

**INFLUENCE OF BEHAVIOURAL BIASES ON REAL ESTATE
INVESTMENT DECISIONS BY AGENTS IN SHENZHEN, CHINA**

BY

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DECLARATION

This research project is my original work and has not been submitted for examination to any other university.

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DEDICATION

I dedicate this research project to my supervisor Mr. Dan Kibet Chirchir and supervisor Dr. Winnie Nyamute and my moderator Prof. Cyrus Iraya, all my MBA educators for impartation of knowledge, fellow MBA students and the staff of the University of Nairobi MBA co-ordination office for their administrative support.

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ABBREVIATIONS/ACRONYMS

REITs	Real Estate Investment Trust
CEO	Chief Executive Officer
SEZ	Special Economic Zone
GDP	Gross Domestic Product
SPSS	Statistical Package for Social Sciences

ABSTRACT

Behavioural biases naturally affect real estate investment decision. It may be very detrimental to an investor's fortune to let one's behavioral biases impact their decision-making process. Because of the inherent prejudices that are programmed into our minds and bodies, human people are prone to making judgments that are not in their best interests (Gordon, 2011). An investor is presumed to be normal in behavioural finance. The objective of this study was to determine the influence of behavioural biases on real estate investment decisions by agents in Shenzhen, China. A sample of 42 real estate agents operating in Shenzhen China was selected. Semi-structured questionnaires were administered. Five distinct biases were analyzed. Overconfidence, Frame Dependence, Herding Effect and Mental Accounting. In order to determine how much agents in Shenzhen's real estate market are influenced by their own behavioral biases while making financial investments, a regression study was conducted (China). By examining the beta values, we can see that the herding bias and overconfidence bias both negatively impacted the choice to invest in real estate, while the frame reliance bias and mental accounting prejudice both positively impacted the choice. The effect of herding bias (t-value = -2.452, p-value= 0.014), overconfidence bias (t-value = -3.889, p-value= 0.000), frame dependence bias (t-value = 3.437, p-value= 0.001) and mental accounting bias (t-value = 4.239, p-value= 0.000) were found out to be statistically significant as confirmed by the high t-values and p-values of less than 0.05. The research found a significant correlation (R-value = 0.729) between the four common cognitive biases (herding, overconfidence, representativeness, and mental accounting) and the real estate investment choices made by Shenzhen real estate agents. Adjusted R Square score of 0.525 indicates that irrational beliefs and biases account for 52.5% of the total variation in Shenzhen real estate agents' investing choices. Additionally, the research found that representative bias and mental accounting bias had a negative and statistically significant influence on individual investment decision making, but herding bias and overconfidence bias had no effect. It followed that an increase in herding bias and overconfidence bias would lead to worse individual investment decisions, whereas an increase in representative bias and mental accounting bias would lead to much better decisions. The research found that representativeness bias is one of the most prevalent biases influencing investing decision-making due to the fact that individuals tend to make choices based on preconceived notions or past and anticipated securities price movements. According to the findings, real estate professionals should be aware of and prepared to deal with cognitive biases, and they should also use effective allocation procedures to calculate the relative risk and reward of potential investments.

CHAPTER ONE

INTRODUCTION

1.1 Background

Indulging in one's own behavioral biases while making financial decisions might have disastrous consequences. The inherent biases in our minds and bodies cause us to consistently make poor choices (Gordon, 2011). An investor is presumed to be normal in behavioural finance. Researchers in the subject of behavioral finance have shown that people's decision-making processes are not always logical when it comes to financial matters (Ayopo & Adekunle, 2012). As the world's economy develops rapidly in recent years, real estate industry becomes a new investment tool for worldwide investors. Basically, the real estate prices fluctuate in line with national and regional economies, however, the prices keep increasing because people always want to have their own houses and companies always need office space to carry out their works.

This study is anchored on Behavioural Finance theory and supported by Frame Dependence Theory and Herding Theory. Under some circumstances, such as illogical conduct, repetitive patterns of behavior, and restrictions to arbitrage in financial markets, the markets may not accurately represent the fundamentals of the economy, according to the behavioral finance hypothesis. Frame dependence means that people are affected by ways of information presented which will influence their decision-making process. The most important explanation for frame dependence is

that people are loss-averse. Herding theory is based on the herding effect. Herding effect is defined as the personal decisions that will be affected by others' behavior. The vast majority of investment choices made in the real estate market are impacted, either directly or indirectly, by the actions of other market participants.

The real estate industry in China has turned into the indispensable element of the national economy. It has developed at a relatively fast growth rate in the past ten years and it continuously attracts investors to enter this market. This article will focus on the real estate investment decisions of the general public. Among all the factors which affect the real estate agents' decisions, behavioural biases become the most prominent ones in China.

1.1.1 Behavioural Biases

Behavioural biases are unreasonable thoughts or actions that can affect our decision-making process unknowingly (Chen, 2019). In a general sense, behavioral biases may be understood in the same way as systematic mistakes in judgment (Chen, Kim, Nafsinger & Rui 2017). Lola Lopez (2012) defined behavioural biases as wrong and potentially damaging behaviors caused by irrational decisions, unfit reactions and blunders. Behavioural decision are poor decisions resulting from unmeditated judgement. There are two types of behavioural bias. The first is the emotional timeline, whereas the second is herd instincts and overreaction. Agents, according to psychologist Lola Lopes (2012), go through a range of emotions, both positive and

negative. A person's emotions towards investing can be expressed along an emotional timeline that starts with the decision and concludes with the goal.

There are many behavioural biases revealed in the real estate market. Real estate agents are optimistic, confidential, representative in bull markets which will lead to the rise of real estate prices far beyond the fundamental values. While on the contrary, during bear markets, investors will fear of losing and operate in similar actions which brings real estate prices below their fair values. Behavioural factors have greater influence on real estate investment rather than fundamentals. Case and Shiller (1989) indicated that investors decisions can lead to the boom or recession of the market. In addition to this, they contend that investors in real estate markets are ignorant of the industry's fundamentals and instead base their judgments on how they interpret events in terms of piecemeal knowledge and random observations. Farther proof that agents' qualities would impact real estate transaction pricing was provided by Genesove and Mayer (2001), and this brings the real estate market one step further away from becoming a perfect asset market. Factors affect real estate investment decisions are overconfidence, frame dependence, herding effect and mental accounting.

Eichholtz and Yönder (2014) carried out the study about the influence of overconfidence on real estate investment activities and performance. CEOs of real estate investment trusts (REITs) who are overconfident, as measured by the Malmendier and Tate techniques, tend to spend more of their cash reserves on acquisitions and less on sales, and their firms as a whole perform poorly when they do

so. If a overconfident CEO has one percent increase in cash to assets, it will decrease the return on assets by 1.5 to 3.1 percent.

Shefrin (2002) stated frame dependence's formation is on the contrary of expected utility theory, while the argument supposed by traditional finance assumes that people will make the same decision no matter, they face the gains and losses of the same problem. Frame dependence comes from prospect theory which deems that people are more despondent when they have higher losses than gains which is defined as loss aversion. A qualitative study has been conducted by Godoi et al. (2005), aimed to study factors of loss aversion in an investor's environment. In the end, this study indicated an investor's fear to lose is socially formed and it also verified experiences by many feels and got the conclusion that loss aversion is the factor which significantly form the frame dependence.

Luchtenberg and Seiler (2013) has carried out research among professionals on decision-making and herding behavior found that investors can be easily affected when they are susceptible to information. It also shows that herding was caused when investors were asked to make personal decision if the information signals were weak, while herding appeared when investors were asked to offer advice to a friend if the information signal was strong.

Economist Christian Hott (2012) has carried out research on whether housing bubbles are caused by herding or not. He argued that herding behaviors occurred when

investors were informed imperfectly and got advice from other investors' decisions; and that when investors heard one event happen to some investors, they would like to assume that the same event would likely occur to them. Although Hott indicated that herding was only one of the factors which caused the collapse of real estate market, and argued that mortgage banking was one of other factors which was responsible; the findings did show that herding behavior indeed play a role in real estate price fluctuations and housing bubbles.

