallacy has a significant effect on real estate investment decision in Addis Ababa Ethiopia.

H2: Representativeness has a significant effect on real estate investment decision in Addis Ababa Ethiopia.

H3: Availability has a significant effect on real estate investment decision in Addis Ababa Ethiopia.

H4: Anchoring has a significant effect on real estate investment decision in Addis Ababa Ethiopia.

H5: Overconfidence has a significant effect on real estate investment decision in Addis Ababa Ethiopia.

H6: Mental accounting has a significant effect on real estate investment decision in Addis Ababa Ethiopia.

H7: Regret aversion has a significant effect on real estate investment decision in Addis Ababa Ethiopia.

H8: Loss aversion has a significant effect on real estate investment decision in Addis Ababa Ethiopia.

H9: Herding has a significant effect on real estate investment decision in Addis Ababa Ethiopia.

1.7 Operational Definition of Terms

The following operational definitions are provided to clarify this study's use of important terms.

Real estate: Is used to mean land, together with air above it and also earth underneath it, and any building or structure on it. It is also known as realty. It includes trading areas such as hotels, restaurants and theatres, commercial offices, residential dwellings,

retailing spaces, factory buildings and other site developments which are stationary.

Investors: Investors in this study are people who invest money with the objective of obtaining return in the future in terms of rental and develop real property and sell them to the end users.

1.8 Significance of the Study

The integration of behavioural finance into real estate investment decision making holds significant implications for a broad range of stakeholders, including individual investors, policymakers, regulators, academic researchers, and the broader field of behavioural finance. Traditional financial models often assume investor rationality; however, behavioural finance provides a framework for understanding the psychological and cognitive factors that frequently lead to suboptimal investment decisions. This study seeks to illuminate these behavioural patterns within the context of real estate investment, particularly in emerging markets such as Ethiopia.

For Individual Investors: The findings of this study will assist investors in identifying and mitigating behavioural biases such as overconfidence, herd behaviour, and loss aversion that can distort rational judgment and lead to inefficient investment choices. By increasing awareness of these biases, the study serves as a practical guide, empowering investors to interpret market signals more objectively and adopt more informed and deliberate real estate investment strategies.

For Policymakers and Regulators: A better understanding of investor psychology will enable policymakers and regulatory bodies to design more effective frameworks for market regulation and oversight. Insights derived from behavioural finance can inform the development of investor education programs, risk assessment tools, and policy interventions tailored to real world decision-making behaviours. Additionally, this research supports more accurate market forecasting by highlighting the psychological dimensions of investor behaviour in the property market.

For the Field of Behavioural Finance: As a relatively nascent field, behavioural finance has primarily focused on capital markets, with limited exploration of its applications in

real asset markets such as real estate. This study addresses that gap by investigating how behavioural biases influence investment decisions in the real estate sector. The findings contribute to the theoretical enrichment of behavioural finance and serve as a foundation for future empirical studies, particularly in under researched contexts like Ethiopia.

For the Researcher: Conducting this research provides a unique opportunity for the researcher to enhance both theoretical understanding and practical expertise in behavioural finance and real estate investment. The study facilitates interdisciplinary learning and contributes to the researcher's academic development, equipping them with analytical tools applicable to both scholarly inquiry and professional practice in investment and finance.

1.9 Scope of the Study

This study was conducted in Addis Ababa, Ethiopia a city characterized by vibrant and expanding real estate activities. Consequently, the findings of the research are context specific and may not be generalizable to other geographic regions with different socio economic and market dynamics. The scope of the study was further delimited to the examination of nine specific behavioural biases: gambler's fallacy, representativeness, availability, anchoring, overconfidence, mental accounting, regret aversion, loss aversion, and herding. These biases were analysed in relation to their influence on individual real estate investment decision making within the city.

Future research could extend the scope by incorporating additional behavioural biases to provide a more comprehensive understanding of investor psychology. Moreover, expanding the geographical coverage beyond Addis Ababa to include other urban and regional areas across Ethiopia would enhance the generalizability and comparative relevance of the findings.

1.10 Limitations of the Study

Like any empirical investigation, this study is subject to certain limitations. First, it focused exclusively on the perceptions of respondents in Addis Ababa, Ethiopia, where the roles of real estate developers and investors are often intertwined. As such, the

findings may have limited applicability in contexts where a clearer distinction exists between these two groups. Second, the study employed a cross-sectional research design, collecting data at a single point in time. While this approach provides a snapshot of behavioural influences on investment decisions, it does not capture changes in investor behaviour over time.

Future research could address these limitations by adopting a longitudinal design to explore how behavioural biases evolve and influence decision-making over extended periods. Additionally, comparative studies across different cities or regions where investor and developer roles are more distinctly defined would further enhance the generalizability and contextual relevance of the findings.

1.11 Organization of the Study

This study is organized into five chapters, each covering specific components of the research:

Chapter 1 introduces the study, presenting the background, an overview of the real estate industry, the problem statement, research questions, study objectives, hypotheses, definitions of key terms, the significance and scope of the study, and the overall structure of the paper.

Chapter 2 reviews relevant literature. It explores various theoretical frameworks and empirical studies related to behavioural finance and investment decision-making.

Chapter 3 outlines the research methodology. This includes the research design, strategy, sampling procedures, data sources, data collection tools, and methods of data analysis used in the study.

Chapter 4 presents the results and discussion. This chapter analyses the empirical findings and interprets them in the context of the research objectives.

Chapter 5 summarizes the key findings and offers conclusions and recommendations. It also highlights the theoretical and practical implications of the research.

CHAPTER TWO

2. REVIEW OF RELATED LITERATURE

2.1 Introduction

In this chapter, the relevant literature that was examined is reviewed. The first section discusses the theoretical and empirical studies in behavioral finance and how it affects investment decision making in general and real estate investment decision making in particular. It finds the behavioral biases that influence investment decision. Finally, the study's theoretical and conceptual framework is presented, along with the operationalization of the construct variables as hypotheses.

2.2 Conceptual Review of the Study

Human nature tries to define every idea in every field of study, but the behavioral finance field cannot rely on a single definition or notion; in fact, the academic community defines behavioral finance formally in their own way (Ahmad, 2024). Several definitions offer a multifaceted perspective that aids in a deeper comprehension of behavioral finance. As Shefrin (1999) stated "Behavioral finance is the application of psychology to financial behavior i.e. the behavior of investment practitioners". "Investor behavior is an important part of behavioral finance, which aids in the understanding and forecasting systematic financial market concerns of psychological decision processes" as per Fromlet (2001). Individual behavior and market events are tightly combined in behavioral finance, which also draws on insights from financial theory and psychology. Behavioral finance is "a science about how psychology influences financial market" as quoted by Forbes (2009). This view focuses on the way psychological aspects, such as cognitive bias, influence people's decisions other than their rationality and willingness to maximize wealth.

According to Sewell (2010), behavioral finance is the study of how psychology affects financial professionals' individual and collective behavior and how that affects markets, which helps to understand why and how markets may be inefficient. According to Zindel et al. (2014), behavioral finance is a science that integrates knowledge of economics, finance, and cognitive psychology to comprehend how financial decisions are made.

Because individuals weigh all available information when making investment decisions, individual investors are thought to be rational by standard finance theories (Devi et al., 2024). Fama (1970) asserts that the core theories of conventional finance support nearly always efficient markets. In efficient markets, investors are seen as logical, objective, and reliable individuals who make the best investment choices free from psychological or emotional influences. Since share prices take into account all available information, the Efficient Market Hypothesis (EMH) suggests that no investor can outperform the market. Market efficiency prevents investors from buying inexpensive assets or selling them at a higher price, and the only way to outperform is to make riskier investments, according to EMH, which holds that share prices in the market are trading at fair value (Fama, 1970).

The conventional finance theory can be reflected in four pillars these include investors are rational, markets are efficient, investors should design their portfolio on the mean variance portfolio principles and expected returns are risk functions and risk only (Statman, 2008). According to Jain et.al (2020), it was presumed prior to the establishment of behavioral finance that there is conventional finance theory that holds true since it informs us that investors are rational and they make thoughtful decisions either based on varied estimates or economic models. Traditional finance theory makes the assumption that all individuals have stable, well-defined preferences and that agents maximize these preferences in a rational way. The theory of the rational man has held sway over economics and finance theory for over 50 years. The rational man is supposed to be economical, rational, informed, and able to compute the probabilities of each option, and then select the optimum option that will maximize his utility at the minimum cost (Simon 1955).

However, after conducting a series of experiments, human decisions were seen to be dependent upon their habits, intuitions, and nature, and cognitive or affective biases (Kahneman, 2013). Behavioral finance has begun to rise as a fresh school of thought after garnering enough data to justify certain behavior on the part of humans versus standard finance theory. Behavioral finance has questioned the paradigm of classical finance theory by drawing attention to the pervasive role of cognitive bias and emotions in investment decisions and psychological influences (Tversky and Kahneman, 1974).

Behavioral finance offers a choice in place of each of the classic or mainstream finance building blocks discussed here above. It holds that investors are "normal" instead of being rational; the markets are inefficient even if they cannot be beaten, investors do not build their portfolio on mean-variance theory and the expected returns are gauged by more than risk (Statman, 2008).

2.3 Theoretical Underpinning/Review of Theories

These part cover theories that underpin the behavioral finance approach. Behavioral economists have borrowed human being cognitive behavior theory evidence from sociology, anthropology, and psychology when looking for to explain different irrational investor behaviors within the investment markets. Behavioral finance theory (De Bondt and Thaler, 1995; Fuller, 1998; Fromlet, 2001) uses behavioral biases in the explanation of the behavior of investors in property markets. The behavioral biases and its influence on property investment decision-making involve two broad behavioral theories such as heuristics and prospect theories (Waweru et al., 2008). Some other researchers have also analyzed the influence of herding factor on investment decision-making (Rahman and Gan, 2020).

Different theories of behavioral finance are put forward by different researchers among them the most well-known theories and this research's interests are; prospect theory, heuristic theory, and herding theory. All the theories are explained in section 2.3.1 to section 2.3.3.

2.3.1 Heuristic Theory

Heuristics are principles that allow individuals to come to a decision and deal with complex and uncertain circumstances intuitively. Heuristics were initially formulated by Kahneman and Tversky during the late 1960s and early 1970s who wrote an enormous amount of papers on heuristics and biases (Cascao et. al., 2022). Tversky and Kahneman (1974) described three broad heuristics which include representativeness, availability and anchoring, whereas new biases were investigated as part of heuristics such as overconfidence, escalation of commitment, hindsight and randomness (Adair et al.,

1994). Heuristics are efficient cognitive processes which ignore some part of the information, with or without intentions (Ahmad, 2024).

A heuristic is a decision rule that utilizes a subset of the information set (Ackert and Deaves, 2009). Gigerenzer and Gaissmaier (2011) propose the following definition of heuristic as "a strategy that ignores part of the information with the aims of making decisions more quickly frugally, and/or accurately than more complex methods. "Shah and Oppenheimer (2008) say every heuristic is an attempt reduction through the utilization of one or more of the subsequent: paying attention to a subset of cues only, decreasing the amount of effort required to retrieve cue value, combining less information or attending to a subset of alternatives only. Therefore, heuristics is also known as "rules of thumb" or mental shortcuts, which are used by finance practitioners individually and collectively in uncertain and complicated settings in an effort to simplify decisions and make them efficient (Ahmad, 2024). Finance professionals and business players are likely to use heuristics with the purpose of reducing the decision making process, in most cases these heuristics are good and helpful when decision makers lack time and information (Waweru et al., 2008), though at times they lead to systematic errors of judgment (Tversky and Kahneman, 1974; Ritter, 2003).

When finance professionals rely on heuristics, they minimize the mental effort required in decision-making, which often results in various behavioral biases. The range of biases stemming from heuristic use in financial practice is extensive and cannot be fully detailed here. According to Rath et al. (2014), the key heuristics that significantly impact investor behavior include representativeness, overconfidence, anchoring, availability, and the gambler's fallacy. These specific biases are explored in the sections that follow.

2.3.1.1 Gambler's Fallacy

The gambler's fallacy refers to the tendency of individuals to perceive patterns in random sequences (Filiz et al., 2018). For example, if a fair coin lands on heads three times in a row, people may wrongly expect the next toss to result in tails (Filiz et al., 2018). Despite this belief, the probability of getting tails on the fourth flip remains 50 percent, assuming the coin is fair based on the earlier outcomes (Filiz et al., 2018). The gambler's fallacy

involves an irrational expectation that a current trend will reverse, leading individuals to believe that positive or negative outcomes are due to change (Waweru et al., 2008). As Ahmad (2024) explains, this fallacy occurs when someone incorrectly assumes that the likelihood of a random event changes based on previous outcomes.

This line of reasoning is flawed because previous events have no impact on the probability of future outcomes (Kenton, 2021). As noted by Suetens and Tyran (2012), the gambler's fallacy involves the mistaken belief that a random, independent event is less likely to occur if it has just happened. This assumption is inaccurate in situations where events occur independently of one another. Waweru et al. (2008) expanded the scope of heuristics by applying the gambler's fallacy to behavioral finance. It reflects a misjudgment where individuals expect a reversal of current trends, potentially causing investors to wrongly believe that gains or losses in the market are about to stop. It is an illusion that whenever something happens with more frequency than predicted in the past, less will happen its way in the future.

2.3.1.2 Representativeness

Representativeness is a type of cognitive heuristic bias, described as a mental shortcut where decisions are influenced by pre-existing mental stereotypes (Shefrin, 2005). It can also be understood as the extent to which an event mirrors the characteristics of its broader population (DeBondt and Thaler, 1995), or, in other words, how closely an event resembles the group it originates from (Kahneman and Tversky, 1974). As per Shefrin (2008) representativeness depends too much on stereotypes and makes individuals predict in a manner that is inappropriate for the given situation. There are two forms of representativeness bias: one is referred to as base rate neglect, and the other is known as sample size neglect.

Base rate neglect refers to a cognitive bias in which individuals rely on irrelevant or inaccurate information when assessing the probability of a particular investment outcome. This often involves using stereotypes in decision-making without properly accounting for the actual base rate associated with those stereotypes (Pompain, 2006). The ignorance of sample size occurs when decision-makers attempt to draw conclusions

from too few examples (Barberis and Thaler, 2003) or mistakenly believe that small samples accurately reflect larger populations (Pompain, 2006). As a result of the representativeness heuristic, individuals tend to make predictions based on limited samples and adjust their beliefs using broad categories rather than detailed, data-driven analysis (Shah et al., 2018).

2.3.1.3 Availability

Tversky and Kahneman (1974) introduced the concept of availability bias, which occurs when individuals judge the frequency of a category or the likelihood of an event based on how easily examples come to mind. In behavioral finance, this bias emerges when investors give excessive weight to readily accessible information and use it to assess the probability of similar future events. This tendency is tied to memory and attention, as people recall information that has captured their focus (Jain et al., 2022). As a result, investors may react excessively to market changes, whether positive or negative. This cognitive bias leads individuals to overestimate the probability of events based on recent or memorable experiences (Jahanzeb, 2012). According to Filbeck et al. (2017), availability bias allows individuals to rely on memories, personal experiences, or even imagined scenarios when making judgments. Since recent events are more easily recalled than those further in the past, this bias often results in systematic errors in decision-making (Tversky and Kahneman, 1974).

2.3.1.4 Anchoring

Tversky and Kahneman (1974) define anchoring bias as a tendency in which individuals base their estimates on an initial value known as the reference point. This bias reflects the human inclination to rely on limited pieces of information such as recent news, trading volume, or single-day returns when making investment decisions (Andersen, 2010). Investors often anchor their judgments to a particular reference, which may be a past event or trend. Anchoring occurs when undue importance is placed on specific information, referred to as the "anchor," influencing subsequent decisions. A first judgment is first formed referred to as an anchor, and then this judgment is used to make adjustments are inadequate (Lieder et al., 2018).

2.3.1.5 Overconfidence

Overconfidence is a type of cognitive heuristic bias, described as “excessive belief in one’s own intuitive reasoning, judgment, and mental capabilities without justification” (Pompian, 2011). Psychologists suggest that this bias leads individuals to overrate their knowledge and level of expertise. Chernoff (2010) says that far too many people overestimate what they are not; those are the victims of overconfidence bias. Pompain (2011) explains that overconfidence takes two forms these are prediction overconfidence and certainty overconfidence. In prediction overconfidence, investors make forecasts using limited information, while in certainty overconfidence; they place too much trust in the accuracy of their own judgments. In both cases, investors have strong faith in their capabilities and assume that their actions will lead to correct outcomes. Overconfidence reflects an inflated perception of one’s personal attributes (Cascao et al., 2023).

2.3.2 Prospect Theory

Prospect theory was first introduced by Kahneman and Tversky in 1979 through their article Prospect Theory: An Analysis of Decision under Risk published in *Econometrica* (Pandey and Jessica, 2018). This theory closely resembles expected utility theory in that individuals are modeled as maximizing a weighted sum of utilities. However, the key difference lies in the use of a value function instead of a traditional utility function, and the weights applied are not actual probabilities (Shiller, 1999).

Prospect theory, as explained by Kahneman and Tversky (1979), suggests that individuals make choices relative to reference points, focusing on perceived gains and losses instead of overall outcomes. Gains and losses are valued differently by different people, and their values are determined using benchmarks. Two key aspects of prospect theory are used in behavioural finance literature to explain the dispositional impact. First, prospective gains and losses are taken into consideration when investors make their choices. In line with prospect theory, individuals assess gains and losses relative to a reference point. They tend to avoid risk when dealing with potential gains but become risk-seeking when faced with potential losses. Second, they act as though they are assessing the decision's effects this behaviour is represented by an S-shaped value

function that is concave for gains and convex for losses. The function of the S-shaped value, which is depicted in the figure below, is the fundamental element of the theory of prospects.

