BEHAVIORAL BIASES IN INVESTMENT DECISION MAKING: EVIDENCE FROM ISLAMABAD'S REAL ESTATE MARKET

Submitted by

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CERTIFICATE

This is to certify that this thesis entitled **"Behavioral Biases in Investment Decision Making: Evidence from Islamabad's real estate market".** Submitted by **Muhammad Abubakr** is accepted in its present form by the PIDE School of Economics, Pakistan Institute of Development Economics (PIDE) Islamabad as satisfying the requirements for partial fulfillment of the Degree of Master of Philosophy in Economics and Finance.

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I **Muhammad Abubakr,** hereby state that my MPhil thesis titled **Behavioral Biases in Investment Decision Making: Evidence from Islamabad's Real Estate Market** , is my own work and has not been submitted previously by me for taking any degree from Pakistan Institute of Development Economics or anywhere else in the country/world. At any time if my statement is found to be incorrect even after my graduation. The University has a right to withdraw my MPhil degree.

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Signature of Student

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Dedicated

To

My Beloved grandfather

who supported me, motivated me and encouraged me in all my endeavors.

&

My Dearest parents

who are always there for me and were patient throughout my journey.

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ABSTRACT

This research has been conducted to gauge the presence of behavioral biases in investment decision making in Islamabad's real estate market. The majority of traditional theories of finance have the underlying assumption that individuals behave rationally when investing and their objective is to maximize their utility. However, behavioral finance differs from the idea of flawless rationality and claims that behavioral aspects have their effect on investment decision making. A primary survey has been used to gather responses using a purposive sampling technique. The impact of three biases that is the disposition, herding, and overconfidence have been tested concerning the investment decisions of Islamabad's real estate investors. Exploratory factor analysis, sample average method and multiple regression are used and the results show a strong presence and impact of these psychological biases in investment decision making. This thesis will be useful for real estate consultants in understanding and properly guiding their clients.

Key Words: Real Estate, behavioral finance, Investment, Decision making

JEL code: G40, R30

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LIST OF ACRONYMS

CAPM	Capital Asset Pricing Model
GDP	Gross Domestic Product
EFA	Exploratory Factor Analysis
KMO	Kaiser-Meyer-Olkin
KSE	Karachi Stock Exchange
ISE	Islamabad Stock Exchange
EMH	Efficient Market Hypothesis
RERA	Real Estate Regulatory Authority

CHAPTER 1

INTRODUCTION

1.1 Investment Decision Making

Investment decision making is an intricate process that involves analyzing multiple factors and following different rules. According to Ahmed and Noreen (2021), "Investment decision-making is a process of choosing a particular alternative from a number of alternatives". It requires investors to make decisions under uncertain conditions. Traditional models in finance such as Capital Asset Pricing Model (CAPM) are based on the risk and return of a particular investment but ignore situational factors for example the particular environment and circumstances of an investor. Such models use mathematical modeling tools to predict the investment behavior. This led to the debate between traditional economists and behavioral finance supporters.

Traditional theories of finance are based on the assumption that the investors are intelligent who always make economic decisions based on the utility theory. The expected utility theory proposed by Von Neuman and Morgenstern (1944) and subjective utility theory proposed by Savage in 1954 are the basis for the traditional approach of decision making. Rationality is defined as the change in beliefs and the correct formation of new expectations in light of new information. These expectations are developed as per the Bayes' probability law. Also, the rational investor's objective is to maximize its utility, which is dependent on the return and risk of all the investment

Expected Utility Theory: Estimates the likely utility of an action and suggests that rational choice is to choose an option with maximum utility.
Subjective Utility Theory: The decision maker chooses an option that maximizes subjective utility.
Bayes' Probability Law: This theorem gives the probability of an event based on the occurrence of another event that might be related to it.

options available. However, the investor could be unaware of all the options and their possible outcomes.

The famous Efficient Market Hypothesis (EMH), developed for asset pricing, presented by Fama in the 1960s was also based on the rationality assumption and it gained recognition worldwide. Over the years, a lot of researchers tested the EMH and some studied rejected the EMH. The results were inconsistent with the EMH and this direction of research gave birth to behavioral finance.

Expected Utility theories along with other traditional finance theories are based on the assumptions that investor has complete information about all the possible outcomes and can identify a best possible option out of the different expected options. Though that these theories are very useful but they don't describe the observed behavior and fail most of the times. They fail due to investor being irrational or due to false assumptions on which these models are based.