1.1.2 Real Estate Investment Decisions

A real estate investment choice is the use of experience, sound judgment, and creativity in the process of making a reasonable decision about how much to invest, where to invest, and where else to put one's money in the real estate industry. Decision makers (agents) should compare expected return and degree of risk with the investment capital (*M'Asad, Muhammad, Saif & Atta, 2021*). Real estate investment was originated long ago, even before the appearance of the stock market. In a similar manner, real estate agents should choose certain properties and determine the optimal timing for making investments in real estate. Investing in real estate, on the other hand, differs from investing in stocks in that it often necessitates the use of more complex tactics in order to make better selections.

Researchers Wiley (1976), Page (1983), Farragher (1983), Webb (1984), Webb and McIntosh (1986), Louargand (1992), and Farragher and Kleiman (1996) have all

examined the extent to which equity investors in income-producing real estate use rigorous investing decision-making methods. By selecting various populations, these studies provided various questions in different ways, the results of these studies still show that real estate investment decisions have got complicated along with time.

The most common investment decisions are: Leasing decisions, rental/letting decisions, real estate investment trusts (REITs), real estate company stock decisions, Real estate sector-focused mutual fund decisions, ETF decisions, Mortgage rate decisions, interest rate decisions and Mortgage bonds. Prasanna (2008) used leasing and rental/letting decision as indicators of real estate value optimizations. He was doing a comparative analysis of real estate investment outcomes derived from leasing against renting/letting. In this study mortgage rate decisions, interest rates decisions and leverage ratio decisions will be considered.

1.1.3 Behavioural Biases and Real Estate Investment Decisions

Behavioural biases employ cognitive psychology, anthropology and social sciences to explain the agents' irrational behavior. In real estate market, agents are not all and always rational, they can be affected by behavioural biases when they make investment decisions due to information asymmetry (Eric, 2018).

Markowitz portfolio theory (1952 & 1959) found that the decision makers' behavior can be different because of the human brain's reaction towards the selection of real estate. Newell and Simon (1972) and Simon (1978) brought out the human problem-

solving theory which showed that human memory has limitations in processing abilities. Since decision makers have to filter and analyze a mass of data, real estate selection becomes difficult and complicated.

1.1.4 The Real Estate Agents in Shenzhen, China

Real estate agents are investors in housing development and their representatives (Hass Consult, 2021). *Peng (2017) defined real estate agents as special representatives who sells and rents out buildings and land for clients.* Shenzhen is one of China's many regions with millions of real estate agents. Since the first property agencies opened in China in 1998, the industry has grown to over 1.58 million registered agents in 2018. The property agency sector's trading volume is expected to reach 11.5 trillion yuan (\$1.8 trillion) in 2020.

Shenzhen is one of the Special Economic Zones (SEZs) that were formed around the Pearl River Delta in 1979 by Deng Xiaoping. Shenzhen is one of the SEZs that has the same economic treatments as the others. Shenzhen soon showed tremendous development among the SEZs, which was not only because of the growth in population and the economy, but also because of the enormous amount of constructed land that completely changed the geography of Shenzhen. This was not only a result of the growth in population and the economy, but also because of the construction of land. When it was announced that Shenzhen would be designated as a Special Economic Zone (SEZ), a large number of people moved to the city in search of new

chances for economic growth. This resulted in a huge expansion of the city's economy. According to the statistics, the native population of Shenzhen was just 30,000 in 2005; however, the city's official population was 12 million, which indicated that 99% of the population was made up of migrants from other locations in China.

According to national investigations, the annual real estate prices only increased by 3.5% from 1998 to 2003, however, the annual personal income increased by 9.5% which was much higher than the annual increasing rate of the real estate prices. In 2002, many people discovered the potential investment opportunity in real estate market, they began to invest their money into it. From then on, real estate investment has been becoming a significantly source of economic growth in China. In 2006, 50% of the GDP growth in China came from the total fixed asset investment, and the real estate investment contributed about 25% to the total fixed asset investment. Calculated per share in GDP, the rate of real estate investment was 10% in 2006 and increased to 16% in 2011. The real estate industry provides quite a number of working opportunities, house construction and real estate services employed more than 10% of manpower and dedicated to 13% of the total added value. Due to the real estate prices' dramatically increase, the government had carried out tightening real estate investment policy from 2013 to 2015, which slowed down the growth speed of real estate. However, the real estate market began to rise again in 2016. According to national statistics, sales in the first six months were 4,868.2b RMB, which increased 42.1% compared to the sales in 2015.

Nowadays, Shenzhen is one of the leading cities in China's GDP ranking list after over 40 years continuous development. Shenzhen's GDP growth was 236% from 2004 (RMB 342 billion) to 2011(RMB 1150 billion), and within the same period its housing price growth was 216%, all the above numbers showed that the increase of real estate prices contributed to over 90% of Shenzhen's GDP growth. In 2018, the total value of residential buildings investment in Shenzhen reached to over 130.3 billion RMB, which became the largest city of real estate investment in China.

1.2 Research Problem

The term "behavioral bias" refers to a pattern of variation in judgment that takes place in certain contexts and may result in a shift in perception, an erroneous assessment, an illogical interpretation, or what is more widely known as "irrationality" (Rasheed, Raftar, Fatima & Maqsood, 2013). There is evidence of repeated patterns of irrationality in the way that people make judgments and choices when they are confronted with uncertainty (Subash,2012). According to Nofsinger (2001), psychologists have poked people's notions of rationality and unbiasedness for a long time. Globally, real estate has sparked a lot of interest. One possible explanation for this is because the industry has certain distinctive qualities. Housing is unique in that it may be seen as both an investment and a consumption item (Stepanyan, Poghosyan & Bibolov, 2010). Behavioural finance and real estate have piqued the curiosity of academics.

Recent house real Estate sales data from Shenzhen indicate a steep fall in real estate prices partly due to Covid 19 and Behavioral Biases on the other hand (Eric, 2018). According to Johan 2019, the contagion that results from declining sales and a lack of trust might bring down real estate enterprises in Shenzhen that were previously doing very well. Because of the nationwide real estate slump and the country's stringent zero-Covid policy, local land sales have also been hit hard in recent years. In accordance with the UBS 2022 the income generated from the sale of local land in Shenzhen saw a precipitous drop of 31% year-on-year during the first half of the current year. Because of the limited finance available to developers, the fall may slow down in the second half of the year, but it may still remain dismal at a level of - 10% (UBS 2022).

In Pakistan, research on influence of Behavioural Biases on prices of Real Estate was carried out. The study's primary goal was to ascertain whether and to what extent human cognitive biases influence real estate investing decisions. In this study, researchers surveyed 244 real estate agents via in-depth interviews. Overconfidence and gambler's fallacy were shown to have the largest impacts on real estate values in Pakistan, whereas the herd mentality and regret aversion had far less impacts. The findings of the research suggest that the gambler's fallacy and overconfidence have a greater influence on real estate prices in Pakistan than do the aversion to regret and the herd mentality. It also presents that these four biases have no relations to investors' gender, education, and demographics. It was proposed that real estate brokers should

carefully take into consideration behavioural biases when making judgments about real estate investments due to the fact that real estate prices are not always reflective of the property's true worth (Qian Cheng, 2020).

Kishore (2004) applied Behavioural Finance Theory to analyze Australia's rapid real estate development. As the Australian Bureau of Statistics (2004) showed, Australia's real estate prices has been increased two times from 1999 to 2003. This boom was observed by Kishore (2004), he further noticed, to a large extent, the high prices were caused by the positive mood and behavior of investors rather than by the consideration of real value. With the fear and desire of having their own houses, and the overreaction to future rising of interest rates, the investors were affected by herding affect.

According to a study conducted by Luong and Ha (2011) on the behavioural factors influencing individual investor decisions in China, behavioural factors do not always influence investor decisions. This is contrary to expectation. The study recommends for further research specifically on selected biases to confirm the findings (Luong, Ha 2011). Another study by Zhao (2018) revealed that overconfidence, representative bias, herding and mental accounting are the only biases the influence investment decision. He studied four biases including mental accounting. Mental Accounting had no influence on investment decisions.

The above two analysis shows that real estate agents are irrational and sometimes cannot make rational decisions during the investment process. This result can be applied to explain agents' behavior in the real estate investment in Shenzhen, China.