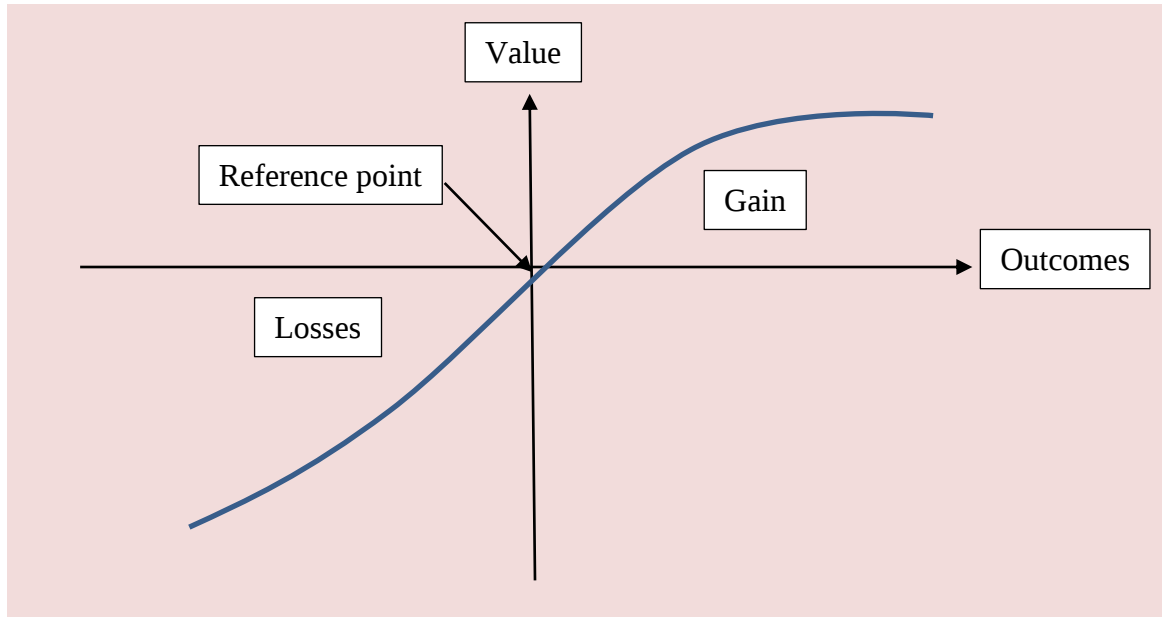


Figure 1 S- Shaped value function of Prospect Theory (Kahneman and Tversky, 1979)

Prospect theory suggests that the shape of the value function illustrates investors' diminishing sensitivity to gains and losses. Jiao (2017) used an experimental approach to explore risk-seeking behavior in the context of losses and risk aversion in the context of gains, emphasizing the impact on investor decisions and identifying prospect theory as a foundational explanation for the disposition effect. According to Jiao (2017), this theory may account for the occurrence of the disposition effect. Prospect theory also encompasses concepts such as loss aversion, regret aversion, and mental accounting, as outlined by Barberis (2013).

2.3.2.1 Mental Accounting.

Thaler (1980) referred to this behavior as the "mental accounting bias," noting that investors manage each part of their portfolio separately. They assign varying costs to different transactions and assess them based on the psychological impact of those costs. Investors generally have a stronger emotional reaction to losses than to gains. Because

losses impose a greater mental burden, which is difficult to overcome, investors tend to avoid taking further risks that might result in additional losses (Tversky and Kahneman, 1992). Investors possess different thoughts and tendencies in relation to multiple financial investments (Thaler, 1999).

All investment decisions are influenced by mental accounting, which contributes to the disposition effect whether in the form of gains or losses. Mental accounting explains how investors categorize their investment opportunities into separate accounts and evaluate each in isolation, ignoring potential interactions between them. Each mental account carries its own perceived value for the investor. When a loss is recognized in any of these accounts, investors may feel compelled to close the position. Since it's possible to exit individual accounts at a loss, this behavior helps explain the occurrence of the disposition effect.

2.3.2.2 Regret Aversion

Regret aversion refers to a tendency where individuals maintain the status quo, having learned that assets which initially appeared promising based on seemingly sound information can later prove to be less favorable (Seiler et al., 2008). Ritov and Baron (1992) associate this with omission bias, where people prefer inaction over taking action. Regret theory suggests that real estate investors tend to delay selling properties that have lost value while accelerating the sale of those that have appreciated (Shefrin and Statman, 1985). Shefrin and Statman (1985) developed regret aversion theory, proposing that investors retain losing stocks and sell winning ones due to the negative emotions experienced after incurring a loss.

Regret aversion relates not only to the financial outcomes of investment decisions but also to the emotional responses tied to gains or losses. As Ahmad (2024) explains, investors experience regret when the choice they made underperforms compared to an alternative they did not pursue, while they feel pride when their chosen option outperforms others. Speculators often seek to avoid regret and chase feelings of pride, which leads them to fall victim to the disposition effect bias. Consequently, the interplay

of regret aversion and pride-seeking behavior contributes to the disposition effect (Ahmad, 2024).

2.3.2.3 Loss Aversion

Tversky and Kahneman (1991), key figures in behavioral finance, introduced the concept of loss aversion, describing it as the idea that losses have a greater emotional impact than equivalent gains. This cognitive bias suggests that investors prioritize preserving capital over seeking growth. They tend to react more strongly to losses than they feel satisfaction from comparable gains (Barberis and Thaler, 2003). This behavior often causes investors to become risk-averse after experiencing a loss, prompting them to sell shares in response to even slight price drops and make irrational decisions (Odean, 1998). Tversky (1995) further defines loss aversion as “the greater impact of the downside than the upside.”

Loss aversion partly explains the strong positive relationship observed between transaction volume and property prices in the real estate market (Beracha and Skiba, 2014). Property investors who are loss-averse exhibit high sensitivity to losses and often anticipate slight price improvements while also fearing potentially unlimited downside risk (Leung and Tsang, 2013). As a result, loss aversion plays a significant role in shaping real estate price dynamics (Bokhari and Geltner, 2011).

2.3.3 Herding Theory

To fully understand herding, it is helpful to examine the various definitions found in existing literature. Banerjee (1992) describes herding as a scenario where individuals follow the crowd, even when their private information suggests they should act differently. According to Christie and Hwang (1995), herding occurs when individuals ignore their personal opinions and make investment choices based on the collective behaviour of the market or by imitating other investors, despite disagreeing with the outcomes. Vieira and Pereira (2015) define herding as a group of investors discarding their own insights and beliefs to mimic the actions of others. Similarly, Patterson and Sharma (2007) explain herding as a situation where multiple investors trade the same stocks on the same side of the market at the same time, disregarding their unique information and replicating the behaviour of others.

Banerjee (1992) also points out that herd behaviour is the tendency to follow others' actions under the assumption that those individuals possess relevant information, even when one's own knowledge is overlooked. Yang et al. (2020) further clarify that herding happens when people abandon their own judgments and beliefs to align their behaviour with that of the majority.

Chen (2017) defines the herding phenomenon as a pattern in which groups of investors consistently imitate others whom they perceive to be more informed when buying or selling the same stocks during a particular period, instead of relying on their personal forecasts and opinions. Thus, herding refers to investors either deliberately or unintentionally mirroring the actions or reactions of others, or basing their decisions solely on overall market trends rather than their individual analyses. Prior studies have identified two forms of herding: rational (or spurious) and intentional (or irrational). Rational herding can result from similar responses to information, identical investment choices, or shared incentives among fund managers. Intentional herding, more common among individual investors than institutional ones (Kim and Wei, 2002), involves blindly copying others' investment decisions without evaluating the available data.

2.3.4 Investment Decision

Investment is a sacrifice to be made for a possible profit in the future (Jaffe and Sirmans, 1989). Investing in any venture involves considering a combination of external and internal factors. External factors include aspects such as a firm's financial statements, inflation rates, current market interest rates, and documentation supporting asset availability (Oehler et al., 2018). Internal factors are primarily psychological in nature, encompassing cognitive, emotional (affective), and behavioral (psychomotor) components (Statman, 2017).

The cognitive domain involves intellectual capabilities like understanding, analysis, application, and evaluation, while the affective domain pertains to emotions, attitudes, ethical behaviour, and feelings (Njo et al., 2019). Psychological biases in behavioural finance often drive investors from rational to irrational behaviour when making decisions (Peters, 2003). According to Mittal (2010), mood and emotions significantly shape an

investor's behaviour, leading to biased or irrational choices. This aligns with Kahneman and Tversky's (2013) assertion that under uncertainty, people tend to deviate from traditional economic theories in their investment decisions.

Brunsson (2014) further supports this view, explaining that uncertainty stems from a lack of confidence in available information and the inherent challenges of decision-making. He notes that uncertainty arises from unstable cognitive structures, fluctuating judgment, and inconsistent estimations. Additionally, internal psychological factors help shape whether an investor tends to seek or avoid risk (Choi, 2020).

Traditionally, property investment is viewed through the lens of utility maximization, where investors are assumed to be rational, self-interested actors with well-defined objectives (Bruin and Flint-Hartle, 2003) who operate in ideal markets with full access to information (Wang, 2000). Consequently, rational decision-making has been modelled as a structured, stage-based process designed to facilitate logical and efficient investment decisions (MacGregor, 2014; Roberts and Henneberry, 2007). These models outline steps ranging from goal setting and criteria formulation to asset selection and post-investment review. However, they often ignore individual differences and subjective behaviours (Farragher and Savage, 2008).

Roberts and Henneberry (2007) integrated key elements from various rational models, identifying a sequence that includes goal setting, decision criteria formulation, market analysis, forecasting, decision implementation, and post-investment evaluation. While useful in theory, such models have faced criticism for their limited applicability in real-world complex scenarios. Gigerenzer and Selten (2001) argue that in complex decision environments, people often focus on either the outcomes or the expected results, bypassing a comprehensive evaluation. As a result, the role of cognition and emotion in decision-making has become more prominent (Boshoff, 2017), leading to a shift toward behavioural models that emphasize human reasoning in navigating investment complexity (Sah et al., 2010).

Diaz (1999) cautions against relying solely on structured models for evaluating investment decisions, noting that human actions are often driven by self-interest but can't always be captured by rigid frameworks. Gallimore and Gray (2002) highlighted that intuitive decisions can sometimes outperform deliberate, staged approaches. They emphasize the importance of evaluating the decision process, context, and the decision maker's abilities to arrive at sound outcomes. Moreover, Chukwudumogu et al. (2018) argue that moral values can sometimes guide investment decisions, even at the expense of personal gain. Parker (2014) also suggests that reasonableness in investing should align with the investor's beliefs and values. The traditional, deterministic view of the property market is being replaced by a more dynamic and complex understanding of investment behaviour (Sah et al., 2010). Parker (2014) noted that strategic thinking and human intelligence are increasingly central to property investment decisions.

Research shows that investors often skip certain decision stages (Lowies et al., 2016) and let emotions guide their behaviour (Gallimore et al., 2000). Behavioural patterns such as framing, anchoring, herding, loss aversion, and representativeness have been documented in property literature (Anastasia, 2015; Lowies et al., 2016). This shift has led to a more interpretive and descriptive approach to investment decision-making, requiring a multi-dimensional view of the process (Chukwudumogu et al., 2018).

According to Njo et al. (2017), individual behaviour in real estate decisions is influenced by both psychological factors and investment levels at the micro (individual or group) and macro (financial market) scales. Investment choices are shaped by both quantitative goals and qualitative attributes of financial products. Drawing on cognitive (mental) and affective (emotional) factors, investors make judgments influenced by their past experiences, beliefs, and preferences. As Bargh (2002) observes, human decision making often shifts from rational to psychological and social domains, underscoring the need for a deeper understanding of behavioural influences that extend beyond purely logical reasoning.

2.4 Empirical Review of the Study

A growing body of empirical research has explored the influence of behavioural biases on real estate investment decisions across various international contexts. Hoxha and Hasani (2023) studied investors in Prishtina, Kosovo, focusing on heuristics, prospect theory biases, and personality traits. Their findings indicated that all three factors significantly influenced investor behaviour, with heuristic biases exerting the strongest effect. Similarly, Pandey and Jessica (2019) highlighted the dominance of heuristic influences among Indian real estate investors, identifying four key biases related to anchoring, representativeness, and regret aversion as significant predictors of investment behaviour.

In more developed real estate markets, such as Australasia, Lam et al. (2023) examined behavioural finance factors affecting Real Estate Investment Trusts (REITs). The study found that investor sentiment, anchoring, and overconfidence significantly impacted decisions, while the availability heuristic had no effect among seasoned REIT fund managers. In Pakistan, Ali (2024) investigated behavioural biases during the COVID-19 pandemic. The results indicated that herding, overconfidence, and perceived asset value were significant influences on investment behaviour, whereas the disposition effect and risk aversion were not.

Technological and analytical advancements have also been applied to behavioural finance. Bihari et al. (2023) used machine learning and artificial neural networks to assess cognitive biases in investment behaviour. Their findings highlighted regret aversion as the most influential bias, followed by loss aversion, overconfidence, and the Barnum effect, the latter showing a significant negative relationship with investment decisions. Jain et al. (2022) contributed to measurement approaches by developing a scale identifying ten common behavioural biases, such as availability, representativeness, mental accounting, and gambler's fallacy, emphasizing the multifaceted nature of investor psychology.

In European housing markets, Cascao et al. (2022) examined the influence of heuristics in Portugal. Representativeness, availability, anchoring, and herding significantly shaped

investor behaviour, with overconfident investors more sensitive to housing price changes. The study also found that female investors were more prone to availability and anchoring biases. Njo et al. (2019) explored decision-making in Indonesia's real estate market, revealing that homebuyers tend to act more rationally compared to investors, whose decisions are heavily influenced by heuristics and family life cycle stages.

In the African context, Munyami (2022) analysed how cognitive biases and intuitive traits affect decision quality in commercial real estate investments in Uganda. The study confirmed that cognitive biases played a critical role in shaping investment outcomes. Similarly, Hussein et al. (2021) in the United Arab Emirates examined determinants of real estate investment behaviour, revealing that profitability, risk, and service quality had significant positive correlations with investor decisions, although market conditions and infrastructure were statistically insignificant.

In Ethiopia, empirical research specifically addressing behavioral finance in the real estate sector is virtually non-existent. The only notable study, though not focused on real estate, is by Agegn (2021), who investigated behavioral biases among investors in the Amhara Region. Using multinomial logistic regression on 235 respondents, the study identified representativeness, mental accounting, loss aversion, regret aversion, and herding behavior as significant influences on investment decisions. However, the real estate market in Addis Ababa presents a significantly different context characterized by rapid urban expansion, high land values, and a more competitive investor base. This disparity underscores the need for focused empirical investigation into the behavioral determinants of real estate investment decisions in Ethiopia's capital.

2.5 Hypothesis of the Study

As outlined above, this study draws on the work of various researchers and authors. To establish the conceptual relationship between behavioural factors and real estate investment decisions, both theoretical and empirical studies were reviewed. The variables used in the study's conceptual model were adapted from Jain's measurement model. The study assumes that behavioural biases including gambler's fallacy, representativeness,

availability, anchoring, overconfidence, mental accounting, regret aversion, loss aversion, and herding have an influence on real estate investment decisions in Addis Ababa.

Following a review of existing literature in this area, the researcher observed that the relationship between behavioural biases and investment decisions remains a subject of debate. While some studies found no correlation between behavioural biases and investor decisions, others reported a positive association. Meanwhile, certain scholars rejected both of these positions, arguing instead that behavioural biases may negatively affect investment choices. As a result, the literature shows a lack of consensus regarding the role and significance of behavioural biases in investment decision making. This ongoing disagreement indicates the need for further research to provide clearer insights into this complex topic.

The following sections present the theoretical and empirical foundations for the behavioural determinants proposed to influence real estate investment decisions in Addis Ababa.

2.5.1 Relationship between Gambler's Fallacy and Investment Decision

Quaicoe and Eleke-Aboagye (2021), in a questionnaire based study conducted in Ghana, found that the gambler's fallacy could lead individuals to make suboptimal investment decisions. Similarly, Malik et al. (2021), in their investigation of behavioural biases in Pakistan's real estate market, concluded that the gambler's fallacy had a stronger influence on real estate pricing than herding and regret aversion. These findings suggest that the gambler's fallacy may play a notable role in shaping investment decisions in certain contexts.

However, other studies present contrasting results. Fachrudin et al. (2017) reported that while representativeness and availability biases significantly influenced investment decisions, anchoring, gambler's fallacy, and overconfidence did not have a meaningful impact. Likewise, Waweru et al. (2014) acknowledged only a marginal effect of gambler's fallacy, and further evidence from Pandey and Jessica (2019) as well as Cascão et al. (2023) found no substantial influence of this bias on property investment decisions.

These divergent findings highlight an ongoing academic debate regarding the relationship between heuristic-driven biases and individual investment behaviour. While some researchers assert a negative impact, others suggest that the effect is negligible or context-dependent. In light of these mixed perspectives, the first hypothesis of this study is framed as non-directional to allow for an objective assessment of the relationship.

H1: Gambler's fallacy has a significant effect on real estate investment decisions in Addis Ababa, Ethiopia.

2.5.2 Relationship between Representativeness and Investment Decision

A number of studies have explored the relationship between heuristic driven cognitive biases particularly representativeness and investor decision making. Several of these investigations suggest that such biases may have a positive influence on investment behaviour and outcomes. For instance, Toma (2015) found that behavioural biases, especially representativeness bias, positively impacted the decisions of individual investors. Similarly, Irshad et al. (2016) reported a positive correlation between representativeness bias and investment decisions, while Ikram (2016) demonstrated that both availability and representativeness biases positively influenced individual investment choices. Notably, availability bias was found to contribute significantly to improved investment returns. Khan (2015) also confirmed the significant influence of availability bias on individual investor decision-making.

In contrast, other researchers have emphasized the negative implications of representativeness bias. Shah et al. (2018) argued that dependence on representativeness often leads to irrational investment decisions. Ahmad and Shah (2021) contended that heuristic reliance undermines investors' technical understanding and reasoning, increasing the likelihood of judgmental errors and poor financial outcomes. Similarly, Dangol and Manandhar (2020) emphasized that representativeness bias encourages irrational and emotionally driven investment decisions.

Additional empirical evidence supports the adverse effects of this bias. Chen et al. (2007) observed that Chinese investors frequently made poor trading decisions due to representativeness. Lakonishok et al. (1994) found that firms sometimes made suboptimal investment choices driven by this bias. Likewise, Athur (2014) and Yaowen et al. (2015) concluded that representativeness bias negatively affects investment decision making. Onsomu (2014) also demonstrated how this cognitive distortion shapes the decisions of individual investors. Given the substantial and contrasting body of literature, this study considers representativeness bias as a critical behavioural factor influencing investment decisions. Accordingly, the following hypothesis is proposed:

H2: Representativeness has a significant effect on real estate investment decisions in Addis Ababa, Ethiopia.

2.5.3 Relationship between Availability and Investment Decision

Moradian et al. (2013) identified a strong association between personality traits and behavioural biases, noting the considerable influence of availability bias on investors. Rehan and Umer (2017) found a negative relationship between availability bias and investment decision-making, suggesting that reliance on easily recalled information may lead to suboptimal investment choices. Waweru et al. (2008) similarly concluded that availability bias affects the decision-making processes of institutional investors. In contrast, Javed et al. (2017) reported that availability bias positively influences perceived investment performance, while Alrabadi et al. (2018) demonstrated that psychological biases including availability, herding, representativeness, overconfidence, and familiarity have a significant positive impact on investors' performance.