Behavioral finance is a field that has gained a lot of attention during the last three to four decades. It uses knowledge from other sciences to understand the observed investor behavior. Scientists and Psychologists have been doing a lot of research on the human brain and human behavior. Behavioral finance unlike traditional finance theories uses this knowledge to understand why investors make the observed decision rather than indicating how investors should make their decisions. They incorporate this investor behavior into decision making-models (Baker & V. Ricciardi). Herbet Simon (1955) proposed an early alterative to the traditional theories that people choose an option that most satisfies their needs but that option might not be the most optimal one. Later, he proposed his theory of bounded reality that optimal decision-making is limited because of information availability and cognitive constraints (Simon, 1978).

One of the primary reasons for the emergence of behavioral finance is the lack of explanation given by traditional theories for financial bubbles and crises such as the dot com bubble in the early 2000 and the subprime mortgage crisis in 2007-08. The assumption that people are perfectly rational is heavily challenged by the proponents of "behavioral finance". The study of behavioral finance focuses on the traits of the individual investors whereas the major conventional theory focuses on the aspect of the markets. Permitting the micro theory, people's choices are molded by either psychological biases or cognitive errors. Emotional prejudices come from moods, perception, or impulsive thinking whereas mental errors occur due to the mistake of data, faulty reasoning, arithmetical miscalculations, or remembrance errors. Such errors affect the decision making of investors, which can lead to either sound or incorrect decisions related to investing in a particular endeavor. Investors sometimes forego some lucrative investing opportunities just because of having personal, religious, or psychological biases against such an opportunity, while they also invest in relatively lower lucrative investment endeavors if they have any psychological or notional inclination towards investing in such endeavors.

At the micro-level, the individual preferences affect the persons' economic conclusions whereas, at the macro-level, marketplaces are exposed to the effects of these joint decisions. Even in a state of perfect information, most investors are not able to make choices without being exposed to any bias or feeling. When observing at different experimental studies done relative to the behavioral biases, most of the best researchers in the arena have fixated on such behavioral biases as overconfidence, disposition effect, and home bias, etc. Those empirical studies done in dissimilar settings have established that the investors, both single and institutional, and also the predictors tend to diverge from rationality in their decision making.

Kahneman and Tversky are considered to be the pioneers of behavioral finance and they give the famous “prospect theory” in 1979 as an alternative to the utility theory. They explained how human beings have limitations to their abilities and attention capacity when faced with multiple scenarios and tasks. It explains how people often make inconsistent choices across different presentation of choices. It also tells how emotions play a major role in producing biases and errors in investor decision making. Moreover, heuristics play a pivotal role in the simple economic decision, and the cognitive capabilities of human beings are bounded as presented by Gabaix & Laibson (2000). Multiple factors bound the cognitive abilities of individuals. For instance, the notions they develop in their mind regarding certain investment endeavors due to any social or religious conceptions popular in the society about such endeavors, the widespread reputation of such endeavors in society, the positive or negative feeling which they get while conversing with the representative of an investment company, the impression they make from the body language, posture, or personality of the real estate representative, and many other things affect the cognitive decision making of people about investing or not investing in particular investment opportunities. At most of the times, such factors remain hidden and the real estate representatives cannot gauge them, which further augments the bounded rationality of individuals in making investment decisions.

In academics, the behavioral biases have also been studied for the real estate market and most studies have found the presence of biases among investors. Wang et al. (2000) measured overconfidence and confirmed its presence in the real estate market concerning builders. The study of Moskowitz and Garmaise (2004) stated that information asymmetry had a significant impact on investors’ behavior. Information Asymmetry arises when one party, i.e. investors in this case, have lack of true information as compared to the information gained by the other party in the contract. Such a situation puts investors at risk; therefore, generally, they avoid taking part in any investment endeavor that entails information asymmetry to them. However, in that scenario, the reputation and communication of the real estate entity comes into play and can steal the show by gaining confidence of the investors. On the other hand, Seiler and Seiler (2010) stated that even in a severe recession, investors show strong loss aversion behavior. This behavior is certain because investors do not want to risk their money in an investment endeavor during recessions as recessions do not guarantee stability of any investment setup.

In short, as per the above given introduction of behavioral finance, the field of behavioral finance appears to be an inter-disciplinary field and entails the features of other fields such as psychology, anthropology, and economics. It studies the behavioral actions which the investors make for proceeding with investment decision making. Investors show different behavioral patterns, particularly while investing in the real estate market. These include Disposition Effect, Herding, Hindsight bias, Overconfidence Bias, Over-optimism, Trust Factor, Illusion of Control, etc. The scope of this study rests on three of these effects, these are: Disposition Effect, Herding, and Overconfidence Bias.