The results of the existing study show that the features of behavioral finance studied in relation to investor decision making do have an impact on market outcomes (Rofsinger, 2001; Luong & Hai, 2011; Zhao, 2018). However, real estate decisions are influenced by behavioural bias and frame dependence. Although there are lots researches about the influence of behavioural factors on real estate investment decisions, no researcher has carried out the same research in Shenzhen, China; meanwhile, due to the national policies and cultures diversity, the same research results may not be suitable for Shenzhen, China. This research will find out the influence of behavioural biases on real estate investment decisions in Shenzhen, China by answering the question: Do behavioural biases influence real estate investment decisions in Shenzhen, China?

1.3 Research Objective

The objective of this study is to determine the influence of behavioural biases on real estate investment decisions by agents in Shenzhen, China.

1.4 Value of the Study

This study tries to explain the behavioural biases which influence the real estate

investment decisions in Shenzhen China and how they will affect the investments and benefit the real estate agents. These behavioural biases are overconfidence, frame dependence, herding effect and mental accounting.

This study finds that overconfidence and mental accounting can mislead agents to overestimate their predictive abilities and belief they can always win in real estate markets, frame dependence can affect real estate agents' decision-making process by ways of information presented, and herding effect has an influence on real estate agents with less judgment to imitate other agents with good performance to invest the same.

This study provides valuable information to real estate agents who deal with real estate agents directly, this will enable them get more precise estimation about their clients' behaviors, and they can offer better real estate investment advice. This research is particularly useful for real estate agents since it sheds light on the impact of cognitive biases on financial decision-making.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents the literature of behavioural finance. First it will try to define the theory of behavior finance and behavioural biases which have been applied to human behavior. Overconfidence, frame independence, herding affect, and mental accounting are all cognitive biases that may impact how well real estate salespeople make decisions. Learn how these cognitive biases affect property investing choices in this chapter.

2.2 Theoretical Foundation

This study is anchored on Behavioural Finance Theory and supported by Frame Dependence and Herding Theory. The theories are discussed below:

2.2.1 Behavioural Finance Theory

This theory was developed by Selden in 1912 as part of his Psychology of the stock market and advanced by Fessinger in 1956 in his study of cognitive dissonance and later improved by Pratt in 1964 in his discussion of risk aversion and the utility function. Under some circumstances, such as illogical conduct, repetitive patterns of behavior, and restrictions to arbitrage in financial markets, the markets may not accurately represent the fundamentals of the economy, according to the behavioral

finance hypothesis. Behavioural finance is different from traditional finance (standard finance) , it tries to figure out and explain the psychological behavior of investors and markets behavior. While the traditional finance focuses on how investors and markets should behave. In a word, traditional finance specialized in theory but behavioural finance focuses on the practical behavior of investors and markets.

Through observation of actual behavior of agents, behavior researchers found that real estate agents would make investment decisions in different ways. Meir Statman stated that those involved in conventional finance are rational, but those involved in behavioral finance are typical. People often respond in a sensible manner, even if it is suboptimal, which is a departure from conventional finance. This hypothesis is significant to this research because it helps explain human behavior and how individuals respond to various types of financial information. Both psychological and market behavior are important in predicting investment decisions in the real estate sector.

2.2.2 Frame Dependence Theory

This theory was developed by Tversky and Kahneman in 1981. Frame dependence means that people are affected by ways of information presented which will influence their decision-making process. Frame dependence theory asserts that people are loss-averse. For the same opportunity, lots of people make a decision when they face losses while they act in a different way when they get gains. Those two different

behaviors portrayed when people face losses and gains present the frame dependence. The value-function indicates that people become more pessimistic when they get losses. Rabin (1998) confirmed it and he stated that real estate agents choose to stay in the current situation if new action would bring about losses, which then in turn lead to frame dependence.

Tversky & Kahneman (1981) carried out research to study the influence of frame dependence on real estate agents' decisions-making. They found that for the same problem, people tend to behave in ways they prefer which are beyond the frame, but when they face difficulty or uncertainty they will depend on the frame. The theory is important in assessing the levels of risk and loss averse nature of real estate investments.

2.2.3 Herding Theory

Herding theory was originally conceived by Keynes in 1930 as a motive to copy and follow the crowd in a world of uncertainty. Herding theory was first developed as a desire to imitate and follow the mob (Keynes 1930). Herding, first appeared in movements of animals, when a herd of animals begun to move to one direction, other animals would follow it in the same direction. Therefore, herding effect is defined as the personal decisions that will be affected by others' behavior.

Kirman (1993) had explained the 'ants' model that ants 'convert' by copying another ant through a Markov chain approach. He discovered when ants found two food

sources in different directions with equal distance, they would all work on the same food source instead of dividing themselves into two groups for the two sources. Scharfstein and Stein (1990) stated that herding will appear when people follow others' behavior and neglect their thinking and judgments. Researchers have tried to interpret the influence of group behavior on individuals' actions, such as individual differences and rational learning explanations based on Bayesian assumptions. Empirically, as a Bayesian learning process, herding effect was studied and proved by many economic experiments (Anderson & Holt, 1997). Due to uncertainty, cognitive and informational constraints, people have difficulty to determine the correct way for further actions. In Simon's (1979) observation, people are rational and make decisions through deep consideration of their own subjective judgment. Social learning exists in the society, people consider herding as a heuristic which can help them to make decisions quickly. Psychological elements should be applied to explain the phenomenon when people always use heuristics to make decisions because of their own personalities and characteristics.

From the point of behavior, emotional biases such as gossip, home biases, conformity, congruity and cognitive conflict can occur from herding. Real Estate agents would like to act in herding when they are convinced that it will help them to obtain favorable and credible information. However, financial professionals, will make decisions by analyzing relative periodic assessment and the comparison to their peers. Kallinterakis, Munir and Markovic (2010) found that people with low abilities may

incline to imitate people with high abilities to improve their capabilities, they indicated that herding can be applied for the assessment of professional performance. The herding bias is discussed in relation to real estate investment choices, and this theory provides an illustration of this phenomenon. Every investor is interested in eliminating biases in order to maximize profits.

2.3 Determinants of Real Estate Investment Decisions

2.3.1 Behavioural Factors

Behavioural factors are those human actions that directly affect the decision-making process. The most common behavioural factors in the real estate sector in Shenzhen include: values, personality and investor's propensity to take risks. Behavioural factors are interpersonal and are developed over time through perceptions and personal experiences. The negative perception about real estate returns in Shenzhen basically contributes to the low uptake of real estate investment projects.

2.3.2 Internal Factors

These are elements that are local to Shenzhen, and although they have the potential to affect choices on real estate investments, the management of the funds has control over them. These elements include the contributions made by members, the purchasing of government securities, the return on investment (ROI), and the provision of benefits.

2.3.3 External Factors

These are the kinds of things that may either have a good or a negative impact on the choices that real estate companies make on their real estate investment strategies. They are occurrences that take place in the world outside of the fund and have the potential to affect investment choices.

2.3.4 Mortgage Rates and Interest Rates

Many real estate agents believe that the mortgage rate is the only element that determines the value of a home. Mortgage rates, on the other hand, are only one component among several that have to do with interest and how it affects property prices. Property prices will be affected in a variety of ways as a consequence of interest rates, which have an effect on capital flows, supply and demand for capital, and necessary rates of return on investment. The importance of real estate as a financial investment is without dispute. This is true across a wider range of countries and historical periods, as pointed out by Reinhart and Rogoff (2009). Knowing what drives real estate values is just as important as knowing what drives the prices of stocks, bonds, commodities, and currencies, from a financial and economic standpoint.

2.3.5 Leverage

In the wake of the current housing market crash, academics have focused on two main topics. First, the function of leverage in housing price dynamics has received fresh

attention. According to theoretical research, leveraged properties are more susceptible to economic shocks. The fact that the amount of money a family is able to borrow is directly proportional to the value of its assets serves as the primary mode of amplification in those publications. Although not all of the papers in this part give compelling proof that real estate may be predicted, they all demonstrate that leverage is a crucial factor in determining the dynamics of housing prices.

2.4 Empirical Evidence

2.4.1 Global Studies

A qualitative study was carried out by Godoi et al. (2005) to figure out factors of loss aversion in the investment process of the observed agents. The study indicated that agents socially have the fear of losing, which is the most important factor in agents' investment, rather than rational mood, anger and guilty and so on. The study showed that frame dependence has influence on investor's decision-making process for investment.