Despite these findings, a number of studies highlight the potentially detrimental effects of availability bias on investment behaviour. Shah et al. (2018) argued that reliance on availability bias may lead to illogical conclusions and poor decision-making outcomes. Ahmad and Shah (2021) contended that such heuristic-driven decisions compromise technical reasoning, often resulting in flawed judgments and irrational investment behaviour. Supporting this view, Dangol and Manandhar (2020) emphasized that availability bias contributes to emotionally driven and irrational investment choices.

Earlier studies also support the influence of availability on decision-making. People (1988) found that consumer beliefs about product performance are significantly shaped by the availability heuristic. Massa et al. (2005) noted that investors' share selection decisions are influenced by the information most readily available to them. Additionally, Shah et al. (2018) investigated the role of media exposure in shaping investment decisions and concluded that availability bias, as amplified by media content, is an unreliable basis for sound investment choices. Given the body of evidence indicating both positive and negative influences, this study considers availability bias a relevant behavioural factor in real estate investment decision-making. Accordingly, the following hypothesis is proposed:

H3: Availability has a significant effect on real estate investment decisions in Addis Ababa, Ethiopia.

2.5.4 Relationship between Anchoring and Investment Decision

Building on the work of Peaches and Laryea (2023), who investigated the impact of anchoring bias on investment decision making in Ghana's mutual fund market, this study recognizes the pervasive influence of anchoring on investor behaviour. Their research revealed that investors are significantly influenced by anchoring bias, and that the extent of its effect varies based on gender and levels of financial literacy. Similarly, Rehan and Umer (2017) examined the role of emotional and cognitive biases in shaping investment decisions, concluding that anchoring bias exerts a positive and significant influence on individual investors' decision-making.

However, contrasting views have also emerged in the literature. Dangol and Manandhar (2020) argued that anchoring leads to irrational investment decisions, as it prevents investors from adapting their judgments to new or more accurate information. Supporting this perspective, ul Abdin et al. (2017) highlighted the influence of anchoring bias on both investment performance and decision-making processes, asserting that heuristic-driven biases such as anchoring contribute to market inefficiencies and irrational financial behaviour.

Taken together, these studies underscore the complex role of anchoring in investment contexts. While some research highlights its potentially positive influence on decision-making, other studies caution against its role in distorting rational judgment and impairing market efficiency. Based on these insights, the following hypothesis is proposed:

H4: Anchoring has a significant effect on real estate investment decisions in Addis Ababa, Ethiopia.

2.5.5 Relationship between Overconfidence and Investment Decision

Empirical studies have linked overconfidence to suboptimal investment behaviour. Bao and Li (2016), Farlow (2004), and Shiller (2005) observed that overconfidence contributes to poor decision-making in property markets, as it leads investors to underestimate risks and ignore warning signals. Farlow (2004), in particular, emphasized the dangers of overconfidence in real estate investments, suggesting that this bias may result in overexposure to volatile or overvalued assets.

Antony and Joseph (2017), in a study conducted in Kerala, India, examined how psychological factors affect investment variables. Their findings revealed that overconfidence bias exerted the most substantial influence on investor decisions. Supporting this, Lim (2012), Toma (2015), and Javed et al. (2017) all reported a positive relationship between overconfidence and investment decision-making. Adil et al. (2021) also found a statistically significant positive effect of overconfidence on investment behavior, while Chhapra et al. (2018) provided empirical evidence from Pakistan confirming its influence on individual investor behaviour. Similarly, Madaan and Singh (2019) concluded that overconfidence positively and significantly affects investment choices.

However, not all studies agree on its positive role. Kengatharan and Kengatharan (2014) argued that overconfidence bias can negatively influence investment decisions by fostering unrealistic expectations and reducing rational assessment of risk and reward. Given these contrasting perspectives, the current study includes overconfidence bias as a

key behavioural factor in its conceptual framework and proposes the following hypothesis:

H5: Overconfidence has a significant effect on real estate investment decisions in Addis Ababa, Ethiopia.

2.5.6 Relationship between Mental Accounting and Investment Decision

Mental accounting refers to the cognitive process by which individuals categorize, evaluate, and manage their financial resources by assigning them to separate mental “accounts” (Henderson and Peterson, 1992). Thaler (1985) introduced the concept as part of behavioural economics, explaining that individuals tend to use heuristic rules when allocating expenditures across these distinct mental categories. Rather than viewing their financial resources holistically, people often treat each component of their wealth such as income, savings, or investments as isolated accounts, which can result in inconsistent and potentially suboptimal financial decisions.

Shiller (2000) further emphasized that this mental compartmentalization leads investors to evaluate elements of their portfolios independently, often ignoring the interconnectedness that is essential for sound investment strategies. Rockenbach (2004) also highlighted that mental accounting disrupts rational investment behaviour, as it prevents individuals from linking various investment options. In contrast, the principle of arbitrage-free pricing requires consideration of multiple investment avenues in relation to one another. Therefore, mental accounting may hinder optimal decision-making, particularly in complex investment environments like real estate.

Empirical studies support the notion that mental accounting significantly influences investment behaviour. Jain et al. (2020), using a fuzzy analytic hierarchy process, demonstrated that mental accounting bias affects the decisions of individual equity investors. Similarly, Rekik and Boujelbene (2013) studied 300 Tunisian stock market respondents and found that mental accounting plays a significant role in shaping investment choices. In the Ethiopian context, Agegn (2021) examined behavioural factors

among individual investors in the Amhara Region and concluded that mental accounting bias had a significant influence on investment behaviour.

Khan (2020) also explored the role of heuristic-based cognitive biases including mental accounting, the disposition effect, and herding behaviour on investment decisions, considering financial literacy as a moderating factor. His findings revealed that mental accounting has a statistically significant and positive impact on investment decision making. In light of this empirical and theoretical evidence, the current study proposes the following hypothesis:

H6: Mental accounting has a significant effect on real estate investment decisions in Addis Ababa, Ethiopia.

2.5.7 Relationship between Regret Aversion and Investment Decision

Regret aversion is a behavioural bias rooted in the emotional discomfort experienced when individuals reflect on decisions that led to unfavourable outcomes or when they realize that better results could have been achieved through alternative choices (Fogel and Berry, 2006). In the context of investment, this bias manifests when investors avoid making decisions that might later cause regret, even if those decisions have the potential for favourable returns. According to Shiller (2003) and Odean (1998), regret, combined with fear and uncertainty, often prompts investors to behave irrationally either by avoiding risk altogether or by clinging to underperforming assets to avoid admitting a mistake.

Experimental research involving repeated decision-making under uncertainty, such as lottery based studies, has shown that the emotional response of regret can give rise to regret aversion bias (Frydman and Camerer, 2016; Quaicoe and Eleke-Aboagye, 2021). These findings underscore the importance of evaluating how regret influences investor behaviour, particularly in high-stakes environments such as real estate investment.

Several empirical studies support the significant influence of regret aversion on investment decision-making. Kengatharan and Kengatharan (2014), Lim (2012), Zat and Khan (2017), and Jain et al. (2019) all found that regret aversion plays a critical role in

shaping investor choices. In a study focused on the Ghana Stock Exchange, Quaicoe and Eleke-Aboagye (2021) concluded that regret aversion significantly influenced the behaviour of investors. Similarly, Malik et al. (2021) analysed behavioural biases within the real estate sector in Pakistan and determined that regret aversion exerted a greater influence on property pricing than either herding behaviour or regret alone.

These findings suggest that regret aversion may similarly affect real estate investors in Addis Ababa. Thus, the following hypothesis is proposed:

H7: Regret aversion has a significant effect on real estate investment decisions in Addis Ababa, Ethiopia.

2.5.8 Relationship between Loss Aversion and Investment Decision

Loss aversion refers to the tendency of individuals to prefer avoiding losses over acquiring equivalent gains a behaviour that significantly shapes financial decision-making. According to Duxbury and Summers (2004), loss averse investors tend to steer clear of risky portfolios due to their heightened sensitivity to potential losses. This reluctance impacts their risk tolerance and influences key investment decisions. Kishor (2022) similarly noted that fear of loss leads investors to behave conservatively, often at the expense of potential returns.

Recognizing the influence of this bias is crucial when assessing investment behaviour. Iram et al. (2021) found that behavioural biases such as loss aversion, mental accounting, and self-control play a significant role in shaping investment decisions. Their study also revealed that a combination of loss aversion, herding behaviour, and fear of missing out (FOMO) influences retail investor behaviour, with FOMO acting as a mediating factor between these biases and investment choices.

Numerous empirical studies affirm a significant positive relationship between loss aversion and investment decision-making. Lim (2012), Jain et al. (2019), Zat and Khan (2017), Rehan and Umer (2017), and Toma (2015) all reported that loss aversion exerts a considerable influence on investor behaviour. These studies suggest that investors are

more likely to avoid perceived risky investments due to an exaggerated fear of loss, even when potential gains may outweigh the risks.

However, contrasting evidence exists. Afi (2017), for example, explored the role of loss aversion in trading behaviour and found a negative association with trading volume, stock volatility, and returns. This suggests that loss aversion can reduce market activity and may limit investors' ability to benefit from favourable opportunities. Given the theoretical and empirical insights outlined above, the present study posits the following hypothesis:

H8: Loss aversion has a significant effect on real estate investment decisions in Addis Ababa, Ethiopia.

2.5.9 Relationship between Herding and Investment Decision

Herding effect refers to the tendency of an individual to follow instructions or actions (Rahman and Gan, 2020). A considerable number of studies have explored the influence of herding behavior on investment decisions (Dennis and Strickland, 2002; Caparrelli et al., 2004; Lee et al., 2004; Lim, 2012; Kengatharan and Kengatharan, 2014). Low-confidence investors will tend to follow others' judgment, as explained by Durand et al. (2013). Adil et al. (2021) found that herding behavior adversely affects investment decisions for both male and female investors. According to Rahman and Gan (2020), media and market news play a role in shaping investor sentiment, and by providing meaningful information, they can reinforce the influence of herding on investment choices. Therefore, in periods of volatile market conditions, real estate investors tend to follow the action that is being followed by their counterparts, and hence bubbles exist in the real estate markets because investor sentiment has a tendency to shape the attitude of the market environment. Caparrelli et al. (2004) found that investors are more prone to engage in herding behaviour when market conditions are volatile.

According to Lee et al. (2004), individual investors are more likely to exhibit herding tendencies than institutional investors. However, Dennis and Strickland (2002) noted that during periods of market uncertainty, institutional investors demonstrate greater herding behaviour than individual investors. Nofsinger and Sias (1999) observed that institutional

herding has a more significant impact on stock prices compared to that of individual investors. Madaan and Singh (2019) argued that herding bias plays a crucial role in shaping individual investors' decisions. Similarly, Chhapra et al. (2018) examined the behaviour of individual investors and provided empirical support for a positive relationship between herding behaviour and investment choices among individual investors in Pakistan. Ahmad and Wu (2021) explored the implications of herding behaviour on market efficiency and investment management. Their findings suggest that individual investors who engage in herding tend to perceive the market as inefficient, trade excessively, and experience negative investment outcomes. In light of these findings, the following hypothesis is proposed:

H9: Herding has a significant effect on real estate investment decision in Addis Ababa Ethiopia.

2.6 Research Gap

As observed above on the empirical and the theoretical review of the study, numerous empirical investigations have explored behavioral finance and its impact on investment decisions across various countries. However, several of these studies yield mixed or conflicting results regarding the specific behavioral factors that influence individual investment choices, with no consistent conclusions reached. Furthermore, the majority of these studies focus primarily on investment decisions within formal stock markets, often overlooking the decision-making processes of individual investors when it comes to investing in real assets. Overall, a comprehensive review of both local and international literature highlights several gaps ranging from theoretical and empirical to industrial or contextual shortcomings.

Theoretical gaps: Prior research investigating the influence of behavioral factors on individual real estate investment decisions has typically relied on a single theoretical framework or, in some cases, none at all. This limited theoretical approach restricts the ability to capture a comprehensive range of behavioral bias variables that may influence investment choices among individual real estate investors. To address this shortcoming,

the present study seeks to integrate multiple theoretical perspectives, aiming to include a broader spectrum of behavioral biases that could impact investment decision making.

Empirical gaps: Although a variety of studies have been conducted within the field of behavioral finance, the existing body of knowledge remains limited, often focusing on only one or two behavioral biases that investors face when making investment decisions. Consequently, this study aims to create a comprehensive, reliable, and valid scale to effectively measure the range of behavioral biases that influence investors' decision making processes.

Industry/Contextual gaps: To the best of the researcher's knowledge, there is a lack of structured, scientific studies examining the impact of behavioral factors on real estate investment decisions specifically within the context of Addis Ababa. This highlights a significant gap in the existing research in this area.

Therefore, in light of the identified theoretical, empirical, and contextual research gaps, this study aims to examine the impact of behavioral factors on individual real estate investors in Addis Ababa, Ethiopia.

2.7 Conceptual Framework of the Study

The operational framework of this study is constructed based on key research variables derived from the literature review and established theories of investor behavior. The independent variables include heuristic-driven behavior, prospect-driven behavior, and herding behavior. The study analyzes how these factors influence individual investors' decision-making. Drawing on theoretical and empirical insights in behavioral finance, specific heuristic biases such as gambler's fallacy, representativeness, availability, anchoring, and overconfidence along with prospect related biases like mental accounting, regret aversion, and loss aversion, in addition to herding behavior, have been identified as potential investor biases and are treated as independent variables. Investment decision-making serves as the dependent variable, as it is influenced by these behavioral biases. Thus, the conceptual model consists of nine independent variables and one dependent variable. Figure 2 illustrates the operational model used in this study.

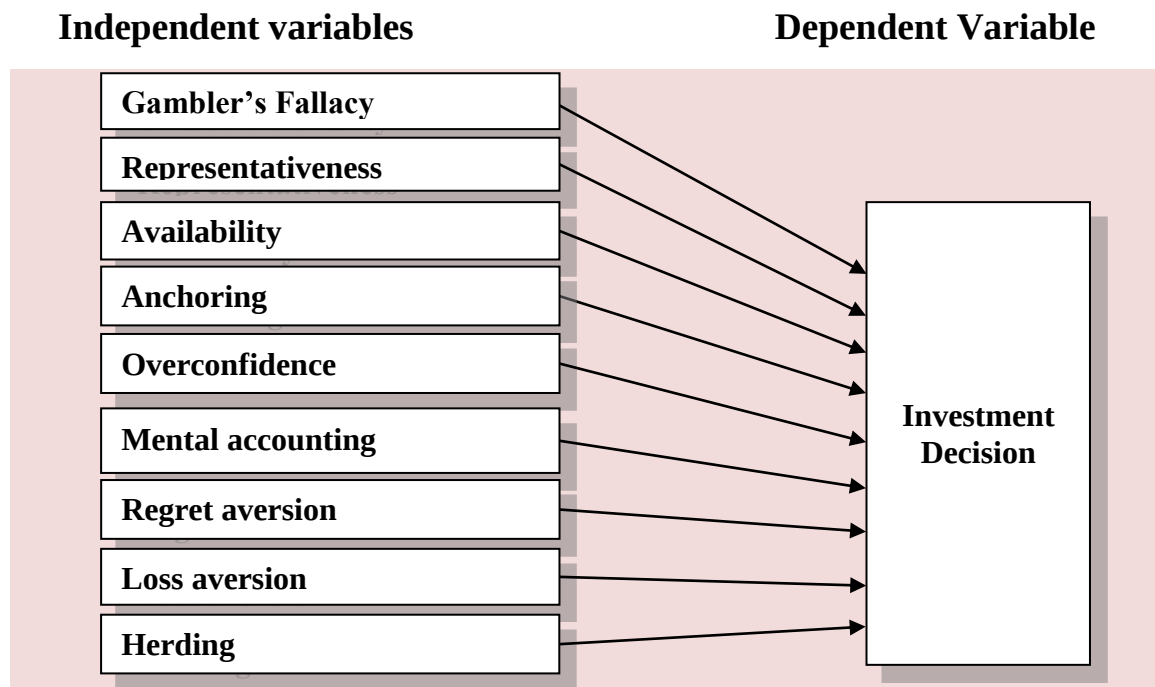


Figure 2 Conceptual framework; Source: Modified from Jain (2019)

CHAPTER THREE

3. RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the research methodology employed throughout the study. Specifically, it addresses the research philosophy, design, and approach, along with the sampling techniques, methods for measuring variables, and procedures for data analysis. Additionally, it covers considerations related to reliability and validity, and concludes with a discussion of the ethical aspects of the research.

3.2 Research Approach

This study adopted a quantitative research approach, selected for its alignment with the objectives and nature of the investigation. As outlined by Saunders et al. (2007), the quantitative approach is justified by two key considerations.

First, quantitative research is concerned with the development and application of mathematical models, theories, and hypotheses to explain observed phenomena. It typically begins with a clearly defined theoretical framework or general proposition that outlines the expected relationships between variables. This deductive process enables the researcher to derive testable hypotheses and systematically evaluate them through empirical data.

Second, the quantitative approach is particularly suited to research designs involving surveys and experiments, as it emphasizes hypothesis testing, statistical analysis, and the validation of theoretical constructs. In this study, the use of structured questionnaires and statistical techniques facilitated the objective measurement and analysis of behavioural factors influencing real estate investment decisions.

3.3 Research Design

To assess the impact of behavioural factors on investment decisions among real estate investors in Addis Ababa, Ethiopia, this study employed a combination of descriptive and explanatory research designs. The descriptive design was used to provide a

comprehensive overview of the research context, presenting detailed findings such as the extent to which behavioural biases are perceived by investors and the level of their investment decision-making. These findings were systematically organized and presented using tabular and statistical formats.

In parallel, the explanatory design was employed to investigate the causal relationships between behavioural biases and investment decisions, offering deeper insights and enhancing existing theoretical frameworks. This design enabled the study to go beyond mere description, linking empirical findings directly to the research questions and hypotheses.

Given the dual objectives of describing patterns and explaining relationships, the study adopted a survey research approach, which is well suited for collecting standardized data from a large number of respondents. This method facilitated the systematic examination of behavioural biases across a diverse population of individual real estate investors.

Furthermore, the study utilized a cross sectional design, whereby data were collected at a single point in time. This design was selected due to time constraints and the broad scope of the research. As noted by Janet (2006), cross sectional studies are particularly effective for descriptive research and are appropriate for identifying relationships among multiple variables within a defined population.

3.4 Sampling Design

3.4.1 Target Population and Sampling Frame of the Study

This study focused on individual real estate investors affiliated with firms registered under the Addis Ababa Land Administration and Building Permit Authority, which maintains an official registry of recognized real estate companies operating in the city. According to the Authority, a total of 125 registered real estate firms are actively engaged in the sector within Addis Ababa.