The disposition effect arises when the investors hold their property in losses and sell it only on profits. This makes investors cautious in investing, buying, and selling property. The Herding effect arises when an investor follows the opinions or actions of other investors in making a decision of investment. This effect has been observed very common in developing countries including in Pakistan. The major cause of Herding is the lack of knowledge owned by the investors. In such a scenario, they tend to focus more on the knowledge shared by other regarding feasibility of investment in a particular endeavor. Therefore, they make their investment decisions sometimes irrationally. On the other hand, the Overconfidence Bias occurs when the investors follow their own knowledge and experience in making a decision of investment. They disregard the opinions or experiences of other people in investing in the same endeavor. Therefore, they make the decision in their personal overconfidence. This aspect is observed more common in those investors who have wide range of knowledge about investment endeavors. Therefore, they trust their own knowledge more than the opinions of others regarding investing in an endeavor.

In Pakistan, research has been far and few when it comes to the real estate market. This paper, on one hand, is likely to be valuable for researchers, academics, and professionals who are attracted in the real estate market to have an idea into so far printed literature in the field of possible cognitive biases and their influence on decision making. On the other hand, it will also enlighten the real estate market that investors have cognitive bounded rationality and behavioral biases in making investment decisions. Likewise, this paper will also inform the investors that their decision making is affected by their psychological biases; therefore, they need to keep a check on that so as to make sound investment decisions. Thus, the paper will serve as a source of information for several entities and factions in society.

The underlying dataset of this study is Islamabad’s real estate investors. Islamabad, being the capital of Pakistan, is an attractive area for investors. Unlike cities like Lahore and Karachi which have already expanded, Islamabad is still in the progress of expansion and hence provides ample investment opportunities for different categories of investors. Overseas Pakistanis, who are one of the major drivers of the real estate market, prefer to invest in Islamabad’s market due to its scenic beauty and vicinity to the northern areas of Pakistan. In addition, the city is developing rapidly and its population is rising. Likewise, the commercial areas are also developing in the city. Therefore, these attributes are attractive to the real estate investors who are getting largely interested in not only investing in the housing sector but also in the commercial sector. This rising scope of investment has to be studied in relation to any academic discipline that affects the decision making of investors. The scope of this study relates the behavioral finance with the decision making of investors. The behavioral finance connects the psychology of investors to their decision making and has vast scope in terms of its application in the real estate sector due to the behavioral biases shown by investors in their investment decision making.

Researchers have also established out several influences affecting such kind of deviance. For example, M. Braber and Terrance Olin have done studies on investors' overconfidence and disposition effect whereas Ghakul Bandari and Richard Dean Miller & Ross have focused on overconfidence bias. The effort of this paper is to evaluate the existing literature connected to some particular behavioral biases specifically; overconfidence, disposition effect, and herd behavior. These biases play role in affecting the decision making of investors. This study will particularly investigate the impacts of these biases on investors' investment decisions in the real estate sector.

O**verconfidence:** the tendency of investors to rely more on their ability rather than relying on knowledge and experience
Disposition: refers to the investor's denial in accepting his losses
Herding: the investor ignores his knowledge and follows the investment decision of other investor

1.2 Problem Statement

The real estate market like any other market is governed by human behaviors which increases its complexity and adaptability. This fails the majority of investors to fully capture and adjust accordingly. The real estate sector is a fertile land for behavioral biases to grow and depict their effect. This is because compared to the equity market, real estate has a higher level of market inefficiency. Price discrepancy is also common in the real estate sector because there is no portal or index available which provides you with up-to-date transparent prices. Unlike stocks or bonds, Real estate is a physical asset and hence can lead to physical attachment and irrational behavior. Most of the time, real estate investors depict the "endowment effect" that is they assign a higher value to their asset compared to its intrinsic value just because they own it. This often leads to overconfidence bias as the investors tend to believe overconfidently in the profitability of their property.

The above-mentioned three points illustrate that the nature of the real estate market and its structural and operational functionality leads to the expression of behavioral biases of investors. For example, the overconfidence bias and disposition effects emerge out due to the endowment effect attribute of the real estate property, while herding effect is displayed by the real estate investors due to their dependency on the superior knowledge of the real estate agent/broker. Thus, the emergence of biases becomes inherent and unavoidable in the arena of real estate sector, which further indicates that such biases have their significance in terms of shaping and affecting the investment decisions of the real estate investors.