Eichholtz and Yönder (2014) has carried out research about the influence of overconfidence and mental accounting on investment behavior and performance in real estate markets. By using the Malmendier and Tate measures, they measured the degrees of overconfidence of REIT CEOs. The study found that due to the level of their cash stock, overconfident CEOs purchase more and sell fewer of REITs they

preferred than other REITs. It also suggested that when the overconfident managers have cash in hand, the REITs managed by them would perform worse. If an overconfident CEO put 1% more cash to assets, it will cause 1.5%-3.1% decrease on the return of assets.

Luchtenberg & Seiler (2013) have conducted research on herding behavior in strategic default among professionals. The research mainly studied the relationship between herding behavior and decision making, and it showed that agents who had doubts on the available information could change their minds easily in their investment. Luchtenberg & Seiler (2013) found that herding was caused when agents were required to make personal choices if the market showed a weak information signal, while herding also was caused when agents were asked to offer advice to acquaintance if the market showed a strong information signal.

2.4.2 Local Studies

In China, Ju Fang, Zhu Jinmei and Peng Lina (2016) have conducted a study on the relationship between herding behavior and real estate prices. It indicated that because of information asymmetry and insufficiency, in the investment process the major real estate agents were likely to imitate other agents' behavior and make the same investment decision at the same period. This phenomenon could cause the rising of housing demand and increase of real estate prices. From 2005, the real estate market in China is developing rapidly, real estate developers pour more capital for real estate

construction which also causes the rising of real estate, which ultimately encourages new agents entering into real estate investment with expectation of high returns.

Luong (2011) did study in China on the behavioral elements that effect the decision-making and performance of individual investors. He discovered that behavioral finance does have an impact on these aspects of investors' lives. Anchoring-ability, Herding, Market Prospect, and Gambler's Fallacy Herding, Market Prospect, and Overconfidence. At the Beijing Stock Exchange, individual investors' investment choices are impacted by five different behavioral traits that are collectively referred to as bias. The herding factor is comprised of four different behavioral characteristics, including the following of the choices made by other investors (buying and selling; choice of 18 trading stocks; volume of trading stocks; speed of herding). There are three components that make up the market factor: price fluctuations, knowledge about the market, and historical patterns of stock prices.

According to research conducted by Mayeri and Genesovei (2001) in downtown Guangzhou during the 2000s, loss aversion is the primary factor that drives the behavior of sellers in the property market. A study revealed that real property owners who suffered fictitious losses It was shown that sellers who 1) asked for 25–35% more than the gap between their property's estimated selling price and their original purchase price, 2) received offers that were 3–18% more than their asking price, and 3) had a lower sale hazard than other sellers. And they go on to say that this is still the case for both landlords and tenants, even if the cheapest outcomes were twice as large

for owners as they were for landlords and tenants. The positive price-volume relationship in Boston's real estate market may be explained by their findings, which are compatible with prospect theory. Their results are in line with those predicted by the prospect theory. Homeowners who made their purchase at the market's peak period marketed their properties for sale at a premium of between 25 and 35 percent over the houses' values in the current market. This was done in an effort to reduce the likelihood of experiencing regret. That made the time it took to sell their homes far longer than it did for sellers who had bought their homes more recently and established more reasonable asking prices. It's possible for a person to deviate from rational behavior when their own knowledge is corroborated by an independent, objective external market source.

The research conducted by Wang, Zhao, Chan, and Chau (2000) shows that developers might create an unhealthy level of confidence, which in turn can lead to excessive construction. It has been shown that these acts produce an excessive amount of volatility in the real estate market and influence real estate cycles.

2.5 Conceptual Framework

The purpose of conceptual framework is describing the variables used in the study. There are many factors affecting the real estate investment decisions, this study mainly focus on behavioural factors -overconfidence, frame dependence, herding effect and mental accounting.

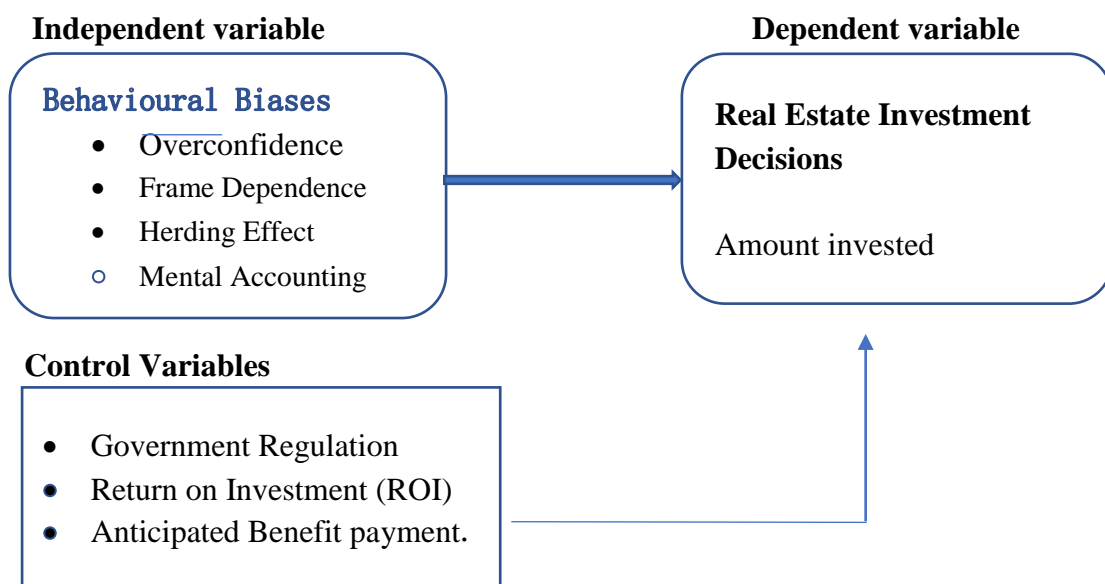


Figure 2.1 Conceptual Model

2.6 Summary of Literature Review

A summary of the relevant previous research will round out this section. According to the study evaluation, some behavioral factors have been identified as having an effect on the choices made and the prices paid for real estate. Muthama (2012) did study in Nairobi, Kenya, on the effects of investor psychology on real estate market values and found that it does have an effect. It is suggested that the value of real estate assets should include psychological variables in light of the findings of the study. Property

dealers in real estate should go beyond the obvious and into the buyers' and sellers' minds, as well as the specific psychological aspects that will likely have a significant impact on those decisions.

Three theories are discussed under literature review: Behavioural Finance theory, Frame Dependence Theory and Herding Theory. Section 2.3 covered the determinants of real estate investment decisions. Section 2.4 covered the empirical literature review which was broken into two: International empirical studies and local one. The conceptual framework is the final section under literature review.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the brief description of the methodology, which mainly has four parts: research design, population and samples, data collection and data analysis.

3.2 Research Design

This research used descriptive questionnaires. A descriptive survey is one of the research methodologies that is utilized in studies more often than any other. Typically, a certain demographic will be focused on during a survey. The responses of the chosen samples are then recorded after they have been invited to participate in an interview, a series of questions, or comments included inside a well prepared questionnaire. A questionnaire should be designed with open-ended and close-ended questions or statements which should be responded by selected samples through interviews, the participants should be free to answer the questions or statements.

3.3 Population

The participants in this research consisted of all 416 real estate agents that were registered in the city of Shenzhen in China. According to the statistics of Shenzhen Real Estate Association, there were 416 real estate agents registered in Shenzhen by 2022. This study selected these real estate agents as its population due to their role in

real estate transactions. The views that real estate brokers have about real estate investment may shed light on trends in the investment market. Real estate agents are the middlemen in all real estate transactions, meaning that they represent both the buyers and the sellers.

3.4 Sample Size

A sample size of 42 registered real estate agents was drawn and used in this study. This is 10% of the entire population. According to Puri (2019) a 10% sample size is adequate for a population greater than or equal 400 members. On the other hand, for populations with less than 400 members, a 20% sample size is adequate. Similarly, Mugenda and Mugenda (2003) observed that for a population greater than or equal to 300 members, a 10% sample size is adequate.