The target population for the study consisted of 11,691 individual real estate investors, including owners and shareholders of these registered companies. These individuals were

considered appropriate for the study as they are directly involved in investment decisions and share common expectations regarding investment returns and market performance. Access to this population was facilitated through the 125 registered firms, serving as points of contact for identifying and reaching the individual investors. As such, the sampling frame was defined as the list of 11,691 individual investors associated with these companies, representing the broader pool of decision makers in Addis Ababa's real estate market.

3.4.2 Sample Size

Among various sampling methods, this study employed the sample size determination approach proposed by Green (1991). This method is specifically designed for use with regression analysis and is well-suited for survey-based research aimed at hypothesis testing. A key advantage of Green's formula is that it does not depend on the total population size but rather considers only the number of independent variables. The formula, originally derived from Harris (1975) and later endorsed by Howell (2002), is expressed as:

$$n \geq 50 + m,$$

Where n is the minimum sample size and m represents the number of independent variables. Howell (2002) also emphasized that Green's formula is particularly effective for regression analysis, although it may not be ideal when dealing with a very small number of predictors.

$$n \geq 50 + 8(m)$$

Where n is sample size

m is predictor or independent variables, in this case $m = 9$,

Therefore, sample size estimated in this study is.

$$n \geq 50 + 8(9) \geq 122$$

15% uncollected questioners were considered therefore, the sample size selected for the study under consideration was 140.

3.4.3 Sampling Technique

This study employed a multi stage sampling technique to select a representative sample from the target population. While the overall population consisted of individual real estate investors in Addis Ababa, the accessible population was defined as those investors affiliated with real estate firms registered under the Addis Ababa Land Administration and Building Permit Authority, which maintains a comprehensive and up to date list of all officially recognized real estate companies operating in the city.

Using this registry, the study identified 125 operational real estate firms and used them as entry points to reach individual investors. A multi stage sampling approach was then applied, in line with the procedures outlined by Cooper and Schindler (2011), who describe multi stage (or multiphase) sampling as a method involving the selection of samples through two or more sequential stages.

The sample size was determined through a two-step process. In the first stage, a list of the 125 real estate companies was organized alphabetically. From this list, one investor was selected from each firm, resulting in an initial sample of 125 investors. In the second stage, to meet the required minimum sample size and ensure broader representation, systematic random sampling was employed among investors from private limited and share companies. This step added 15 additional investors to the sample. As a result, the final sample size consisted of 140 individual real estate investors: 125 selected through the initial stage and 15 selected through the subsequent systematic sampling phase.

3.5 Source of Data

This study employed primary data. Primary data were collected through a well-structured questionnaire, which was adapted from established instruments used in previous research to ensure relevance and validity. The questionnaire was administered to respondents on a voluntary basis, allowing for the systematic collection of first-hand information regarding behavioural biases and investment decision making among real estate investors in Addis Ababa.

3.6 Data Collection Methods and Instruments

Quantitative data were gathered using a structured questionnaire designed with interval-scaled, five point Likert items. These questions targeted individual real estate investors and were developed based on the independent and dependent variables identified through the literature review. Each item was aligned with the five point Likert scale to assess the relevant variables. The questionnaires were distributed directly to respondents and later collected by the researchers themselves.

The questionnaire was divided into three sections:

- i. General information about the respondents,
- ii. Behavioural variables influencing real estate investment decisions, and
- iii. Items related specifically to the investment decisions of real estate developers in Addis Ababa (refer to Appendix I for details).

Table 3.1 Research variables and their corresponding measures

Constructs	Theory	Number of Items	Source
Gambler's fallacy	Heuristic behavior	3	(Jain et al., 2022)
Representativeness	Heuristic behavior	4	(Jain et al., 2022)
Availability	Heuristic behavior	6	(Muchemi, 2019; Jain et al., 2022)
Anchoring	Heuristic behavior	4	(Muchemi, 2019; Jain et al., 2022)
Overconfidence	Heuristic behavior	7	(Muchemi, 2019; Jain et al., 2022)
Mental accounting	Prospect behavior	3	(Muchemi, 2019; Jain et al., 2022)
Regret aversion	Prospect behavior	5	(Muchemi, 2019; Jain et al., 2022)
Loss aversion	Prospect behavior	6	(Muchemi, 2019; Jain et al., 2022)
Herding	Herding behavior	6	(Muchemi, 2019)
Investment decisions		5	(Imran et al., 2016)

3.7 Instrument Reliability and Validity

3.7.1 Instrument Reliability

Reliability refers to the degree to which a measurement tool produces consistent results over time, across different evaluators, or among different items (Churchill, 1979). To assess internal consistency, a reliability test was conducted using Cronbach's alpha coefficient. This coefficient ranges from 0 (no consistency) to 1 (perfect consistency). According to Hair et al. (2010), a Cronbach's alpha value of 0.80 or above indicates high reliability, 0.70 to 0.80 signifies good reliability, 0.60 to 0.70 reflects fair reliability, and values below 0.60 are considered questionable.

To ensure the clarity and reliability of the questionnaire, a pilot test involving 20 respondents was carried out prior to the main data collection (Adams et al., 2007). These pilot responses helped confirm that the questionnaire was understandable and functionally sound. Following the pilot test, Cronbach's alpha was again used to evaluate the tool's internal consistency.

3.7.2 Instrument Validity

Validity refers to the degree to which an instrument accurately measures what it is intended to measure (Creswell, 2014). A measurement tool that is free from error is considered to have perfect validity. It is essential to assess the validity of a measurement model before using it for hypothesis testing. Validity can be evaluated through various methods, with content validity and construct validity being among the most commonly used approaches.

Content validity focuses on how well the items of a scale represent the intended subject matter. It involves a systematic, though subjective, judgment about the extent to which the instrument covers all aspects of the concept being measured. In this study, industry experts were consulted through a survey to evaluate whether the scale accurately captures the intended behavioural phenomena. Additionally, a pilot study with 20 potential respondents was conducted to gather preliminary data and confirm the validity of the instrument prior to the full-scale data collection.

3.8 Data Processing and Analysis

The data collected through self-administered questionnaires were analyzed using SPSS software. Only the questionnaires that were fully completed and returned were considered valid for analysis, while those that were incomplete or not returned were deemed invalid and excluded. The analysis involved further processing of the collected data to identify patterns and relationships within or between data groups, utilizing both descriptive and inferential statistical techniques.

3.8.1 Descriptive Analysis

Descriptive statistics such as means, standard deviations, and percentages were used to summarize and present the data in a clear and concise manner. In addition to this, Pearson's correlation coefficient was applied to assess the degree of interdependence and to determine whether there is a statistically significant relationship between the independent and dependent variables. According to Sekaran and Bougie (2010), the correlation coefficient ranges from -1 to +1, where -1 indicates a perfect negative correlation, +1 signifies a perfect positive correlation, and a value of 0 implies no correlation. The interpretation of correlation results is generally based on the strength and direction of these values.

Table 3.2 Guideline for the Pearson correlation analysis

Pearson Correlation	Strength of correlation relationship
$r = 0.10$ to 0.29 or $r = -0.10$ to -0.29	Weak
$r = 0.30$ to 0.49 or $r = -0.30$ to -0.49	Moderate
$r = 0.50$ to 1.00 or $r = -0.50$ to -1.00	Strong

3.8.2 Inferential Analysis

Inferential statistics, as explained by Sekaran (2000), enable researchers to draw conclusions from data by analyzing the relationships among two or more variables and assessing how multiple independent variables contribute to the variation in a dependent variable. In this study, the application of inferential statistics was carried out as detailed below:

3.8.2.1 Multiple Regression

Multiple regression is a statistical method used to predict the value of one variable based on the values of several other variables. In this study, standard multiple regression analysis was employed. With this approach, all independent variables (behavioral factors) are entered into the model simultaneously. Each independent variable is then evaluated based on its predictive strength, over and above the contribution of the other variables in the model. While both correlation and regression assess relationships between variables, the primary function of regression is prediction, rather than simply identifying associations (Geoffrey et al., 2005).

Model specification

The regression model in this study is based on two categories of variables: the dependent variable investment decision, and the independent variables which include gambler's fallacy, representativeness, availability, anchoring, overconfidence, mental accounting, regret aversion, loss aversion, and herding. The main objective of applying the regression equation in this research is to enhance the understanding, explanation, and prediction of how these behavioral factors influence investment decisions. The regression equation used in the study is presented as follows:

$$INV = \alpha_1 + \beta_1GAM + \beta_2REP + \beta_3AVA + \beta_4ANC + \beta_5OVE + \beta_6MEN + \beta_7REG + \beta_8LOS + \beta_9HER + e$$

Where:

INV = Investment decision

GAM = Gambler's fallacy

REP = Representativeness

AVA = Availability

ANC = Anchoring

OVE = Overconfidence

MEN = Mental accounting

REG = Regret aversion

LOS = Loss aversion

HER = Herding

α_1 = The intercept term, or constant, represents the expected mean value of the dependent variable when all slope coefficients (independent variables) are equal to zero.

e = Error

β_1 through β_9 represent the regression coefficients, indicating the average change in the dependent variable for every one standard deviation increase in each corresponding independent variable.

Regression analysis is one of the most commonly used statistical tools in behavioral finance research to explore relationships between variables. It enables researchers to isolate and assess the individual effects of specific variables, while also controlling for the influence of others. Among the various regression techniques available, the Ordinary Least Squares (OLS) method is the most frequently applied. Picture a scatterplot where data points generally follow a linear trend OLS linear regression fits a line of best fit that most accurately represents the distribution of those points. The least squares criterion ensures that this line minimizes the sum of the squared differences between the actual data points and the predicted values on the line. Essentially, OLS regression constructs a regression line or plane through the data cloud that best reflects a linear relationship (Fox, 2015).

Although the regression plane does not intersect every individual data point within the cloud, it effectively illustrates the partial relationships between each independent variable (slope) and the dependent variable, while controlling for the influence of the other variables (Fox, 2015). In Ordinary Least Squares (OLS) regression, the coefficients are determined by minimizing the sum of the squared differences between the observed values and the predicted values on the regression plane.

Before performing the regression analysis in this study, the researcher ensured that the key assumptions of multiple linear regression were met. These include: adequate sample size (based on established guidelines), normality, linearity, homoscedasticity, multicollinearity, and autocorrelation. These diagnostic tests are essential for accurately assessing the relationships between independent and dependent variables. Accordingly,

all major OLS assumptions were examined and found to be satisfactorily met in this research.

3.9 Ethical Considerations

The university issued a cooperation letter to the stakeholders involved in the research. The researcher scheduled meetings with selected individual real estate investors, met with them in person, introduced the research project, and formally invited them to participate. To ensure confidentiality, the university provided an introductory letter stating that the study was being conducted by a student and had received ethical clearance. Each respondent received an informed consent form, which the researcher explained in detail. Respondents were given ample time to ask questions and seek clarification about both the form and the study itself. Additionally, all data were reported accurately and without alteration, and all sources used in the study were properly acknowledged in the reference list.

CHAPTER FOUR

4. RESULTS AND DISCUSSION

4.1 Introduction

Overall, this chapter is structured as follows: it begins with the presentation of the respondents' demographic profile and the calculation of the reliability of the measurement instruments. To facilitate the empirical analysis, the findings from the descriptive statistics are presented first, followed by the analysis of Pearson's correlation coefficients and multiple regression results.

4.2 Samples and Response Rate

The questionnaires were hand-delivered to chosen individual real estate investors in Addis Ababa. These selected respondents were contacted by phone and personally asked to return the completed forms. A total of 140 questionnaires were distributed, and 137 were retrieved. After discarding 4 invalid responses, 133 valid questionnaires remained, resulting in a 98% response rate. Of those distributed, 95% were returned with valid responses.

4.3 Demographic Profile of Respondents

The study's samples were categorized based on three demographic characteristics obtained from the questionnaire survey. The purpose of the demographic analysis is to present the profile of the respondents, including the gender distribution, age range, and educational qualifications of individual real estate investors in Addis Ababa. The demographic breakdown of the respondents is shown in Table 4.1 below.

The data clearly shows that most real estate investors in Addis Ababa are aged between 46 and 60, accounting for 46.60% of the respondents. The majority of respondents were male (94%), while females made up only 6%. In terms of educational background, 10.50% had qualifications below a diploma, 51.9% held a diploma, 30.80% had a first degree, and 6.8% possessed education beyond a first degree. Overall, the typical respondent was a male aged 46–60 with a diploma level education.

Table 4.1: Demographic information individual real estate investors in Addis Ababa

Items	Description	Frequency	Percentage	Cumulative Percent
Gender	Male	125	94	94
	Female	8	6	100
	Total	133	100	
Age	18-30	8	6	6
	31-45	54	40.6	46.6
	46-60	62	46.6	93.2
	Above 60	9	6.8	100
	Total	133	100	
Academic qualification	Below Diploma	14	10.5	10.5
	Diploma	69	51.9	62.4
	First Degree	41	30.8	93.2
	Above First Degree	9	6.8	100
	Total	133	100	

Source: Survey Data (2025)

4.4 Reliability Test

The pilot survey verified that the questionnaires designed to gather the required information were dependable. Furthermore, to assess the overall data reliability, Cronbach's alpha was computed using SPSS, and the results are presented in Table 4.2. Since all the alpha values for the study's constructs exceed the recommended threshold of 0.70, it is confirmed that the measurements are sufficiently reliable for further analysis.

Table 4.2: Measurement Reliability

Reliability Statistics		
Constructs	Cronbach's Alpha	N of Items
Gambler's fallacy	.961	3
Representativeness	.845	4
Availability	.958	6
Anchoring	.900	4
Overconfidence	.849	7
Mental accounting	.756	3
Regret aversion	.738	5
Loss aversion	.733	6
Herding	.740	6
Investment decisions	.727	5

Source: Computation from survey data (2025)

4.5 Descriptive Statistics

This section presents respondents' perceptions in tabular form, displaying the mean and standard deviation of their responses. The mean indicates the central tendency of each variable, while the standard deviation reflects how much the responses deviate from the mean. All variables were assessed using a five point Likert scale, ranging from "1" (Strongly disagree) to "5" (Strongly agree). According to Alhakimi and Alhariry (2014), Likert scale scores are interpreted as follows: 1 to 2.32 indicates a low level, 2.33 to 3.65 indicate a medium level, and 3.66 to 5 indicate a high level.

4.5.1 Individual Real Estate Investors' Perception on Gambler's Fallacy Bias

This attitude and opinion question assessed individual real estate investors' beliefs related to the gambler's fallacy. Respondents were presented with three statements and asked to indicate their level of agreement with each. Table 4.3 summarizes the mean and standard deviation for each item. The mean scores for the gambler's fallacy construct ranged from 3.20 to 3.45 on a five point Likert scale (1 = strongly disagree, 5 = strongly agree), with standard deviations between 1.351 and 1.394, indicating a moderate level of variation in responses.

The statement with the highest agreement was "I often overlook the advantages that can come from investing in real estate." (Mean = 3.45, SD = 1.351). The item with the lowest agreement was "Following several consecutive days of decline in the real estate market, I believe it is now poised to rise." (Mean = 3.20, SD = 1.362). The overall mean for the gambler's fallacy perception was 3.33, suggesting that most respondents moderately agreed with the statements.

Table 4.3: Descriptive statistics for attitude of individual real estate investors' perception on gambler's fallacy

Gambler's fallacy	Mean	Std. Deviation
"I often overlook the advantages that can come from investing in real estate."	3.45	1.351
"Following several consecutive days of decline in the real estate market, I believe it is now poised to rise."	3.20	1.362
"I can usually predict when a good or bad phase is coming to an end."	3.35	1.394
Overall level of individual real estate investors' perception on gambler's fallacy.	3.33	1.37

4.5.2 Individual Real Estate Investors' Perception on Representativeness Bias

This part of the questionnaire evaluated individual real estate investors' attitudes and opinions concerning the concept of representativeness. Respondents were given four statements and asked to indicate their level of agreement with each.

Table 4.4 below displays the mean and standard deviation for each item. The mean scores for the representativeness construct ranged from 2.71 to 3.11 on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree), with standard deviations between 1.329 and 1.508, indicating some variability in responses. The statement receiving the highest agreement was "I choose to invest only in real estate opportunities that I am familiar with." (Mean = 3.11, SD = 1.449), while the lowest was "I rely on trend analysis to guide my investment decisions." (Mean = 2.71, SD = 1.329). The overall mean for

representativeness perception was 2.89, suggesting that most respondents moderately agreed with the items in this section.

Table 4.4: Descriptive statistics for attitude of individual real estate investors' perception on representativeness

Representativeness	Mean	Std. Deviation
"I choose to invest only in real estate opportunities that I am familiar with."	3.11	1.449
"Even when my most thoroughly researched investment doesn't meet my expectations, I still choose to hold onto it."	2.87	1.569
"I rely on trend analysis to guide my investment decisions."	2.71	1.329
"If a real estate company is performing well and issues new shares, I would choose to invest in them."	2.88	1.508
Overall level of individual real estate investors' perception on representativeness.	2.89	1.46

4.5.3 Individual Real Estate Investors' Perception on Availability Bias

This question assessed individual real estate investors' attitudes and opinions regarding the availability heuristic. Respondents were presented with six statements and asked to rate their level of agreement with each. Table 4.5 displays the mean and standard deviation for all items. The mean scores for the availability construct ranged from 1.62 to 2.86 on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree), while the standard deviations ranged from 1.323 to 1.754, indicating a degree of response variability.

The statement with the highest level of agreement was "I usually invest in sectors that have shown profitability in the past." (Mean = 2.86, SD = 1.754). Conversely, the statement with the lowest agreement was "I'm inclined to invest in areas where my friends have previously invested and earned profits." (Mean = 1.62, SD = 1.323). The overall mean for the perception of availability was 2.25, suggesting that most respondents expressed a low level of agreement with the provided statements.

Table 4.5: Descriptive statistics for attitude of individual real estate investors' perception on availability

Availability	Mean	Std. Deviation
"I usually approach investments that have recently posted negative returns with greater caution."	2.15	1.676
"I usually invest in sectors that have shown profitability in the past."	2.86	1.754
"I'm inclined to invest in areas where my friends have previously invested and earned profits."	1.62	1.323
"If I earn profits from an investment, I'm likely to pursue a similar one in the future."	2.06	1.664
"My investment decisions are mostly influenced by advertisements rather than thorough research."	2.64	1.504
"I would consider investing in a company that is presently facing a financial crisis."	2.19	1.706
Overall level of individual real estate investors' perception on availability.	2.25	1.60

4.5.4 Individual Real Estate Investors' Perception on Anchoring Bias

This part of the survey evaluated the attitudes and opinions of individual real estate investors regarding the anchoring bias. Respondents were given four statements and asked to indicate their level of agreement with each. Table 4.6 presents the mean and standard deviation for each item. The mean scores for the anchoring construct ranged from 1.45 to 2.63 on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree), while the standard deviations ranged from 0.821 to 1.471, indicating a moderate degree of variability.

The statement receiving the highest level of agreement was "My current investment decisions are influenced by the returns I've received from past investments." (Mean = 2.63, SD = 1.464). The item with the lowest agreement was "I set a target purchase price for an investment product ahead of time." (Mean = 1.45, SD = 0.821). The overall mean

for anchoring perception was 2.20, suggesting that most respondents showed a low level of agreement with the items in this section.

Table 4.6: Descriptive statistics for attitude of individual real estate investors' perception on anchoring

Anchoring	Mean	Std. Deviation
"My present investment decisions are shaped by my past experiences."	2.35	1.343
"My current investment decisions are influenced by the returns I've received from past investments."	2.63	1.464
"I take an investment's past performance into account before deciding to invest in it."	2.38	1.471
"I set a target purchase price for an investment product ahead of time."	1.45	.821
Overall level of individual real estate investors' perception on anchoring.	2.20	1.27

4.5.5 Individual Real Estate Investors' Perception on Overconfidence Bias

This section of the questionnaire explored individual real estate investors' attitudes and opinions regarding overconfidence. respondents were given seven statements and asked to rate their level of agreement with each. Table 4.7 displays the mean and standard deviation for each item. The mean scores for the overconfidence construct ranged from 2.56 to 3.02 on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree), with standard deviations ranging from 1.265 to 1.561, indicating a moderate degree of variability. The statement that received the highest level of agreement was "I'm willing to invest in a new real estate opportunity, even if my previous investment was unsuccessful." (Mean = 3.02, SD = 1.462). The statement with the lowest level of agreement was "I consistently achieve strong results in real estate investments." (Mean = 2.56, SD = 1.362). The overall mean for the perception of overconfidence was 2.82, suggesting that most respondents moderately agreed with the statements presented in this section.

Table 4.7: Descriptive statistics for attitude of individual real estate investors' perception on overconfidence

Overconfidence	Mean	Std. Deviation
"I believe I possess exceptional skills in real estate investing."	2.95	1.342
"I consistently achieve strong results in real estate investments."	2.56	1.362
"My real estate investment skills are superior to those of my peers."	2.71	1.561
"If I were to lose my current real estate venture, I could easily find another one similar to it."	2.76	1.360
"I'm willing to invest in a new real estate opportunity, even if my previous investment was unsuccessful."	3.02	1.462
"I rely on my skills and confidence to make well-informed real estate investment decisions."	2.86	1.541
"I tend to use my foresight to outperform other investors."	2.89	1.265
Overall level of individual real estate investors' perception on overconfidence.	2.82	1.41

4.5.6 Individual Real Estate Investors' Perception on Mental Accounting Bias

This part of the survey assessed the attitudes and perceptions of individual real estate investors regarding mental accounting. Respondents were given three statements and asked to indicate their level of agreement with each. Table 4.8 presents the mean and standard deviation for each item. The mean scores for the mental accounting construct ranged from 3.43 to 3.71 on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree), with standard deviations between 1.216 and 1.369, indicating a moderate level of variation in responses. The statement receiving the highest agreement was "I usually manage each component or account in my investment portfolio individually." (Mean = 3.71, SD = 1.216). The item with the lowest level of agreement was "I sell underperforming investments from my portfolio." (Mean = 3.43, SD = 1.263). The overall mean for the perception of mental accounting was 3.55, suggesting that

respondents generally showed a medium level of agreement with the statements provided in this section.

Table 4.8: Descriptive statistics for attitude of individual real estate investors' perception on mental accounting

Mental accounting	Mean	Std. Deviation
"I usually manage each component or account in my investment portfolio individually."	3.71	1.216
"I sell underperforming investments from my portfolio."	3.43	1.263
"I overlook the relationships between various investment opportunities."	3.50	1.369
Overall level of individual real estate investors' perception on mental accounting.	3.55	1.28

4.5.7 Individual Real Estate Investors' Perception on Regret Aversion Bias

This section of the questionnaire examined the attitudes and opinions of individual real estate investors concerning regret aversion. Respondents were presented with five statements and asked to rate their level of agreement with each. Table 4.9 displays the mean and standard deviation for each item. The mean scores for the regret aversion construct ranged from 3.09 to 3.76 on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree), with standard deviations ranging from 1.109 to 1.341, indicating a moderate degree of variability in responses. The statement with the highest agreement was "I usually sell my underperforming investments as soon as their price returns to the original purchase level." (Mean = 3.76, SD = 1.109). The statement with the lowest agreement was "I favor fixed-income investments over those with variable returns." (Mean = 3.09, SD = 1.234). The overall mean for regret aversion perception was 3.52, suggesting that respondents generally expressed a medium level of agreement with the items in this section.

Table 4.9: Descriptive statistics for attitude of individual real estate investors' perception on regret aversion

Regret aversion	Mean	Std. Deviation
"I feel regret when I skip buying an investment and its price rises afterward."	3.52	1.341
"I hold onto profitable real estate investments, hoping their value will keep rising."	3.71	1.166
"I favor fixed-income investments over those with variable returns."	3.09	1.234
"I feel regret for not investing in real estate when the prices were low."	3.50	1.146
"I usually sell my underperforming investments as soon as their price returns to the original purchase level."	3.76	1.109
Overall level of individual real estate investors' perception on regret aversion.	3.52	1.28

4.5.8 Individual Real Estate Investors' Perception on Loss Aversion Bias

This part of the questionnaire assessed the attitudes and opinions of individual real estate investors concerning loss aversion. Respondents were presented with six statements and asked to indicate their level of agreement with each. Table 4.10 summarizes the mean and standard deviation for each item. The mean scores for the loss aversion construct ranged from 3.54 to 4.15 on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree), with standard deviations ranging from 1.004 to 1.258, indicating some variability in responses. The statement receiving the highest level of agreement was "I typically invest in assets I believe are undervalued, aiming to profit when their prices increase." (Mean = 4.15, SD = 1.034). The statement with the lowest level of agreement was "I prefer to establish a stable income from real estate investments, even if the returns are modest." (Mean = 3.54, SD = 1.258). The overall mean for loss aversion perception was 3.84, suggesting that a majority of respondents leaned toward a high level of agreement with the statements in this section.

Table 4.10: Descriptive statistics for attitude of individual real estate investors' perception on loss aversion

Loss aversion	Mean	Std. Deviation
"I prefer to establish a stable income from real estate investments, even if the returns are modest."	3.54	1.258
"Between two real estate investments one rising and one declining I would sell the one that's gaining and hold onto the one that's losing."	3.77	1.121
"I typically invest in assets I believe are undervalued, aiming to profit when their prices increase."	4.15	1.034
"I'm willing to take investment risks with bonus money, but I avoid risking funds reserved for my children's education."	3.82	1.114
"If the market performs poorly, I tend to sell some of my riskier investments and reallocate the funds to safer options."	3.99	1.004
"I typically invest in real estate markets that are overlooked by other investors."	3.74	1.210
Overall level of individual real estate investors' perception on loss aversion.	3.84	1.12

4.5.9 Individual Real Estate Investors' Perception on Herding Bias

This question explored the perceptions of individual real estate investors regarding herding behavior. Respondents were presented with six sequential statements and asked to indicate their level of agreement with each. Table 4.11 displays the mean and standard deviation for each item. The mean scores for the herding construct ranged from 3.43 to 3.89 on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree), with standard deviations between 1.060 and 1.300, indicating moderate variability in responses. The statement with the highest agreement was "My first real estate investment was made based on advice from a friend, colleague, or family member." (Mean = 3.89, SD = 1.139). The statement with the lowest agreement was "I primarily depend on the opinions of friends, colleagues, or family members when making real estate decisions." (Mean = 3.43, SD = 1.257). The overall mean for herding perception was 3.61, suggesting that

respondents generally expressed a medium level of agreement with the statements in this section.

Table 4.11: Descriptive statistics for attitude of individual real estate investors' perception on herding

Herding	Mean	Std. Deviation
"I rely on the judgment of my friends, colleagues, or family members when making real estate investment decisions."	3.61	1.278
"I primarily depend on the opinions of friends, colleagues, or family members when making real estate decisions."	3.43	1.257
"My first real estate investment was made based on advice from a friend, colleague, or family member."	3.89	1.139
"When a well-known real estate analyst presents a view that contradicts mine, I usually adjust my opinion accordingly."	3.55	1.300
"I prefer to purchase real estate investments that are popular among other investors."	3.59	1.060
"I do consult others when making real estate investment decisions."	3.59	1.206
Overall level of individual real estate investors' perception on herding.	3.61	1.21

4.5.10 Comparison of Real Estate Investors' Perception on Behavioral Factors Constructs

Table 4.12 presents the overall mean scores for all items within the behavioral factor constructs, reflecting the extent of real estate investors' perceptions. Among the constructs, loss aversion recorded the highest overall mean (mean = 3.84), indicating that investors showed the strongest agreement with statements related to this factor (based on a 5-point Likert scale where 1 = strongly disagree and 5 = strongly agree). Herding followed with a mean score of 3.61, and mental accounting ranked next with a mean of 3.55. The construct with the lowest level of agreement was anchoring, which had the lowest overall mean score of 2.20.

Table 4.12: Overall mean and standard deviation scores for the behavioral factors constructs

Construct	Overall mean score	Standard deviation	Rank
Gambler's fallacy	3.33	1.37	5 th
Representativeness	2.89	1.46	6 th
Availability	2.25	1.60	8 th
Anchoring	2.20	1.27	9 th
Overconfidence	2.82	1.41	7 th
Mental accounting	3.55	1.28	3 rd
Regret aversion	3.52	1.28	4 th
Loss aversion	3.84	1.12	1 st
Herding	3.61	1.21	2 nd

4.5.11 Individual Real Estate Investors' Perception on Investment Decision

This section of the questionnaire assessed the attitudes and opinions of individual real estate investors regarding their investment decisions. respondents were given five statements and asked to rate their level of agreement with each. Table 4.13 shows the mean and standard deviation for each item. The mean scores for the investment decision construct ranged from 3.03 to 4.14 on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree), with standard deviations ranging from 1.255 to 1.527, indicating some degree of variability in responses. The highest level of agreement was recorded for the statement, "I perceived my real estate investments as low risk compared to stocks/bonds." (mean = 4.14, SD = 1.388). The statement with the lowest agreement was "I believe my real estate investment is secure compared to other assets." (Mean = 3.03, SD = 1.527). The overall mean for investment decision perception was 3.68, suggesting that most respondents demonstrated a high level of agreement with the statements in this section.

Table 4.13: Descriptive statistics for attitude of individual real estate investors' perception on investment decision

Investment decision	Mean	Std. Deviation
"I believe my real estate investment is secure compared to other assets."	3.03	1.527
"I perceived my real estate investments as low risk compared to stocks/bonds."	4.14	1.388
"My real estate investment has shown increased revenue growth in recent years."	3.74	1.255
"My real estate investment has experienced rising cash flow growth in recent years."	4.02	1.459
"My real estate investment performs better than I initially predicted."	3.49	1.480
Overall level of individual real estate investors' perception on investment decision.	3.68	1.42

4.6 Correlation Analysis: Relationship between the Study Variables

Pearson's correlation coefficient was employed in this study to examine the relationship between the independent variables gambler's fallacy, representativeness, availability, anchoring, overconfidence, mental accounting, regret aversion, loss aversion, and herding and the dependent variable, investment decision. The correlation results are presented in the following section. As shown in Table 4.14, the correlation coefficients between investment decision and the behavioral factors are linear, ranging from weak to moderate in strength.

As clearly demonstrated in Table 4.14, gambler's fallacy and investment decision ($r = -.201$) were weak to moderate in relation, representativeness and investment decision ($r = .241$), availability and investment decision ($r = -.184$), anchoring and investment decision ($r = .179$), overconfidence and investment decision ($r = -.111$), mental accounting and investment decision ($r = .125$), regret aversion and investment decision ($r = -.228$), loss aversion and investment decision ($r = .420$) and herding and investment decision ($r = -.048$).

Table 4.14: The relationship between independent variables and investment decision

		Investment decision
Gambler's fallacy	Pearson Correlation	-.201 [*]
	Sig. (2-tailed)	.020
Representativeness	Pearson Correlation	.241 ^{**}
	Sig. (2-tailed)	.005
Availability	Pearson Correlation	-.184 [*]
	Sig. (2-tailed)	.034
Anchoring	Pearson Correlation	.179 [*]
	Sig. (2-tailed)	.040
Overconfidence	Pearson Correlation	-.111
	Sig. (2-tailed)	.203
Mental accounting	Pearson Correlation	.125
	Sig. (2-tailed)	.151
Regret aversion	Pearson Correlation	-.228 ^{**}
	Sig. (2-tailed)	.008
Loss aversion	Pearson Correlation	.420 ^{**}
	Sig. (2-tailed)	.000
Herding	Pearson Correlation	-.048
	Sig. (2-tailed)	.585
	N	-.201 [*]

*. Correlation is significant at the 0.05 level (2-tailed).

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

Source: Computation from survey data (2025)

Although we can't make causal conclusions from correlation, we can get ahead of the correlation coefficient by squaring it. The coefficient of determination (r^2), which is the square of the correlation coefficient, represents the proportion of variance shared between variables (Field, 2009). Therefore, based on the correlation result from the table gambler's fallacy accounts for 4.04%, representativeness accounts for 5.81%, availability

accounts for 3.39%, anchoring accounts for 3.20%, overconfidence accounts for 1.23%, mental accounting accounts for 1.56%, regret aversion accounts for 5.20%, loss aversion accounts for 17.67% and herding accounts for 0.23% of variation in the investment decision. This implies that, the most important investment decision is loss aversion, which works to support that loss aversion is considered a common behavioral factor to affect investment decision.

4.7 Assumptions of Regressions Analysis

Multiple regression is a statistical technique used to predict an individual's score on a particular variable using their scores on several other variables. It is important to conduct assumption testing following this analysis (Pallant, 2005).

4.7.1 Sample Size

Various researchers may offer differing guidelines regarding the number of cases needed for multiple regression analysis. Green (1991) proposed a formula to estimate the appropriate sample size based on the number of independent variables: $N > 50 + 8m$ (where m represents the number of independent variables). In this study, there were nine independent variables and 133 sample size, indicating that the sample size requirement was satisfied.

4.7.2 Linear relationship

Investment decisions are presumed to have a linear relationship with behavioral variables, meaning changes in these independent variables are expected to influence the dependent variable, which is the investment decision. A normal probability plot is used to evaluate whether a dataset follows a normal distribution. In this plot, data points are compared to a theoretical normal distribution and should form an approximately straight line if the data is normally distributed. Deviations from this line suggest a lack of normality. The plots do not reveal any signs of non-linearity, supporting the validity of the linearity assumption. Refer to Appendix Two for the scatter plot diagram.

4.7.3 No or little multicollinearity

Multicollinearity refers to the presence of correlations among independent variables. When two or more predictor variables are highly correlated, it can interfere with assessing the individual impact of each variable on the model's performance (Pallant, 2005). In this study, multicollinearity was evaluated using the Variance Inflation Factor (VIF) and tolerance values. A tolerance value close to 1 and a VIF value close to 1, but not exceeding 10, suggest that multicollinearity is not an issue among the independent variables in the regression model (Pallant, 2005). Table 4.15 supports this conclusion, indicating the absence of multicollinearity.

Table 4.15: Multicollinearity of behavioral factors

	Collinearity Statistics	
Independent variables	Tolerance	VIF
Gambler's fallacy	.870	1.149
Representativeness	.948	1.054
Availability	.955	1.047
Anchoring	.943	1.061
Overconfidence	.925	1.081
Mental accounting	.921	1.085
Regret aversion	.847	1.181
Loss aversion	.921	1.086
Herding	.835	1.198
Overall mean value of VIF		1.105

Source: Computation from survey data (2025)

4.7.4 Homoscedasticity

Homoscedasticity refers to the condition where the variability of scores for the independent variables remains consistent across all values of the dependent variable. To meet this condition, the variance of the dependent variable should be uniform at each level of the independent variables (Hair, 2010). A common method for assessing this is by plotting ZRESID (on the Y-axis) against ZPRED (on the X-axis), which helps determine whether the assumptions of homoscedasticity and random error are satisfied.

The decision rule is as follows: if the plot shows patterns such as waves, funnels, or narrowing shapes, it indicates a lack of homoscedasticity. However, if the data points are evenly scattered above and below the zero line on the Y-axis, homoscedasticity is present (Pallant, 2005). According to the scatter plots, homoscedasticity is observed in this study, thereby confirming the assumption. Refer to Appendix Two for the scatter plot diagram.

4.7.5 Normality test

The study assessed normality using the Shapiro-Wilk test, graphical methods (Normal Probability Plot), and numerical indicators (Skewness and Kurtosis). In a Normal Probability Plot, the expectation is that data points will align closely along a diagonal line from the bottom left to the top right, indicating no significant deviations from normality. As shown in Appendix Three, the scores appear to follow a normal distribution. Quantitatively, the analysis began by examining the skewness and kurtosis values for the behavioral mix factors and investment decision. According to Gamst et al. (2008), values of skewness and kurtosis exceeding 1 or falling below -1 suggest non-normality. Table 4.16 presents a summary of these values, showing that all behavioral factor components namely gambler's fallacy, representativeness, availability, anchoring, overconfidence, mental accounting, regret aversion, loss aversion, and herding had skewness and kurtosis values between -1 and 1, indicating normal distribution. The investment decision variable also fell within this acceptable range, confirming its normal distribution.

Table 4.16: Summary of skewness and kurtosis statistic

Constructs	Skewness Statistic	Kurtosis Statistic
Gambler's fallacy	-.405	-.954
Representativeness	-.549	-.627
Availability	.687	-.953
Anchoring	.662	-.743
Overconfidence	-.190	-.899
Mental accounting	-.160	-.528
Regret aversion	-.281	.262
Loss aversion	-.269	-.326
Herding	-.309	-.023
Investment decision	-.719	-.395

Source: Computation from survey data (2025)

Additionally, the results from the Shapiro-Wilk test, as shown in Table 4.17, indicate that all variables had p-values greater than 0.05. This suggests that the variables in the study follow a normal distribution. Consequently, it can be concluded that the residuals are normally distributed, thereby meeting the assumptions required for conducting regression analysis.