3.5 Data Collection

A structured questionnaire was used in order to obtain the primary data for this study (Appendix I). There were five parts in the questionnaire. Part I was on general information of the interviewees, Part II, Part III and Part IV were the presence of behavioural factors, Part V contained questions for the selected samples to respond to the influence of the factors on real estate investment decisions. Likert based questions were administered to the respondents through a semi-structured questionnaire. Each section in the questionnaire was thematic with specific variable indicators represented

in form of Likert type questions.

3.6 Data Analysis

Data analysis contains many procedures aiming at obtain results, or useful information from the study through looking, gathering, filtering, examining and modeling data.

In the course of this research, completely filled out questionnaires were investigated, edited, coded, and processed with the assistance of the SPSS software program before being broken down into their respective percentages, modes, means, and dispersion scores for examination. Measures from Part II of the questionnaire were subjected to a factor analysis in order to determine whether or not there is a correlation between irrational behavioral tendencies and real estate investment choices.

In order to investigate the impact that behavioral finance has on choices about real estate investments made in Shenzhen, China, the regression models listed below were used.

$$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + e \dots \dots \dots (i)$$

Where:

Y = Real Estate Investment Decisions (will be the natural log of the amount of money invested)

X₁ = Overconfidence

X₂ = Frame Dependence

$X_3 =$ Herding Effect

$X_4 =$ Mental Accounting

$X_5 =$ Government Regulation

$X_6 =$ Return on Investment (ROI)

$X_7 =$ Anticipated Benefit payment.

$b_0 =$ y intercept

e = error

3.6.1 Tests of Significance

The F-test was used in order to examine whether or not there was a linear connection between each of the independent variables that were discussed earlier and the independent variable that was being investigated. In addition to this, the t-test was used to determine whether or not there is a linear connection between the dependent variable and each independent variable in turn.

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION OF FINDINGS

4.1 Introduction

The objective of the study was to establish the effects of behavioural biases on real estate investment decisions in Shenzhen China. The chapter covers the results of data analysis and discussion of the findings of the implementation of methodology outlined in previous chapter.

4.2 Response Rate

A total of 42 semi-structured questionnaires were sent out to chosen real estate agents working in Shenzhen (China). The researcher was able to get 40 correctly completed questionnaires, which resulted in a response rate of 95% and a none response rate of 5%. Since Edwards, Clarke, and Kwan (2002) recommended a response rate of at least 80%, the researcher believed that this was an appropriate representation of the population that was intended to be the focus of the study.

Table 4.1: Response Rate

Response Rate	Frequency	Percentage
Properly Filled	40	95
None Response	2	5
Total	42	100

Source: Research Findings (2022).

4.3 Reliability and Multi-collinearity Tests

The reliability test and the multi-collinearity test were carried out to examine the questionnaire for its internal consistency and to determine whether or not there was

multi-collinearity between the variables that were dependent and those that were independent.

4.3.1 Reliability Test

A reliability test was carried out, and a Cronbach Alpha co-efficient of at least 0.7 was employed as an indication. This was done so that the internal consistency of the questionnaire could be determined. Table 4.2 presents the obtained findings.

Table 4.2: Reliability Statistics

Variable	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Herding Bias	0.737	0.722	3
Frame Dependence Bias	0.724	0.714	3
Mental Accounting Bias	0.711	0.713	3
Overconfidence Bias	0.757	0.706	4
Real Estate Investment Decision	0.789	0.706	2
Aggregate	0.744	0.792	15

Source: Research Findings (2022)

It was found via statistical analysis of dependability that there was a high degree of internal consistency throughout all sections of the questionnaire. This was shown by a Cronbach's Alpha co-efficient aggregate score of 0.744. Herding Bias (0.737), Frame Dependence Bias (0.724), Mental Accounting Bias (0.711), Overconfidence Bias (0.757) and Real Estate Investment Decision (0.798) recorded Cronbach's Alpha co-efficient greater than 7. The questionnaire was therefore reliable in measuring the variables.

4.3.2 Test of Multi-collinearity

In addition to this, multi-collinearity tests and Tolerance and Variance Inflation Factor (VIF) statistics were carried out as part of the research. If the VIF values are larger than 3, this would suggest that there are problems with the multi-collinearity of the variables being employed. The findings of the examination are shown in Table 4.3 below.

Table 4.3: Test of Multi-collinearity

Multi-collinearity Coefficients^a			
Model		Collinearity Statistics	
		Tolerance	VIF
1	Herding Bias	.944	1.059
	Representativeness Bias	.985	1.015
	Mental Accounting Bias	.951	1.052
	Overconfidence Bias	.978	1.023
	Government Regulation	.911	1.042
	Return On Investment	.955	1.038
	Anticipated Benefits Payment	.929	1.071
a. Dependent Variable: Real Estate Investment Decision			

Source: Research Findings (2022).

The results above indicate that multi-collinearity tests recorded VIF values of less than 3. This implies that no multi-collinearity exists between the independent variables (Herding Bias, Frame Dependence Bias, Mental Accounting Bias and Overconfidence Bias) and the dependent variable (Real Estate Investment Decision). This implies that inflation, dividend policy, financial performance, capital adequacy, size of the firm and corporate governance can be used as determinants of real estate agents' share returns.

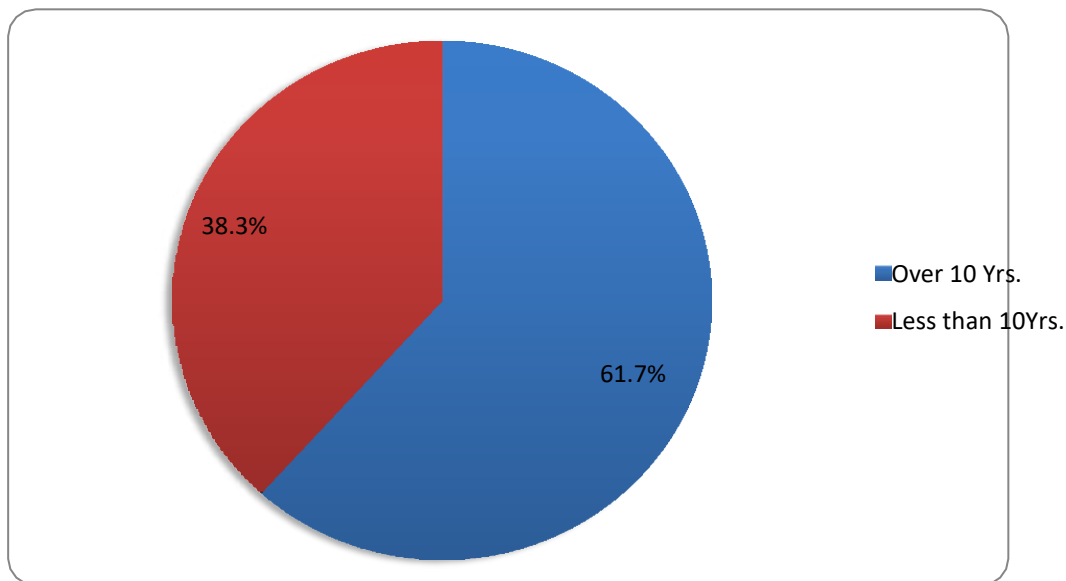
4.4 General Information

This section offers a summary of the background information pertaining to the responder. The information that is being discussed pertains to the respondent's gender, age, degree of education, and average monthly income. Additionally, the respondent's age is also being addressed. The findings are presented and discussed below.

4.4.1 Duration of Existence

The purpose of this research was to determine how long real estate brokers had been in business, starting from the moment they registered their businesses. Figure 4.1 presents the findings of the research as they were found.