Table 4.17: Shapiro Wilk test of normality

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Studentized Residual	.075	133	.063	.982	133	.080
a. Lilliefors Significance Correction						

Source: Computation from survey data (2025)

4.7.6 No auto correlation

Regression analysis relies on the assumption that the error or residual terms are uncorrelated across observations (Kothari, 2004). This assumption is tested using the Durbin-Watson statistic, which assesses the presence of autocorrelation among residuals. The statistic ranges from 0 to 4, with a value of 2 indicating no autocorrelation (Field, 2009). Values below 2 suggest positive autocorrelation, while values above 2 indicate negative autocorrelation. Generally, residuals are considered uncorrelated when the Durbin-Watson value falls within the range of 1.50 to 2.50 (Muluadam, 2015). In this study, as shown in the model summary in Table 4.18, the Durbin-Watson value was 1.505, which lies within the acceptable range. Therefore, it can be concluded with confidence that the assumption of independent errors has been satisfactorily met.

4.8 Regression Analysis and Hypothesis Testing

To evaluate the extent to which the explanatory variables namely gambler's fallacy, representativeness, availability, anchoring, overconfidence, mental accounting, regret aversion, loss aversion, and herding account for the variation in the dependent variable, which is investment decision, a regression analysis was conducted. This analysis was

carried out after confirming that the assumptions of the study were satisfied. A 0.05 significance level corresponding to a 95% confidence interval was applied. Prior to this, a correlation analysis had assessed the relationship between the investment decision and the identified behavioural factors. This section aims to analyse the collective influence of these independent variables on the dependent variable through multiple regression.

According to the model summary in Table 4.18, the R-value of 0.667 signifies a moderate correlation between the nine behavioural factors and investment decision. The adjusted R square value stands at 0.404, indicating that 40.4% of the variance in individual investors' decisions to invest in real estate can be explained by the variations in these behavioural factors. The remaining 59.6% is attributed to other influences or external variables.

Table 4.18: Model fitness of behavioral factors

Model Summary^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.667 ^a	.445	.404	.91501	1.505
a. Predictors: (Constant), Herding, Overconfidence , Representativeness, Loss aversion, Availability , Anchoring , Mental accounting, Gambler's fallacy, Regret aversion					
b. Dependent Variable: Investment decision					

Source: Computation from survey data (2025)

The ANOVA table is used to determine whether the overall model provides a statistically significant prediction of the outcome variable (Field, 2009). In this case, the proposed model was considered effective, as the significance value (0.000) was below the threshold of 0.05. This indicates that the overall model demonstrated a statistically significant relationship between the behavioral factors and the investment decision.

Table 4.19: ANOVA for behavioral factors

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	82.555	9	9.173	10.956	.000 ^b
	Residual	102.981	123	.837		
	Total	185.537	132			
a. Dependent Variable: Investment decision						
b. Predictors: (Constant), Herding, Overconfidence , Representativeness, Loss aversion, Availability , Anchoring , Mental accounting, Gambler's fallacy, Regret aversion						

Model coefficients are presented in Table 4.20 below. Model constant $\alpha=2.608$ and has p value $p=0.023$.

Table 4.20: Regression of behavioral factors on investment decision

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.608	1.132		2.305	.023
	Gambler's fallacy	-.184	.069	-.192	-2.668	.009
	Representativeness	.229	.076	.208	3.008	.003
	Availability	-.150	.060	-.171	-2.489	.014
	Anchoring	.186	.069	.187	2.709	.008
	Overconfidence	-.201	.075	-.188	-2.696	.008
	Mental accounting	.227	.110	.145	2.069	.041
	Regret aversion	-.471	.148	-.233	-3.188	.002
	Loss aversion	1.066	.166	.451	6.440	.000
	Herding	-.477	.168	-.209	-2.840	.005

Source: Computation from survey data (2025)

Moreover, the findings reveal that all nine predictors gambler's fallacy, representativeness, availability, anchoring, overconfidence, mental accounting, regret aversion, loss aversion, and herding exhibited statistically significant standardized coefficients and beta values. Specifically, the results were as follows: $\beta = -0.192$, $p = 0.009$; $\beta = 0.208$, $p = 0.003$; $\beta = -0.171$, $p = 0.014$; $\beta = 0.187$, $p = 0.008$; $\beta = -0.188$, $p = 0.008$; $\beta = 0.145$, $p = 0.041$; $\beta = -0.233$, $p = 0.002$; $\beta = 0.451$, $p = 0.000$; and $\beta = -0.209$, $p = 0.005$, all of which are below the 0.05 significance level. These results indicate that each of the nine behavioral factors has a statistically significant impact on real estate investment decisions in Addis Ababa.

The aim of the regression analysis in this study is to develop an equation that quantifies the impact of the predictor variables on the dependent variable. The resulting regression equation is presented as follows:

$$INV = \alpha_1 + \beta_1GAM + \beta_2REP + \beta_3AVA + \beta_4ANC + \beta_5OVE + \beta_6MEN + \beta_7REG + \beta_8LOS + \beta_9HER + e$$

Where:

INV = Investment decision

GAM = Gambler's fallacy

REP = Representativeness

AVA = Availability

ANC = Anchoring

OVE = Overconfidence

MEN = Mental accounting

REG = Regret aversion

LOS = Loss aversion

HER = Herding

So equation becomes:

$$ID = 2.608 - 0.192GAM + 0.208REP - 0.171AVA + 0.187ANC - 0.188OVE + 0.145MEN - 0.233REG + 0.451LOS - 0.209LOS + e$$

Based on the fitted regression model, if all the predictor variables gambler's fallacy, representativeness, availability, anchoring, overconfidence, mental accounting, regret aversion, loss aversion, and herding are held at zero, the predicted value for the real estate investment decision would be 2.608.

4.8.1 Gambler's Fallacy and Investment Decision

Research findings as presented in table 4.20 above, the gambler's fallacy has a negative relationship with investment decision the significance level $p = 0.009 < 0.05$ ($\beta = -0.192$). The correlation is -0.192, which shows that gambler's fallacy has a negative influence on investment decision. More precisely, gambler's fallacy is influential in shaping real estate investors' investment decision in Addis Ababa. This indicates that a unit increase in gambler's fallacy bias among individual real estate investors would lower real estate investment decision by 0.192 with significance 0.009. The same findings were illustrated in the research works of the relations of gambler's fallacy and investment decision for example Quaicoe and Eleke-Aboagye (2021) illustrated that the gambler's fallacy can lead people to make wrong decisions when investing.

Thus, the research outcome of the study revealed that the first hypothesis (H1: gambler's fallacy has a significant effect on real estate investment decision in Addis Ababa, Ethiopia) is not rejected as the multiple regression result supports the hypothesis. The inability to reject the gambler's fallacy bias hypothesis that is examined the relationship between gambler's fallacy bias and the real estate investment decision in Addis Ababa shows that the behavior of the investors will influence the decision of their investment.

4.8.2 Representativeness and Investment Decision

There is a positive relationship between the representativeness bias and investment decision the significance level $p = 0.003 < 0.05$ ($\beta = 0.208$) as research findings show in table 4.20 above. The correlation value is 0.208, which shows that representativeness bias has a positive influence on investment decision. In particular, representativeness bias is a significant factor in the making of real estate investors' investment decision in Addis Ababa. This implies that a rise in representativeness bias among private property investors would increase property investment decision by 0.208 with significance 0.003.

The above finding is consistent with previous academic work by Irshad et al. (2016) also proved a positive relationship between representativeness bias and investment decisions.

Ikram (2016) examined how behavioral determinants affect individual investment decisions and found that the cognitive heuristic of representativeness had a positive impact, suggesting that availability bias led to increased returns for individual investors. Similarly, Khan (2015) concluded that availability bias significantly influences the investment decisions of individual investors.

Subsequently, the research finding of the study was that the second hypothesis (H2: representativeness has a significant impact on real estate investment decision in Addis Ababa, Ethiopia) not rejected as the multiple regression finding supports the hypothesis. The non-rejection of the hypothesis of representativeness bias under study is regarding the interaction between representativeness bias and the actual real estate investment decision in Addis Ababa shows that investor behavior will determine the investment decision.

4.8.3 Availability and Investment Decision

Availability had a regression coefficient of - 0.171 and significance level of 0.014. Therefore, availability has a significant and negative effect on the investment decision of Addis Ababa real estate investors. The association is - 0.171, meaning that availability bias has a negative effect on investment decision. Specifically, availability bias is a significant determinant to decide real estate investors' investment decision in Addis Ababa. This indicates that increase in availability bias amongst individual real estate investors would reduce real estate investment decision by 0.171 with significance level of 0.014. Numerous studies all confirmed the finding of this study i.e. availability bias significantly negatively affects the investment decision of individual investors.

For instance, Shah et al. (2018) explored the potential effects of heuristic-driven biases on individual investors' decision making processes. Their findings indicated that reliance on availability bias led investors to make irrational choices. Similarly, Ahmad and Shah (2021) emphasized that when investors depend on heuristics, their technical expertise and

reasoning abilities are undermined, resulting in judgment errors. These errors contribute to irrational decisions, which negatively impact investment performance. Likewise, Dangol and Manandhar (2020) contended that heuristic biases, such as availability bias, contribute to irrational investment behavior.

Thus, the outcome of research's finding was that the third hypothesis (H3: availability has a significant effect on Addis Ababa Ethiopia real estate investment decision) not rejected because multiple regression result supported the hypothesis. The non-rejection of the availability bias hypothesis that was tested the relationship between availability bias and the real estate investment decision in Addis Ababa shows that the investors' behavior will influence the investment decision.

4.8.4 Anchoring and Investment Decision

Anchoring revealed regression coefficient 0.187 and significance level 0.008. This indicates that anchoring is significantly and positively affecting real estate investors' investment decision in Addis Ababa. It has a value of 0.187, and it reflects that anchoring is positively affecting investment decision. That is to say, anchoring bias is an important predictor in constructing real estate investors' investment decision in Addis Ababa. This would imply that an increase in anchoring bias by one unit among individual real estate investors would increase real estate investment decision by 0.187 with significance 0.008. All the earlier researches resulted in favor of finding of this study i.e. anchoring bias has significant positive impact over individual investor's investment decision.

Drawing from Peaches and Laryea (2023) research on how anchoring bias affects investment decision making using data from Ghana and suggesting the objective of this paper is to explore how anchoring affects investor decision-making processes in context to mutual fund as well as how it differs with respect to gender and levels of financial knowledge. The study shows that investors on average were most probably going to be highly and positively influenced by the anchoring bias. Rehan and Umer (2017) examined whether cognitive and emotional biases would impact private investors' investment decisions and, if yes, their findings show that anchoring has a highly significant positive impact on investors.

Therefore, the research finding of the study showed that the fourth hypothesis (H4: anchoring has significant and negative impact on real estate investment decision in Addis Ababa Ethiopia.) is not rejected based on the outcome of the multiple regression being in favor of the hypothesis. The inability to reject the anchoring bias hypothesis that tested the relationship between availability bias and the investment decision in the Addis Ababa real estate suggests that the behavior of the investors will influence the investment decision.

4.8.5 Overconfidence and Investment Decision

Overconfidence was found to have a regression coefficient of -0.188 with a significance level of 0.008, indicating a statistically significant negative effect on the investment decisions of real estate investors in Addis Ababa. This suggests that as overconfidence among individual investors increases, their investment decisions are likely to decrease by 0.188 units, holding other variables constant. Thus, overconfidence bias emerges as a crucial factor influencing investment behaviour. Similar findings have been reported in studies examining the relationship between overconfidence and investment decisions.

According to Bazerman (2002), overconfident investors tend to overestimate their personal abilities and display unrealistic optimism about future outcomes or perceived control over situations. Pulford and Colman (1996) also describe excessive confidence in real estate investment as the overestimation of favourable outcomes. Empirical research supports this, highlighting the significant implications of overconfidence in real estate investment decisions (Bao and Li, 2016; Farlow, 2004; Shiller, 2005). Farlow (2004) noted that overconfidence leads investors to underestimate risk in property markets.

However, findings in the literature are mixed. While Lim (2012), Toma (2015), and Javed et al. (2017) reported that overconfidence positively influences investors' decision-making, Kengatharan and Kengatharan (2014) found the opposite overconfidence had a negative impact on investment decisions. Additionally, Adil et al. (2021) found a significant positive relationship between overconfidence and investment decisions. Chhapra et al. (2018) provided empirical evidence supporting a positive effect of

overconfidence on investment behaviour among individual investors in Pakistan. Madaan and Singh (2019) reached similar conclusions. In contrast, Park et al. (2010) found that overconfidence negatively affects both investment decisions and performance.

Thus, the result of the research study showed that the fifth hypothesis (H5: overconfidence has a significant effect on Addis Ababa, Ethiopia real estate investment decision) not rejected as the multiple regression result verifies the hypothesis. The inability to reject the overconfidence bias hypothesis which was examining the interaction between availability bias and investment decision in the real estate market in Addis Ababa suggests that investor behavior will influence the investment decision.

4.8.6 Mental Accounting and Investment Decision

Mental accounting also had a regression coefficient of 0.145 and a significance level of 0.041. This indicates that mental accounting has a significant and positive impact on the investment decision of the real estate investors in Addis Ababa. Its value is 0.145, which indicates that mental accounting has a positive impact on investment decision. Particularly, mental accounting bias is a key variable to form real estate investors' investment decision in Addis Ababa. In other words, a rise in overconfidence bias of individual real estate investors would increase real estate investment decision by 0.145 with significance level of 0.041.

The above finding aligns with prior academic studies. Jain et al. (2020) applied the fuzzy analytic hierarchy process to explore how behavioral biases influence the decision making of individual equity investors. Their results revealed that mental accounting bias significantly impacted investor decisions. Similarly, Rekik and Boujelbene (2013) found that mental accounting plays a role in shaping investment behavior. In another study, Agegn (2021) analyzed behavioral determinants of investment decisions using micro-level data from private investors in Ethiopia's Amhara Region. The research concluded that mental accounting, as a cognitive heuristic bias, had a strong influence on individual investment choices in the region. Khan (2020) also investigated the effects of cognitive heuristic-based biases including mental accounting, the disposition effect, and herding on investment decisions, incorporating financial literacy as a moderating factor. The findings

showed that mental accounting had a strong positive influence on investment decision making.

Therefore, the study's findings support the sixth hypothesis (H6: mental accounting has a significant impact on real estate investment decisions in Addis Ababa, Ethiopia), as the results of the multiple regression analysis validate the hypothesis. The acceptance of this hypothesis indicates that there is a meaningful relationship between mental accounting bias and real estate investment decisions in Addis Ababa, suggesting that investor behavior significantly influences their investment choices in the real estate sector.

4.8.7 Regret Aversion and Investment Decision

Regret aversion bias indicated a regression coefficient - 0.233 and a significance level of 0.002. This means regret aversion bias has a negative and significant influence on the investment decision of the real estate investors in Addis Ababa. The magnitude of this relationship is - 0.233, meaning regret aversion has a negative effect on investment decision. In particular, regret aversion bias is a significant determinant in shaping real estate investors' investment decision in Addis Ababa. This indicates that an increase by one unit of regret aversion bias among private real estate investors would reduce real estate investment decision by 0.233 with significance 0.002.

Similar conclusions were drawn in studies exploring the link between regret aversion and investment decisions. Regret is typically triggered by unfavourable outcomes and reflections on potentially better results that might have been achieved through alternative choices (Fogel and Berry, 2006). Investors influenced by this bias tend to make irrational decisions driven by regret, fear, and the consequences of past choices (Shiller, 2003; Odean, 1998). Prior research, including neurological studies involving lottery-based decision-making, found that experiences inducing regret can lead to regret-averse behaviour during decision-making processes.

Malik et al. (2021) examined the role of behavioural biases in financial decision-making within Pakistan's real estate sector. Their findings showed that regret aversion bias had a more significant impact on real estate prices than herding behaviour and other related

biases. Accordingly, this study's findings support the seventh hypothesis (H7: regret aversion significantly impacts real estate investment decisions in Addis Ababa, Ethiopia). The multiple regression results confirmed this relationship, indicating that investor attitudes influenced by regret aversion bias meaningfully affect real estate investment decisions in the city.

4.8.8 Loss Aversion and Investment Decision

Loss aversion showed a regression coefficient of 0.451 with a significance level of 0.000, indicating a strong and statistically significant positive impact on real estate investment decisions in Addis Ababa. This coefficient value of 0.451 suggests that as loss aversion increases, investment decision-making is positively influenced. More specifically, loss aversion bias is an important factor in forming real estate investors' investment decision in Addis Ababa. That is to say, a unit that raises loss aversion bias among individual real estate investors would raises real estate investment decision by 0.451 with significance level of 0.000. The same findings were pointed out in research studies of loss aversion and investment decision relationships.

Iram et al. (2021) found that loss aversion significantly influences investment decisions. Their study highlighted that loss aversion, herding behaviour, and fear of missing out all play important roles in shaping retail investors' choices, with fear of missing out serving as a mediating factor. Numerous studies have also confirmed a strong and positive link between loss aversion bias and investment decision-making (Lim, 2012; Jain et al., 2019; Zat and Khan, 2017; Rehan and Umer, 2017; Toma, 2015).

Accordingly, the results of this study supported the eighth hypothesis (H8: loss aversion has a significant effect on real estate investment decisions in Addis Ababa, Ethiopia), as indicated by the multiple regression analysis. The acceptance of this hypothesis confirms that loss aversion bias is a meaningful behavioural factor influencing investment decisions among real estate investors in Addis Ababa.

4.8.9 Relationship between Herding and Investment Decision

Finally, herding bias exhibited a regression coefficient - 0.209 and a significance level of 0.005. This indicates that herding has a negative and significant impact on the investment decision of real estate investors in Addis Ababa. This relationship is - 0.209, thus herding bias has a negative impact on investment decision. More specifically, herding bias is a major driver in making real estate investors' investment decision in Addis Aba. That is, an increment in herding bias in low-confidence real estate investors would lower real estate investment decision by 0.209 with significance 0.005.

The above finding aligns with prior research. Durand et al. (2013) observed that investors with low confidence are more likely to rely on others' opinions. Adil et al. (2021) found that herding behaviour has a negative impact on investment decisions among both male and female investors. Ahmad and Wu (2021) examined herding behaviour and its effects on perceived market efficiency and investment management practices, revealing that individual investors influenced by herding tend to view markets as inefficient, engage in excessive trading, and experience reduced investment performance. In contrast, Rahman and Gan (2020) suggested that market news and media can shape investor sentiment, and with access to valuable information, herding behaviour may actually enhance decision-making. Similarly, in highly volatile markets, real estate investors often mimic the actions of others, which contribute to the formation and collapse of real estate bubbles, as collective investor sentiment can influence the overall market environment.

Consequently, this study found support for the ninth hypothesis (H9: herding has a significant effect on real estate investment decisions in Addis Ababa, Ethiopia). The multiple regression results confirmed this relationship, indicating that herding behaviour is a significant factor influencing how investors make decisions in the local real estate market.

CHAPTER FIVE

5. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the research findings, along with the conclusions and recommendations derived from the study. For clarity, the conclusions are based on the research objectives. A general discussion of the findings is provided, and recommendations are offered to relevant stakeholders based on these conclusions. Lastly, the study outlines its limitations and suggests directions for future research.

5.2 Summary of Findings

The study was based on the premise that nine behavioural biases significantly influence real estate investment decisions in Addis Ababa, Ethiopia. Both theoretical and empirical literatures on behavioural biases were reviewed, and a conceptual framework was developed to reflect the presumed relationship between these behavioural biases and investment decision-making.

The proposed relationships were empirically tested through the following specific objectives: to assess the impact of heuristic-based behavioural biases (gambler's fallacy, representativeness, availability, anchoring, and overconfidence) on the investment decisions of real estate investors in Addis Ababa; to evaluate the influence of prospect theory-based biases (mental accounting, regret aversion, and loss aversion); and to determine the effect of herding behaviour on investment decision-making. These expected relationships were incorporated into the conceptual framework that guided the research.

a) Objective 1: To examine the influence of heuristic-based behavioural biases on real estate investment decisions in Addis Ababa, Ethiopia

The first objective focused on determining the effect of heuristic-based behavioural biases on the investment decisions of real estate investors in Addis Ababa. respondents were asked to indicate their level of agreement with statements related to heuristic biases,

which included gambler's fallacy, representativeness, availability, anchoring, and overconfidence.

The study assumed that these biases would show statistically significant correlations with investment decisions. The findings confirmed significant relationships between heuristic-based biases and the investment decisions of real estate investors in Addis Ababa.

Hypothesis H1: "Gambler's fallacy affects real estate investment decisions in Addis Ababa" was not rejected. The standardized beta coefficient for gambler's fallacy was -0.192 with a p-value of 0.009. Since $p < 0.05$, the hypothesis is supported at the 5% significance level.

Hypothesis H2: "Representativeness has a significant effect on real estate investment decisions in Addis Ababa" was also not rejected. Representativeness bias had a standardized beta coefficient of 0.208 with a p-value of 0.003. As $p < 0.05$, this hypothesis is also supported at the 5% significance level.

Hypothesis H3: "Availability bias affects real estate investment decisions in Addis Ababa, Ethiopia" was not rejected. The standardized beta coefficient for availability bias was -0.171, with a p-value of 0.014. Since the p-value is less than 0.05, H3 is supported at the 5% level of significance.

Hypothesis H4: "Anchoring has a significant influence on real estate investment decisions in Addis Ababa, Ethiopia" was also not rejected. Anchoring bias yielded a standardized beta of 0.187 and a p-value of 0.008. As $p < 0.05$, H4 is accepted at the 5% significance level.

Hypothesis H5: "Overconfidence has a significant effect on real estate investment decisions in Addis Ababa, Ethiopia" was not rejected. The regression analysis showed a standardized beta coefficient of -0.188 with a p-value of 0.008. Given that $p < 0.05$, H5 is confirmed at the 5% significance level.

b) Objective 2: To analyse the effect of prospect based behaviour biases on real estate investors' investment decision in Addis Ababa, Ethiopia

This objective focused on assessing the influence of prospect theory-based behavioural biases on the investment decisions of real estate investors in Addis Ababa, Ethiopia. To address this, respondents were asked to express their level of agreement with statements related to prospect-based biases, which included mental accounting, regret aversion, and loss aversion. The results revealed a significant association between these biases and the investment decisions of real estate investors in Addis Ababa.

Hypothesis H6: "Mental accounting has a significant effect on real estate investment decisions in Addis Ababa, Ethiopia" was not rejected. The standardized beta coefficient for mental accounting was 0.145, with a p-value of 0.041. Since the p-value is below 0.05, H6 is accepted at the 5% significance level.

Hypothesis H7: "Regret aversion significantly impacts real estate investment decisions in Addis Ababa, Ethiopia" was also not rejected. Regret aversion bias showed a standardized beta of -0.233 with a p-value of 0.002. Given that $p < 0.05$, H7 is supported at the 5% significance level.

Hypothesis H8: "Loss aversion significantly influences real estate investment decisions in Addis Ababa, Ethiopia" was not rejected. The standardized beta coefficient for loss aversion was 0.451, with a p-value of 0.000. Since this is well below 0.05, H8 is confirmed at the 5% significance level.

Among the prospect based biases, loss aversion had the strongest positive influence on investment decision in real estate investment in Addis Ababa, Ethiopia.

c) Objective 3: To investigate the effect of herding behaviour on real estate investors' investment decision in Addis Ababa, Ethiopia

The third objective aimed to examine the impact of herding behaviour on the investment decisions of real estate investors in Addis Ababa, Ethiopia. To achieve this, respondents were asked to express their level of agreement with statements related to investment behaviours influenced by herding bias. The study was based on the assumption that a

statistically significant relationship exists between herding behaviour and investment decision-making among real estate investors in Addis Ababa.

Hypothesis H9: "Herding has a strong influence on real estate investment decisions in Addis Ababa, Ethiopia" was not rejected. The standardized beta coefficient for herding bias was -0.209, with a p-value of 0.005. Since the p-value is less than 0.05, H9 is supported at the 5% significance level. The negative beta suggests that greater herding behavior is associated with less rational decision in the real estate sector in Addis Ababa, Ethiopia.

5.3 Conclusions

The primary aim of this study was to assess whether a combination of heuristic biases, prospect theory biases, and herding behaviour significantly influence the investment decisions of individual real estate investors in Addis Ababa, Ethiopia. To achieve this objective, the study integrated theoretical insights and a comprehensive empirical review of relevant literature, followed by the collection and analysis of primary data from 133 respondents using a structured questionnaire. A total of nine hypotheses were tested to evaluate the influence of various behavioural biases. The results confirmed that heuristic based biases, prospect theory based biases, and herding behavior collectively influence real estate investment decisions in Addis Ababa, albeit to varying degrees across individual biases.

The first research objective focused on the impact of heuristic-based biases namely gambler's fallacy, representativeness, availability, anchoring, and overconfidence on real estate investment decisions. The empirical results demonstrated that all five heuristic biases had a statistically significant influence on investor behaviour. This finding validates the hypothesis that heuristic driven behaviour plays a critical role in shaping investment decisions, highlighting the departure of investor behaviour from the rational decision making assumed by classical financial theory.

The second objective addressed the influence of prospect theory based biases, including mental accounting, regret aversion, and loss aversion. The analysis confirmed that each

of these biases significantly influenced real estate investment decisions in the Addis Ababa market. These findings support the hypothesis that investor decision making under risk and uncertainty is strongly influenced by emotional and psychological responses. Specifically, the results highlight the asymmetric evaluation of gains and losses, where losses are perceived more intensely than equivalent gains.

The third research objective examined the effect of herding behaviour on real estate investment decisions. The findings revealed that herding bias significantly impacts investor behaviour in Addis Ababa, suggesting that investors often follow collective behaviour patterns rather than relying on individual analysis or market fundamentals. This supports the notion that real estate markets may exhibit inefficiencies due to irrational crowd behaviour, leading to investment decisions that diverge from intrinsic asset values. Moreover, the results imply a lack of awareness or acknowledgment of cognitive biases among investors, which contributes to repetitive decision-making errors.

In summary, this study provides robust empirical evidence that behavioural biases particularly heuristic and prospect based biases, along with herding behaviour play a substantial role in influencing real estate investment decisions in Addis Ababa. These findings challenge the assumptions of investor rationality and market efficiency underpinning traditional finance theories, reinforcing the relevance of behavioural finance as a framework for understanding real world investment behaviour. The study also emphasizes the need for investor education and behavioural awareness to mitigate the adverse effects of such biases on financial decision making.

5.4 Recommendations

This study identified that five out of the nine behavioural biases examined namely gambler's fallacy, availability, overconfidence, regret aversion, and herding behaviour have a statistically significant negative impact on real estate investment decisions in Addis Ababa. These biases can lead investors to make suboptimal choices, thereby reducing the effectiveness and efficiency of their investment outcomes. To counteract the adverse effects of these behavioural tendencies, it is imperative for investors to move beyond evaluating investments solely based on isolated risk-return characteristics.

Instead, a portfolio based approach should be adopted one that considers how each asset contributes to the diversification, risk reduction, and overall return of the investor's real estate portfolio. Based on the findings of this study, the following recommendations are proposed for both individual investors and policymakers:

Behavioural awareness and investor education: Real estate investors should actively seek to understand how behavioural biases influence their decision making processes. Increasing awareness of detrimental behavioural patterns such as overconfidence, susceptibility to recent information (availability), or the tendency to follow the crowd (herding) can help investors avoid decisions that negatively impact investment performance. Investors should strive to base their decisions on objective and comprehensive information, and be willing to revise their strategies as new, credible data becomes available. Adopting a long-term investment perspective, rather than reacting impulsively to short-term market fluctuations, can also improve investment outcomes. Furthermore, investors are advised to refrain from trying to predict inherently uncertain outcomes and to consider the opportunity costs of alternative investment choices.

Integration of behavioural and traditional financial models: While behavioural finance provides essential insights into investor psychology and decision making, it should not be viewed in isolation. A more robust and realistic approach to investment strategy would involve the integration of behavioural insights with conventional financial models. This would enable investors to construct more balanced and effective investment plans that take into account both rational analysis and psychological influences.

Institutional support and policy development: Given the significant impact of behavioural biases on real estate investment decisions, this study recommends the establishment of a dedicated governmental or regulatory body to support the development and oversight of real estate investment policies. Such an institution could play a pivotal role in promoting investor protection and market transparency. Its responsibilities could include educating investors on behavioural finance principles and common decision making pitfalls, offering guidelines for prudent investment practices, providing access to reliable market

data and investment research, assisting in the identification of viable investment opportunities and fostering sustainable strategic positioning within the real estate sector

By implementing these measures, both investors and policymakers can work toward enhancing decision quality, improving market efficiency, and supporting the long-term development of Ethiopia's real estate investment landscape.

5.5 Limitations and Directions for Future Researches

As with any empirical investigation, this study is subject to certain limitations that should be acknowledged. Firstly, the research was geographically confined to Addis Ababa, Ethiopia, where real estate developers are commonly regarded as investors. This contextual nuance may limit the generalizability of the findings to other settings where developers and investors operate as distinct entities. Thus, caution should be exercised in applying the conclusions of this study to real estate markets with differing structural or cultural dynamics.

Secondly, the study utilized a cross-sectional research design, collecting data at a single point in time. While this approach is useful for identifying relationships between variables, it inherently limits the ability to establish causal inferences or observe behavioural trends over time. Given the fluid and evolving nature of investor behaviour, a cross-sectional snapshot may not adequately capture long-term patterns or shifts in decision-making processes.

Another limitation relates to the scope of the sample. Ethiopia is a demographically and culturally diverse nation, yet the sample for this study was drawn exclusively from Addis Ababa home to only about 5% of the country's population. The selection of Addis Ababa was driven primarily by accessibility and the researcher's proximity to the study area. Consequently, the findings may not reflect the behavioural tendencies of real estate investors in other regions of Ethiopia, particularly in rural or economically distinct urban areas. In light of these limitations, several avenues for future research are recommended:

Broaden geographical scope: Future studies should expand beyond Addis Ababa to include multiple cities and regions across Ethiopia. Such efforts would help assess the generalizability of the findings and capture regional variations in investor behaviour.

Incorporate qualitative approaches: Employing qualitative methodologies such as in depth interviews, focus groups, or ethnographic studies could yield richer insights into the cognitive and emotional processes underpinning investment decisions. These methods can complement quantitative findings by offering a more nuanced understanding of behavioural influences.

Consider demographic and contextual variables: Future research should account for additional influencing factors, including age, gender, income level, education, and investment experience. These demographic variables may moderate or mediate the relationship between behavioural biases and investment decisions, offering a more comprehensive understanding of investor profiles.

Adopt longitudinal research designs: To better capture changes in investor behaviour over time, future studies should consider longitudinal designs. Tracking investor decisions across different market conditions or economic cycles would provide valuable insights into how behavioural biases persist, diminish, or intensify over time.

By addressing these areas, future research can build upon the foundation laid by this study, contributing to a more robust and contextually grounded understanding of behavioural finance within the Ethiopian real estate sector.

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APPENDIX

Appendix-I: A Questionnaire on the effect of behavioral factors on real estate investment decision in Addis Ababa Ethiopia

A questionnaire on the effect of behavioral factors on real estate investment decision in Addis Ababa Ethiopia

(To be filled by individual investors)

Dear Respondents,

As part of my Master Degree study at Addis Ababa University School of Commerce, I am undertaking research aimed at investigating the effect of behavioral factors on real estate investment decision in Addis Ababa Ethiopia. The information you provide in this survey will be used for the stated purpose. It is purely for academic purpose, and I would like to assure you that I will treat all data as confidential and it will be reported anonymously in aggregate way. Hence, you are kindly requested to reply to all questions appropriately and return the questionnaire at your earliest possible. I thank you in advance for sharing your valuable experience and time with us in completing the questionnaire.

Thank you!

Kassahun Workneh

If you would like to communicate the researcher, you can use this email kassahunwa12@gmail.com

Part One: Demographic Data

Section 1: General Information

Direction: Please put a tick mark (X) in front of a response that best describes you.

1. Sex:

a) Male ☐ b) Female ☐

2. Which age group do you belong to?

a) 18-30 ☐ b) 31-45 ☐
c) 46-60 ☐ d) Above 60 ☐

3. What is your highest level of education?

- a) Below Diploma b) Diploma
d) First Degree e) Above First Degree

Section II: Behavioural factors affecting real estate investment decision

Direction: Please indicate your degree of agreement/disagreement with the following statements associated with real estate investment decision by circling the appropriate number. (1-Strongly disagree; 2-Disagree; 3-Neutral; 4-Agree; and 5-Strongly agree).

S/No		SDA	D	N	A	SA
1	GAMBLER'S FALLACY					
GAM1	"I often overlook the advantages that can come from investing in real estate."	1	2	3	4	5
GAM2	"Following several consecutive days of decline in the real estate market, I believe it is now poised to rise."	1	2	3	4	5
GAM3	"I can usually predict when a good or bad phase is coming to an end."	1	2	3	4	5
2	REPRESENTATIVENESS					
REP1	"I choose to invest only in real estate opportunities that I am familiar with."	1	2	3	4	5
REP2	"Even when my most thoroughly researched investment doesn't meet my expectations, I still choose to hold onto it."	1	2	3	4	5
REP3	"I rely on trend analysis to guide my investment decisions."	1	2	3	4	5
REP4	"If a real estate company is performing well and issues new shares, I would choose to invest in them."					
3	AVAILABILITY					
AVA1	"I usually approach investments that have recently posted negative returns with	1	2	3	4	5

S/No		SDA	D	N	A	SA
	greater caution."					
AVA2	"I usually invest in sectors that have shown profitability in the past."	1	2	3	4	5
AVA3	"I'm inclined to invest in areas where my friends have previously invested and earned profits."					
AVA4	"If I earn profits from an investment, I'm likely to pursue a similar one in the future."	1	2	3	4	5
AVA5	"My investment decisions are mostly influenced by advertisements rather than thorough research."	1	2	3	4	5
AVA6	"I would consider investing in a company that is presently facing a financial crisis."	1	2	3	4	5
4	ANCHORING					
ANC1	"My present investment decisions are shaped by my past experiences."	1	2	3	4	5
ANC2	"My current investment decisions are influenced by the returns I've received from past investments."					
ANC3	"I take an investment's past performance into account before deciding to invest in it."					
ANC4	"I set a target purchase price for an investment product ahead of time."					
5	OVERCONFIDENCE					
OVE1	"I believe I possess exceptional skills in real estate investing."	1	2	3	4	5
OVE2	"I consistently achieve strong results in	1	2	3	4	5

S/No		SDA	D	N	A	SA
	real estate investments."					
OVE3	"My real estate investment skills are superior to those of my peers."	1	2	3	4	5
OVE4	"If I were to lose my current real estate venture, I could easily find another one similar to it."	1	2	3	4	5
OVE5	"I'm willing to invest in a new real estate opportunity, even if my previous investment was unsuccessful."	1	2	3	4	5
OVE6	"I rely on my skills and confidence to make well-informed real estate investment decisions."	1	2	3	4	5
OVE7	"I tend to use my foresight to outperform other investors."	1	2	3	4	5
6	MENTAL ACCOUNTING					
MEN1	"I usually manage each component or account in my investment portfolio individually."	1	2	3	4	5
MEN2	"I sell underperforming investments from my portfolio."	1	2	3	4	5
MEN3	"I overlook the relationships between various investment opportunities."	1	2	3	4	5
7	REGRET AVERSION					
REG1	"I feel regret when I skip buying an investment and its price rises afterward."	1	2	3	4	5
REG2	"I hold onto profitable real estate investments, hoping their value will keep rising."	1	2	3	4	5
REG3	"I favor fixed-income investments over	1	2	3	4	5

S/No		SDA	D	N	A	SA
	those with variable returns."					
REG4	"I feel regret for not investing in real estate when the prices were low."	1	2	3	4	5
REG5	"I usually sell my underperforming investments as soon as their price returns to the original purchase level."	1	2	3	4	5
8	LOSS AVERSION					
LOS1	"I prefer to establish a stable income from real estate investments, even if the returns are modest."	1	2	3	4	5
LOS2	"Between two real estate investments one rising and one declining I would sell the one that's gaining and hold onto the one that's losing."	1	2	3	4	5
LOS3	"I typically invest in assets I believe are undervalued, aiming to profit when their prices increase."	1	2	3	4	5
LOS4	"I'm willing to take investment risks with bonus money, but I avoid risking funds reserved for my children's education."	1	2	3	4	5
LOS5	"If the market performs poorly, I tend to sell some of my riskier investments and reallocate the funds to safer options."	1	2	3	4	5
LOS6	"I typically invest in real estate markets that are overlooked by other investors."	1	2	3	4	5
9	HERDING					
HER1	"I rely on the judgment of my friends, colleagues, or family members when making real estate investment decisions."	1	2	3	4	5

S/No		SDA	D	N	A	SA
HER2	"I primarily depend on the opinions of friends, colleagues, or family members when making real estate decisions."	1	2	3	4	5
HER3	"My first real estate investment was made based on advice from a friend, colleague, or family member."	1	2	3	4	5
HER4	"When a well-known real estate analyst presents a view that contradicts mine, I usually adjust my opinion accordingly."	1	2	3	4	5
HER5	"I prefer to purchase real estate investments that are popular among other investors."	1	2	3	4	5
HER6	"I do consult others when making real estate investment decisions."	1	2	3	4	5

Section III. Real estate investment decision ---- Perception of the individual investors

Direction: Please indicate your degree of agreement/disagreement with the following statements associated with real estate investment decision by circling the appropriate number. (1-Strongly disagree; 2-Disagree; 3-Neutral; 4-Agree; and 5-Strongly agree).