Figure 4.1: Duration of Existence



Source: Research Findings (2022)

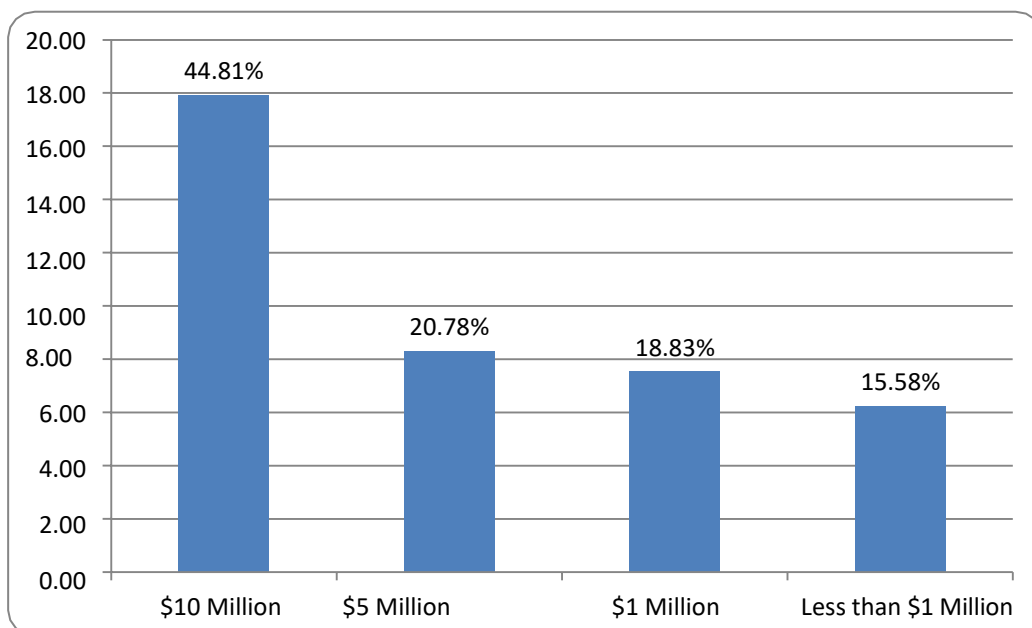
It was established that majority (61.7%) of the real estate agents had been in existence for more than a decade since registration while 38.3% had been in existence for less than a decade. This implies that the sampled firms (agents) have operated long enough to establish observable trends in behavioural biases in real estate investment

decisions. The results also indicate that the researcher was not biased when administering the questionnaires to the respondents.

4.4.2 Asset Base

The respondents were tasked with providing details on the aggregate asset worth of all selected real estate firms. Figure 4.2 shows the results.

Figure 4.2: Asset Base



Source: Research Findings (2022).

The results revealed that most (44.81%) of the agents had total asset values greater than \$10 Million followed by 20.78% of the agents who were worth \$5 Million. Further, those in the \$1 Million worth of asset value represented 18.83%. Those who were less than \$1 Million were the least at 15.58%. These results points to the fact that no single asset base dominates real estate investment decisions in Shenzhen. However, those with lower asset values were the least pointing to the need for financial inclusion, training and induction of smaller agents to real estate investments.

4.4.3 Real Estate Investment Options

The study further sought to establish the agents' preferred real estate investment options. The results are as tabulated in Table 4.4.

Table 4.4: Real Estate Investment Options

Level of Education	Frequency	Percent
Residential Real Estate	13	32.5
Commercial Real Estate	10	25.0
Raw Land	8	20.0
REITs	6	15.0
Real Estate Crowdfunding	3	7.5
Total	40	100

Source: Research Findings (2022).

The established that majority (32.5%) of the agents prefer residential real estate investment option while 25.0% of the agents prefer commercial real estate investment options. Raw land investment option was represented by 20% of the agents while Real Estate investment Trust was represented by 15%. The least preferred investment option by real estate agents was Crowdfunding with 7.5% representation. These findings reveal that the respondents prefer residential and commercial real estate investment mainly due to the high rate of returns derived from such options in Shenzhen.

4.4.4 Average Monthly Income

Finally, the study sought to establish the average monthly income of the agents operating in Shenzhen. Table 4.5 presents the summary of results.

Table 4.5: Average Monthly Income

Income Range	Frequency	Percent
Less than \$ 10000	1	2.5
\$10000-19999	6	15.0
\$20000-49999	11	27.5

\$50000-99999	12	30.0
\$100000-200000	8	20.0
More than \$200000	2	5.0
Total	40	100.0

Source: Research Findings (2022)

It was found that the majority of the organizations had an average monthly income in the range of \$50,000 to 99,999 dollars (30.0% of them), followed by 27.5% of the respondents who had an average monthly income in the range of \$20,000 to 49,999 dollars, and then those with an average monthly income in the range of \$100,000 to 200,000 dollars. Those with an average income of more than \$200,000 represented 5.0%. Only a few agencies (2.5%) reported to have an average monthly income of Less than \$10,000. These results indicate that the researcher sourced information from agents who have different types of average monthly income.

4.5 Behavioural Factors Influencing Investment Decisions

The study further sought to determine the extent to which various behavioural factors (herding bias, frame dependence bias, mental accounting bias and overconfidence bias) influencing real estate investment decisions. Below is the interpretation scale of the mean scores recorded.

1.00 - 1.49: No Extent;

1.50 - 2.49: Little Extent;

2.50 - 3.49: Moderate Extent;

3.50 - 4.49: Great Extent and

4.50 - 5.00: Very Great Extent.

Table 4.6 provides a tabulation of the findings.

Table 4.6: Behavioural Factors Influencing Investment Decisions

	Herding Bias	M ean	Std. Deviation
	The stock volume invested in by other agents affect my investment decisions	3. 81	1.197
	I invest in stocks where more real estate agents are investing in.	3. 72	0.826
	I tend to react speedily to changes by other real estate agents and follow market reaction	2. 44	1.291
	Mean	3. 32	1.105
	Representativeness Bias	M ean	Std. Deviation
	I tend to invest more after a positive return	4. 42	0.585
	My history on investments influences my present decisions.	4. 04	0.863
	After a loss I become cautious and risk averse on investing	4. 02	0.877
	Mean	4. 16	0.775
	Mental Accounting Bias	M ean	Std. Deviation
	I would reinvest money received as bonus in securities than I will be invest education fees	4. 12	0.804
	I don't consolidate my investments to assess the performance rather I look at each separately	3. 78	1.221
	I treat each investment independently	3. 68	1.454
	Mean	3. 86	1.160
	Overconfidence Bias	M ean	Std. Deviation
	I react to new information in the stock market	4. 08	0.768
	I can anticipate when the stock is performing well or poorly	3. 66	1.328
	I have the necessary skills and knowledge in stock market.	3. 41	1.422
	I can decide when to buy and sell shares due to my skills	3. 33	1.235
	Mean	3. 62	1.188

	Aggregate Mean	3.62	1.188
	Government Regulation	Mean	Std. Deviation
	There is prejudice caused by government regulation	3.71	1.462
	The rules and regulations imposed by the government are unfair	3.93	1.255
	Return On Investment	Mean	Std. Deviation
	High Risks guarantee high returns	3.66	1.417
	Real estate agents are risk-averse	3.44	1.235
	Anticipated Benefit Payment	Mean	Std. Deviation
	Expected future pay-offs drive investment decisions in real estate	3.19	1.482
	All real estate investment decisions are speculative in nature	3.25	1.255

Source: Research Findings (2022)

The outcomes of the study indicated that behavioral aspects had a considerable influence on investment decisions as a whole, as revealed by the aggregate mean score of 3.62 (SD = 1.188), which was determined by the standard deviation. A mean score of 4.16 (S.D of 0.663) indicates that the Frame Dependence Bias had the biggest influence on investment choices. To a great extent, the agents reported that they tend to invest more after a positive return; their history on investments influences their present decisions and that after a loss they become more cautious and risk averse on investing.

Mental Accounting Bias had the second greatest impact investment decisions with a average score of 3.86 (SD of 1.160). It influenced investment decisions to a great extent. To a great extent, the respondents reported that they would reinvest money received as bonus in securities than invest it in education fees; they don't consolidate

their investments to assess the performance rather than look at each separately and that they treat each investment independently.

Overconfidence Bias had the third greatest influence on investment decisions as evidenced by a average score of ($M=3.62$, $SD= 1.188$) indicating that it influences investment decisions to a great extent. The respondents reported that they react to new information in the stock market; anticipate when the stock is performing well or poorly; have the necessary skills and knowledge in stock market and can decide when to buy and sell shares due to my skills.

4.6 Real Estate Investment Decision

In addition, it was necessary of the responders to detail the total sum of money that had been put into the various real estate investment projects. A tally of the entire quantity was performed, and the mean scores that had been recorded were analyzed with reference to the scale that is described in the following:

Below \$1M: Conservative Decisions

\$1M - \$10M: Prudent Decisions

Above \$10M: Risk taker

The tabulated findings may be seen in Table 4.7.