	Item	SDA	D	N	A	SA
INV1	"I believe my real estate investment is secure compared to other assets."	1	2	3	4	5
INV2	"I perceived my real estate investments as low risk compared to stocks/bonds."	1	2	3	4	5
INV3	"My real estate investment has shown increased revenue growth in recent years."	1	2	3	4	5
INV4	"My real estate investment has experienced rising cash flow growth in recent years."	1	2	3	4	5
INV 5	"My real estate investment performs better	1	2	3	4	5

	than I initially predicted."					
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APPENDIX III Questionnaire in Amharic version

ከዚህ በታች የቀረቡትን መጠይቆች የሚስማማዎትን መልስ (1=በጣም አልስማማም 2=አልስማማም 3=አላውቅም 4=እስማማለሁ 5=በጣም እስማማለሁ) በማለት በቀረቡት ሰንጠረዥ አማራጭ ውስጥ እንዲያከቡ ያድርጉ።

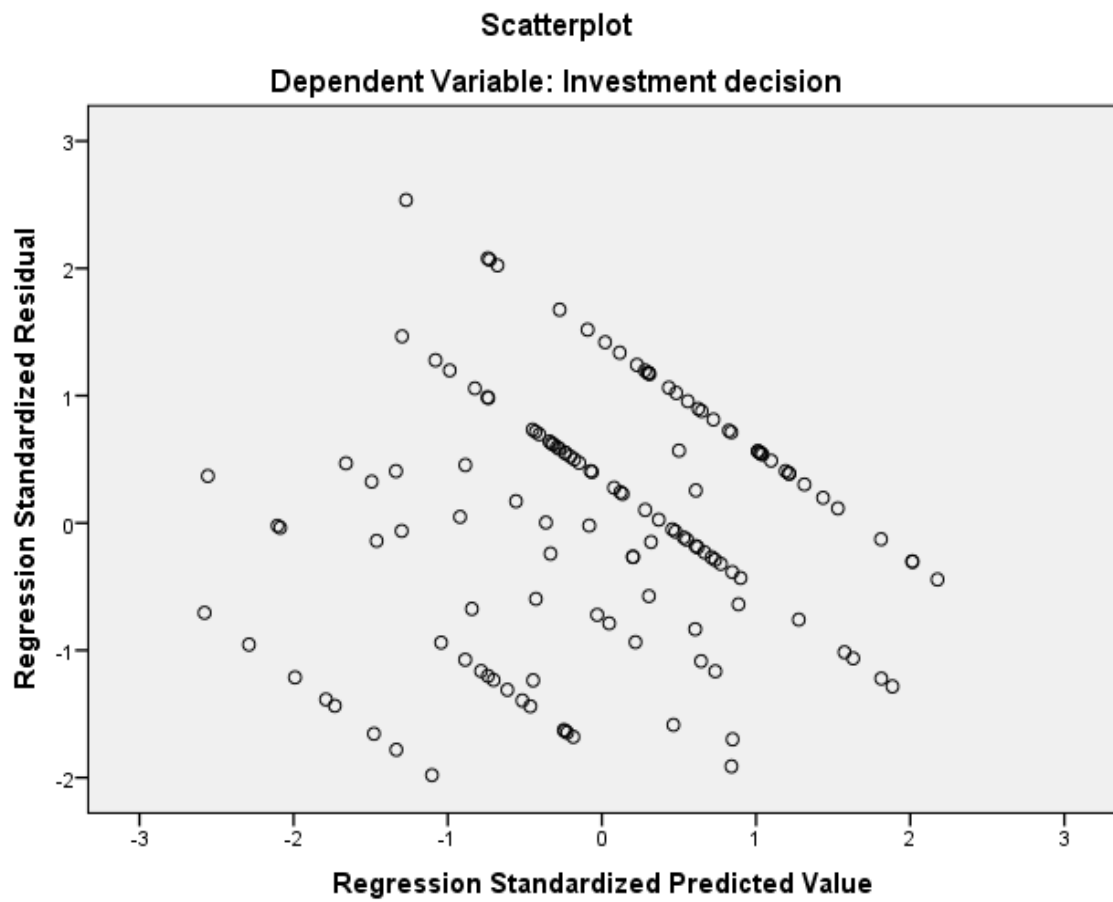
ተ.ቁ	የኢንቨስትመንት ውሳኔ ተፅዕኖ ሊያሳድሩ የሚችሉ ዝርዝር መጠይቆች።	በጣም አልስማማም	አልስማማም	አላውቅም	እስማማለሁ	በጣም እስማማለሁ
1	ከሪል እስቴት ኢንቨስትመንት የማገኘው ጥቅም ትኩረት አልሰጠውም	1	2	3	4	5
2	ለተከታታይ ጥቂት ቀናት የሪል እስቴት ዋጋ ቢቀንስ ለቀጣይ ዋጋው እንደሚጨምር አምናለው	1	2	3	4	5
3	የወደፊቱን ጥሩ ሆነ መጥፎ የመተንበይ ችሎታ አለኝ	1	2	3	4	5
4	የታወቀ ሪል እስቴት ኢንቨስትመንት ላይ ብቻ ኢንቨስት ማረግ ነው የምመርጠው	1	2	3	4	5
5	ምንም እንኳን ጥሩ ነው የምለው የኢንቨስትመንት አማራጭ ባሰብኩት መልክ የጠበኩትን ውጤት ባያመጣም ኢንቨስት ከማረግ አልቆጠብም	1	2	3	4	5
6	የኢንቨስትመንት ውሳኔ ስወስን የባለፉትን ዳታ/መረጃዎች በመጠቀም ትንታኔ አደርጋለው	1	2	3	4	5
7	ሌላ ሪል እስቴት ድርጅት ጥሩ ውጤት ካስመዘገበና የድርጅቱን አክሲዮን ለሸያጭ ካቀረበ አክሲዮን እገዛለው	1	2	3	4	5
8	በቅርብ ጊዜ ኪሳራ ያወጁ ኢንቨስትመንት ላይ ኢንቨስት ላለማድረግ ጥንቃቄ አደርጋለው	1	2	3	4	5
9	ከዚህ ቀደም ትርፋማ የሆኑ የኢንቨስትመንት መስክ ላይ ኢንቨስት የማድረግ ዝንባሌ አለኝ	1	2	3	4	5
10	ከዚህ ቀደም ጎደኞች ኢንቨስትመንት ያደረጉበት መስክ እና ትርፋማ የሆኑበት ላይ ኢንቨስት አደርጋለው	1	2	3	4	5
11	ኢንቨስት ያደረጉበት አንድ ኢንቨስትመንት ትርፋማ ከሆነ ለወደፊቱም በዛው ኢንቨስትመንት ኢንቨስት አደርጋለው	1	2	3	4	5
12	ብዙውን ጊዜ ኢንቨስት የማደርገው ማስታወቂያ መሰረት በማድረግ እንጂ በቂ ጥናት አድርጌ አይደለም	1	2	3	4	5

13	ኪሳራ ላይ እየገቡ ባሉ ድርጅቶች አክሴዎን ኢንሸስት አደርጋለው	1	2	3	4	5
14	ከዚህ ቀደም ያለኝ የኢንሸስትመንት ልምድ ላሁኑ የኢንሸስትመንት ውሳኔ ተፅዕኖ ያሳድርብኛል	1	2	3	4	5
15	ከዚህ ቀደም ኢንሸስት ያደረኩት ኢንሸስትመንት የሚያመጣው ገቢ ላሁኑ የኢንሸስትመንት ውሳኔ ተፅዕኖ ያሳድርብኛል	1	2	3	4	5
16	አንድን ኢንሸስትመንት ኢንሸስት ከማድረግ በፊት ከዚህ በፊት ያለውን የኢንሸስትመንት ጥሩ ውጤት መሰረት በማድረግ ነው	1	2	3	4	5
17	አንድን ኢንሸስትመንት ኢንሸስት ለማድረግ ቀድሞ የምገዛበትን ዋጋ እወስናለው	1	2	3	4	5
18	እራሴን በጣም ጥሩ የሪል እስቴት ኢንሸስትመንት ችሎታ ያለኝ እንደሆነ አምናለው	1	2	3	4	5
19	በሪል እስቴት ኢንሸስትመንት ውጤታማ ሰው ነኝ	1	2	3	4	5
20	እራሴን ከተፎካካሪዎች/ከጎደኞች አነፃር ሳነጻጽር ጥሩ የሪል እስቴት ኢንሸስትመንት ችሎታ አለኝ	1	2	3	4	5
21	ምንም እንኳን አሁን ላይ ኢንሸስት ያደረኩት ሪል እስቴት ኢንሸስትመንት ውጤታማ ባይሆንም እንኳን በቀላሉ ሌላ የሪል እስቴት ኢንሸስትመንት አማራጭ ማግኘት ለኔ ቀላል ነው	1	2	3	4	5
22	ምንም እንኳን ከዚህ ቀደም ኢንሸስት ያደረኩት ሪል እስቴት ኢንሸስትመንት ውጤታማ ባይሆንም አዲስ የሪል እስቴት ኢንሸስትመንት አማራጭ ኢንሸስት ማድረግ እችላለሁ	1	2	3	4	5
23	ጥሩ የሪል እስቴት ኢንሸስትመንት ውሳኔ ለመወሰን በራሴ ሙሉ ችሎታና መተማመን አለኝ	1	2	3	4	5
24	ከሌላው የተሻለ የወደፊቱን መልካም አጋጣሚን መተንበይ ችሎታ አለኝ	1	2	3	4	5
25	የተለያዩ የኢንሸስትመንት መስኮችን ለየብቻቸው የማየት እና የመረዳት ዝንባሌ አለኝ	1	2	3	4	5
26	ትርፋማ ያሉሆኑትን የኢንሸስትመንት መስኮች አጠቃላይ ካሉኝ የኢንሸስትመንት መስክ ውስጥ እሸጣቸዋለሁ	1	2	3	4	5
27	የተለያዩ የኢንሸስትመንት መስኮችን ያላቸውን ግንኙነት ብዙም ትኩረት አልሰጠውም	1	2	3	4	5
28	አሁን ላይ ያልገዛሁት ኢንሸስትመንት ዋጋቸው ሲጨምር እፀጸታለሁ	1	2	3	4	5

29	ዋጋው ይጨምራል ብዬ ተስፋ በማድረግ አዋጪ የሆኑትን የሪል እስቴት ኢንቨስትመንት ቶሎ አልሸጣቸውም	1	2	3	4	5
30	ዋጋቸው ከሚቀያየር የኢንቨስትመንት መስኮች በተሻለ ቆሚ ገቢ ያላቸውን የኢንቨስትመንት መስኮችን እመርጣለው	1	2	3	4	5
31	ዋጋቸው የቀነሱትን ኢንቨስትመንት ባለመግዛቴ እፀጸታለው	1	2	3	4	5
32	ጥሩ ውጤት ያላመጡ ኢንቨስትመንት ወደ ተገዙበት ዋጋ ሲመለሱ ቶሎ እሸጣቸዋለው	1	2	3	4	5
33	ምንም እንኳን ከሪል እስቴት ኢንቨስትመንት የማገኘው ገቢ ዝቅ ቢልም በማገኘው ገቢ እተማመናለው	1	2	3	4	5
34	ሁለት የኢንቨስትመንት አማራጮች ቢኖሩና አንደኛው ዋጋው እየጨመረ ያለ እና ሌላኛው ዋጋው እየቀነሰ ያለ ቢሆን ዋጋው እየጨመረ ያለውን በመሸጥ ዋጋው እየቀነሰ ያለውን አቆየዋለው	1	2	3	4	5
35	አብዛኛውን ጊዜ ከትክክለኛው ዋጋ ያነሱትን ኢንቨስትመንት ብዬ ያመንኩባቸውን እና ወደ ፊት ዋጋቸው ይጨምራል ብዬ ያሰብኳቸውን ኢንቨስትመንቶች እገዛለው	1	2	3	4	5
36	ካለኝ ትርፍ ኢንቨስት ለማድረግ እደፍራለው ነገር ግን ለልጆች ትምህርት የተቀመጠን ገንዘብ ኢንቨስት ለማድረግ አልደፍርም	1	2	3	4	5
37	ያለው ገበያ ጤናማ ካልሆነ አደጋ ያላቸውን ኢንቨስትመንት በመሸጥ ገንዘቤን ጤናማ ኢንቨስትመንት ላይ አውላለው	1	2	3	4	5
38	ሌሎች ኢንቨስተሮች የማይሳተፉበት የሪል እስቴት ኢንቨስትመንት ላይ ባብዛኛው ኢንቨስት አደርጋለው	1	2	3	4	5
39	በሪል እስቴት ላይ ኢንቨስት ውሳኔ ላይ የጎደኞቼን/የቅርብ ሰዎች/ቤተሰብ ድምዳሜን አምናለው	1	2	3	4	5
40	ባብዛኛው በሪል እስቴት ላይ ኢንቨስት ውሳኔ ላይ የጎደኞቼን/የቅርብ ሰዎች/ቤተሰብ አስተያየት ላይ እመረከዛለው	1	2	3	4	5
41	በመጀመሪያ የሪል እስቴት ኢንቨስትመንቴ ላይ በጎደኞቼ/በቅርብ ሰዎች/ቤተሰብ ተመክሬ ነበር	1	2	3	4	5
42	ታዋቂ የሪል እስቴት ተንታኝ ስለሪል እስቴት ኢንቨስትመንት ትንታኔን በመስማትና ትንተናው ከኔ	1	2	3	4	5

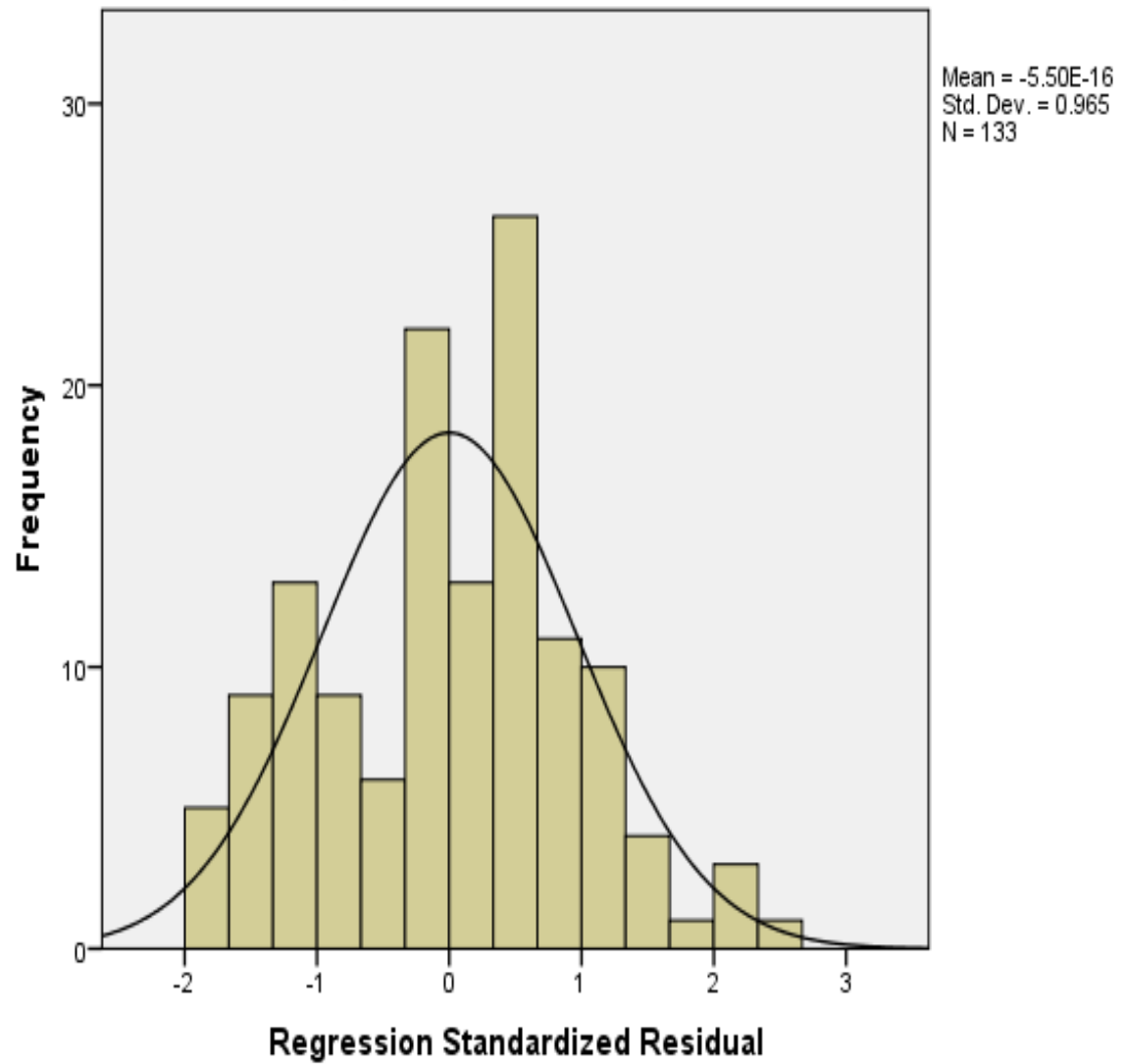
	አመለካከት ጋር የሚቃረን ከሆነ ብዙሁን ጊዜ አሳቤን እቀይራለው					
43	ሌሎች የሪል ኢስቴት ኢንቨስተሮች ኢንቨስት ያረጉትን ኢንቨስትመንት መግዛት እወዳለው	1	2	3	4	5
44	የሪል ኢስቴት ኢንቨስት ሳይረግ ማንኛውንም ሰው አማከራለው	1	2	3	4	5
45	የሪል ኢስቴት ኢንቨስትመንቴ በጣም ምቹት ይሰጠኛል	1	2	3	4	5
46	ከአጠቃላይ ከገበያው አንፃር የሪል ኢስቴት ኢንቨስትመንቴ ትንሽ አደጋ አለው	1	2	3	4	5
47	የሪል ኢስቴት ኢንቨስትመንቴ ላለፉት ሦስት ዓመት ገቢው አድጎል	1	2	3	4	5
48	የሪል ኢስቴት ኢንቨስትመንቴ ላለፉት ሦስት ዓመት በሚያመጣው ጥሬ ገንዘብ አድጎል	1	2	3	4	5
49	የሪል ኢስቴት ኢንቨስትመንቴ ካሰብኩት በላይ ጥሩ ውጤት አምጥቶል	1	2	3	4	5

Appendix II: Assumptions of Multiple Linear Regressions



Histogram

Dependent Variable: Investment decision



Normal P-P Plot of Regression Standardized Residual

Dependent Variable: Investment decision