Table 4.7: Real Estate Investment Decision

Real Estate Investment Decision	Number	Mean (\$)	Std. Deviation
Conservative	2	945,000	0.729
Prudent	13	8,398,112	0.729
Risk Takers	25	42,725,246	0.729

Aggregate Mean		28,085,210	0.893
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Source: Research Findings (2022).

The aggregate mean score of \$28,085,210 ($SD= 0.893$) indicated that there was heavy investment in real estate projects informed by the behavioral biased. Further, the findings indicate that they are more risk averse firms as evidenced by the mean score of \$42,725,246 ($SD= 0.729$). The variation in the amounts of money invested in different real estate investment projects is as indicated by the standard deviations. Prudent decisions are represented by the mean investment value of \$ 8,398,112.

4.7 Regression Analysis

In Shenzhen, a regression study was carried out to investigate the influence of behavioral biases on the choices about real estate investment. The findings are the same as those shown in the model summary, analysis of variance, and regression coefficient sections.

4.7.1 Model Summary

Real estate investment decisions by agents in Shenzhen were regressed against behavioural biases. Table 4.8 presents the model's findings in tabular form, as seen in Table 4.8.

Table 4.8: Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.961 ^a	.923	.906	.1963

a. Predictors: (Constant), Anticipated Benefits Payment, Government Regulation, Return On Investment, Mental Accounting, Frame Dependence, Overconfidence, Herding Effect

Source: Research Findings (2022)

According to the findings of the research, there is a substantial connection (R-value = 0.96.1) between irrational behavioral tendencies and the choices that real estate brokers in Shenzhen make regarding the purchase of real estate. The adjusted R Square value of 0.923 demonstrated that behavioural biases may explain 92.3% of the overall variation in the real estate investment choices made by real estate agents in Shenzhen.

4.7.2 Analysis of Variance (ANOVA)

Analysis of Variance (ANOVA) statistics were further computed for fitness of regression model test to the data collected. Table 4.9 presents the results of the research as they were found.

Table 4.9: Analysis of Variance (ANOVA ^a)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14.742	7	2.106	54.652	.000 ^b
	Residual	1.233	33	.039		
	Total	15.975	40			

a. Dependent Variable: Real Estate Investment Decisions

b. Predictors: (Constant), Anticipated Benefits Payment, Government Regulation, Return On Investment, Mental Accounting, Frame Dependence, Overconfidence, Herding Effect

Source: Research Findings (2022).

The F-ratio of the study's regression model was 54.652, and its p-value was 0.00, which suggested that the model was a good match for the data that was gathered. As a result, the model proved appropriate for making predictions about the impact of cognitive biases on the choices made regarding investments in real estate in Shenzhen.

4.7.3 Regression Coefficients

In order to calculate the regression coefficients, a 95% confidence interval was employed, and a p-value of 0.05 was used as the indication of significance. Below table summarizes the results

Table 4.10: Regression Coefficients

Model		Coefficients ^a				
		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.024	.237		.103	.919
	Overconfidence	.053	.066	.060	.801	.429
	Frame Dependence	.116	.078	.107	1.500	.143
	Herding Effect	.739	.083	.805	8.909	.000
	Mental Accounting	.016	.043	.025	.382	.705
	Government Regulation	-.028	.038	-.048	-.746	.461
	Return On Investment	.059	.040	.083	1.466	.152
	Anticipated Benefits Payment	.027	.035	.045	.764	.450

a. Dependent Variable: Real Estate Investment Decisions

Source: Research Findings (2022).

It was established that herding bias ($\beta = 0.805$) and overconfidence bias ($\beta = 0.060$) had a negative effect on the real estate investment decision while frame dependence bias ($\beta = 0.107$) and mental accounting bias ($\beta = 0.025$) were found to have a positive effect on real estate investment decision as evidenced by the beta values shown alongside. The effect of herding bias (B-value = 0.739, p-value= 0.000) was found to be statistically significant. Overconfidence bias (B-value = 0.053, p-value= 0.429), frame dependence bias (B-value = 0.116, p-value= 0.143) and mental accounting bias (B-value = 0.016, p-value= 0.705) were found out to be statistically not significant as confirmed by the high B-values and p-values of greater than 0.05.

The study generated the following analytical model:

$$Y = 0.024 + 0.053X_1 + 0.116X_2 + 0.739X_3 + 0.016X_4 - 0.028X_5 + 0.059X_6 + 0.027X_7 + e$$

Where,

Y – Real estate Investment Decision (Dependent variable)

X₁ - Overconfidence

X₂ – Frame Dependence Bias

X₃- Herding

X₄- Mental Accounting Bias

X₅ – Government Regulation

X₆- Return On Investment

X₇- Anticipated Benefit Payment

The above mathematical equation demonstrates that in the absence of behavioural bias, the Real Estate Investment Decision made by real estate agents in Shenzhen would be equal to 0.024. Increasing Overconfidence and a mental accounting of costs. The quality of the decisions made on real estate investments would suffer as a result of bias, which would also lead to an increase in frame reliance. Bias, however Herdingi Bias would lead to improvements in the quality of decisions on real estate investments.

4.8 Interpretation and Discussion of Results

If the model is significant at the 0.00 level, then we may infer from the correlation of variance that there is a connection between the dependent and independent variable(s). The following cognitive biases were shown to be significant when regressed at a 95% confidence interval: overconfidence, mental accounting, frame reliance, herding, government regulation, return on investment, and expected benefit payout. These factors account for variations in the dependent variable better than any others do, and the latter's shift is notable in and of itself since it was brought about by the former. After doing an analysis of variance on the model, we found that it was effective at measuring how much behavioral bias affected real estate investment decisions in Shenzhen, China.

The examination of the data reveals a positive relationship between the dependent variable and the independent factors. The most favorable link was identified between herding and mental accounting while making property investments. Herding Bias could estimate 0.739 of the real estate investment decisions while mental accounting real could estimate 0.053. Frame Dependence and overconfidence could estimate up to 0.016 and 0.116 respectively.

These findings are consistent with those of Javed, Ali, Meer, and Naseem (2013), who tested the impact of heuristics on investors' ability to make rational decisions. Overconfidence, Herding Bias, Self-Attribution, Confirmation Bias, and Excessive Optimism (Over-Confidence) were shown to have a substantial connection and influence on investor decision making, whereas the status quo, loss aversion, and mental accounting had a significant link but no impact.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter gives briefing on the results and findings of the study. The chapter also draws the conclusions of the study, makes policy recommendations for further study in relation to the effects of behavioral biases on real estate investment decisions by real estate agents in Shenzhen China

5.2 Summary of Findings

The purpose of the research was to determine whether or not there is an influence of behavioral biases on the choices made by real estate agents in Shenzhen, China on the purchase of real estate. In order to do an analysis of the data using SPSS, both descriptive statistics and inferential statistics were used. The study sent a sample of real estate agents in Shenzhen 42 semi-structured surveys, and they got 40 correctly completed questionnaires, providing a response rate of 95% and a none response rate of 5% respectively.

According to the findings of the research, there is a significant connection (R-value = 0.961) between behavioural biases and the choices that real estate brokers in Shenzhen, China make about the purchase of real estate. According to the value of the adjusted R Square, which was 0.923, behavioral biases may explain 92.3% of the

overall variation in the real estate investment choices made by real estate agents in Shenzhen, China. It was discovered that biases like herding and overconfidence have a statistically significant detrimental influence on the quality of real estate investment decision making, whereas biases like frame reliance and mental accounting had a statistically significant favorable effect.

These findings supported existing empirical results. Herding, the market, prospects, overconfidence, the gambler's fallacy, and anchoring bias were discovered to be the five elements that have an influence on the investing choices made by individual investors, according to the research conducted by Luong (2011). Werah (2006) discovered that the actions of investors are irrational to a certain degree due to anomalies such as herd behavior, overconfidence, and herding. Kimani (2011) established that the factors that impact real estate investment decisions in Shenzhen includes herding, mental accounting bias, overconfidence bias, gamblers fallacy and anchoring bias.

5.3 Conclusion of the Study

The study found a statistically significant relationship ($R\text{-value} = 0.961$) between the four types of cognitive biases studied (herding, overconfidence, representativeness, and mental accounting) and the investment choices made by Shenzhen real estate agents when purchasing property for their clients. Using an adjusted R Square value

of 0.923, we found that behavioral biases may account for 92.3% of the total variance in the real estate investment decisions made by agents in Shenzhen.

In addition, the study found that both representational bias and mental accounting bias had a favorable and statistically significant impact on the selection of real estate investments to pursue. However, it was shown that herding bias and overconfidence bias had a large and detrimental impact on real estate investing decisions. This suggested that an increase in herding bias and overconfidence bias would lead to a decline in the quality of real estate investment decisions, while an increase in representative bias and mental accounting bias would lead to a statistically significant improvement in the quality of individual investment decisions. According to the findings of the research, representativeness bias is one of the most prevalent forms of prejudice that may influence investment decision-making. This is due to the fact that people's judgments are often based on preconceptions as well as current and prospective security prices.

Since real estate agents cannot avoid all the biases, there is need to reduce their effects. Real estate agents need to be aware of their cognitive biases in order for this to take place. They also need to be able to fight off the temptation to engage in risky or unethical activity by formulating and adhering to objective investment plans and trading standards. There is also a need that real estate agents have long-term investing

objectives, determine the level of risk they are willing to take, and devise an asset allocation plan that is appropriate for their particular circumstances.

5.4 Recommendations of the Study

The recommendations were based on the study's results about behavioral biases. Specifically with regards to the overconfidence bias, real estate agents need to be aware of the biases and work to counteract them. Additionally, real estate agents require appropriate allocation strategies in order to properly identify the risk and return associated with their investment decisions. The research suggests that investment and financial consultants should provide training for real estate agents in order to assist them in recognizing biases and, as a consequence, developing strategies to combat excessive trading as a result of bias, which can result in unsatisfactory investment decisions.

Due to the fact that individuals tend to make decisions based on preconceived notions, representativeness is one of the most essential characteristics that might influence financial choices. According to the findings of the research, real estate professionals should steer clear of basing their assessments of the frequency or likelihood of occurrences on the frequency with which such events cross their thoughts. This is due to the fact that when an excessive amount of importance is placed on information that is simple to remember, rational conduct will be constrained, and reasonable investment decision making might be diverted.

The report also suggests that real estate regulatory authorities in Shenzhen could do more to raise agents' market knowledge via training and education by, for example, hosting accounting and financial seminars to help agents become better at evaluating properties before investing in them. Policy makers should make it their responsibility to educate agents on the effects of cognitive biases.

The study recommends real estate agents to seek professional advice from security brokers to advise them accordingly in-terms of performance of specific securities in which the investor would want to invest in since such investment agents have information of the market. However, such agents should be guided by policies and regulations to avoid exploiting investors by misadvising them and taking advantage of their inexperience in the field.

5.5 Limitation of the Study

Some of the people who were asked to fill out the surveys were hesitant to do so because of the worry that the information they supplied might be improperly exploited. The researcher assured those who participated in the survey that their comments would be treated in strict confidence and used only for the purpose of completing the objectives of the research project. The fact that the respondents were real estate agents with hectic schedules made the process of data collecting more laborious and time consuming than it would have been otherwise. The researcher used a procedure

known as "drop-and-pick-later" to provide the respondents with a sufficient amount of time to fill out the surveys.

A sufficient number of responses were received from the survey's target audience to allow for reliable data collection, analysis, and research results. The time constraint was a limitation of the study as the researcher had to balance between research undertakings and other commitments especially work related.

In addition, the researcher had no direct influence on the correctness of the responses given by the respondents. This would imply that the respondents were responsible for ensuring the accuracy of the information that they gave. The problem was overcome by the researcher by asking the participants to supply information that was correct and would be kept secret.

5.6 Suggestions for Further Research

The focus of this research was confined to the impact of behavioral biases on the judgments that real estate agents in Shenzhen, China, made about their real estate investment portfolios. This suggests that the results cannot be appropriately extended to non-behavioral elements that impact choices about real estate investing. In the future, another research along these lines should be conducted, this time concentrating on elements that are not related to behavior. The report suggests doing more studies on the implications of behavioral biases on other aspects of the economy, such as real estate and property, in addition to the financial market.

In addition, behavioral biases, which include herding bias, overconfidence bias, frame reliance bias, and mental accounting bias, were only capable of explaining 92.3% of the overall variation in the real estate investment choices made by agents in Shenzhen. The behavioral biases were unable to provide a satisfactory explanation for the factors that impact the remaining 7.7% of investing choices. In a subsequent research, one may concentrate on the factors that affect the remaining 7.7% of investment choices.

It is recommended that additional research be conducted on the influence of behavioral finance factors on investment decisions made by real estate agents working in Shenzhen. These studies should also concentrate on other cities in China so that the results can be compared, and they should probably use a larger sample size for greater precision. Since this study concentrated on only four biases (Overconfidence, frame dependence, herding and mental accounting), further study needs to be conducted on the other behavioural biases. The study also concentrated in real estate agents in Shenzhen only. A further study should be conducted on individual real estate investors.

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APPENDICES

Appendix I Questionnaire

Part I General Information

Date: _____ Name: _____

Part II Behavioural biases Affecting Real Estate Investment Decisions

To indicate your response to the following question, please choose the option that most closely matches your answer.

1=Never, 2= Rarely, 3= Sometimes, 4= Often, 5= Always

Behavioural biases	1	2	3	4	5
Overconfidence					
To what extent do you believe in your real estate investment decisions					
To what extent do you believe your prediction to the timing of investing the real estate					
To what extent do you trust your prediction on the real estate market					
How much do your lofty expectations for property returns exceed those of the market?					
Frame Dependence					
To what extent do you make real estate investment decisions based on the information presented					
To what extent do you accept gains in real estate investment					
To what extent do you accept the losses in real estate investment					
To what extent do you accept loss over gain					
Herding Effect					
To what extent will you buy a real estate based on acquaintance's advices					
To what extent will you sell a real estate based on acquaintance's advices					
To what extent do you decide to invest the same when you see the major invest decisions					
Mental Accounting					
To what extent does you own personal arithmetic related to returns affect your investment decisions					
To what extent does are you likely to act upon projected high returns from your own arithmetic in the real estate sector					
How likely are you to computer imaginary figures of your own future financial expectations					

Part III Influence of Behavioural biases On Real Estate Investment Decision-making

Please indicate the degree to which each of the following elements has an effect or impact on the choices about real estate investing. Please tick the box that best describes your preference.

Please rank this on a scale from one to five, with **one** representing absolutely not at all, **two** representing impact at little rating, **three** representing impact at moderate rating, **four** representing impact at high rating, and **five** representing impact at very high rating.

	1	2	3	4	5
Real Estate Prices Change (Increase/Decrease)					
Real Estate Market Information (Positive/Negative)					
Past Trends of Real Estate Investment					
Facilities of the Real Estate					
Focus on Popular Real Estate					
Seasonal Price Changes					
Real Estate Agents' Preferences					

Part IV Real Estate Investment Decisions

Please provide an indication of the degree to which the actions of real estate investors have an impact on the choices made about investing in the following areas. Please tick the box that best describes your preference.

	ALWAYS	FREQUENTLY	SELDOM	NEVER	NOT APPLICABLE
Purchasing Decisions when there is a 10% rise or drop in the prices of real estate					
Selling decisions are made when there is a 10% gain or reduction in the property's price.					
The amount of time that should pass before selling a piece of property after a 10% gain or reduction in its price					

Volume of property increase or decrease by 10%					
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Part V Factors Real Estate Agents May Consider Before Making An Investment

Decision

Before settling on a choice about an investment, real estate brokers have to give some thought to the following variety of considerations. Kindly rank them in terms of how important they are.

Please rank this on a scale from one to five, with **one** representing *absolutely not at all important*, **two** representing *importance at less rating*, **three** representing *importance at neutral rating*, **four** representing *importance at great rating*, and **five** representing *importance at very great rating*.

	1	2	3	4	5
Cost of the real estate					
Location of the real estate					
Distance to the central business district					
The rental cost of similar properties during the previous five to ten years					
Capability of paying both the principal and the interest on a mortgage.					
The possibility of the real estate market failing.					
Others kindly specify					

Note: The Amount of Money invested will be obtained from financial records and books of account for each of the sampled real estate companies. Your assistance is appreciated.