The real estate sector is a significant part of Pakistan's GDP. According to a report by State Bank of Pakistan (2018), the direct contribution of the construction and housing sector towards Pakistan's GDP has been more than 9% during the last 10 years. Real estate investment is the first preference of 70% of the investors in Pakistan (Malik et. al. , 2021). However, common investors usually lack the necessary investment knowledge. They usually take information from dealers and other knowledgeable investors. Popular studies related to real estate investment have been conducted in developed countries where there are sophisticated financial datasets available. However, such datasets or information is not available in Pakistan, including in a developed city like Islamabad. If such information sets become available widespread to people, it is likely that the tendency of people showing interest in the real estate sector will rise exponentially. Furthermore, this will also contribute positively towards the national GDP by raising the share of real estate sector in GDP. Nonetheless, considering this factor and the behavioral biases in people, the focus of this study will rest upon to investigate "whether investors investing in Islamabad's real estate market show the following behavioral biases: overconfidence, herding, and disposition or not". Most of the researchers have subjectively chosen the biases for their research. However, we found out during our literature review that most of the work done on behavioural biases, whether it was conducted internationally or locally, studied the effect of these three biases. The other biases are either linked to or form a part of these biases. Moreover, to limit the scope of the study only three of the biases were selected. The effect of these biases on investor behavior will be investigated through the findings of questionnaires filled out by the participants of this research study.

1.3 Research Objectives

Research objectives of this study are as follows:

1. To check the presence of disposition, herding, and overconfidence effect in Islamabad's real estate sector.

2. To gauge how strong is the effect of behavioral biases in investment decision making if there is any.

1.4 Research Questions

This study intends to answer the following two research questions:

1. Do Islamabad real estate sector investors show disposition, herding, and overconfidence biases?
2. Is the effect of the above-mentioned biases strong or weak on investor's decision making?

1.5 Research Gap

In Pakistan, research related to behavioral finance is far and few. Zia, Sindhu & Hashmi (2017) explored the presence of behavioral factors in Pakistan's stock market. Similarly, Gul & Akhtar (2016) conducted a study on Karachi Stock Exchange. Recently, Malik, M.A.S., Zafar, M., Ullah, S. & Ullah, A. (2021) studied the effect of different biases on the real estate agents of Pakistan and concluded that overconfidence and gambler's fallacy had a strong effect on their decision making.

Most of the research done in Pakistan in the field of behavioral finance is related to the stock market. Therefore, purpose of the study is to analyze investors' behavior in

Islamabad's real estate market and this is something which has not been done extensively before to the best of my knowledge. It is essential to do intensive research about investor's behavior as it affects market efficiency which affects overall stability. Hence, there exists a wide literature gap in terms studying the behavioral tendencies of investors in the real estate sector in Pakistan. Therefore, this study aims to fill the existing gap in the literature. It will contribute towards future real estate research in Pakistan, which raises the significance of this study in the domain of academics.

1.6 Significance of the Study

This study focuses on investment decision making in Islamabad's real estate market, while there are various other kinds of financial decisions like financing decisions, investments in other sectors of the economy. This paper will aid financial consultants to recognize the various types of biases that exist and their impact on investment decisions. The paper can also be used to assist in portfolio development of individuals as well as companies. The field of Behavioral finance arena is an emerging field for researchers. Hence, the paper will aid other research academics to further study people's behavior and how it affects decision making in the real estate market. Gaining a better understanding of behavioral finance can help the industry practitioners in extending their business opportunities to the investors more meaningfully.

This thesis will also be useful for real estate consultants in understanding and properly guiding their clients. However, this study does not capture the segment of people who buy real estate with a non-investment purpose. The focus of this study rests upon investigating the behavioral biases of those real estate investors who invest with an investment mindset into the real estate sector. This study will highlight how such real estate investors can optimize their investment decisions by reducing biases; while, it will also give insights to the real estate entities in improving their investment endeavors. The findings of this study would assist researchers and industry practitioners to gain insights about investor's decision-making behavior. The findings will be meaningful in particular because there is a wide range of gap in literature in studying behavioral tendencies of investors in the real estate industry especially in Pakistan. As mentioned earlier, most of the behavioral finance studies in Pakistan have been related to stock markets although majority of the people consider real estate as their number one option for investment. Therefore, this study can also give the insights to researchers and policy makers in conducting research on real estate sector in Pakistan in future. In addition, in future research, other variables such as culture or other types of factors for example investor type can be included in the study as a moderation variable to better understand their investment decision making. Thus, the study entails potential significance for investors, researchers, scholars, academicians, and real estate entities in terms of studying the behavioral biases of investors in investment decision making in real estate sector.

1.7 Organization of Study

This study is divided into five sections. The first chapter is an Introduction to the topic. i.e. Behavioral Biases in Investment Decision Making: Evidence from Islamabad's real estate market. This chapter explains the significance and potential contribution of the study to the literature. It entails an elaboration of the problem statement, research objectives, and the research gap that the study intends to fill. The second chapter presents a literature review of the emergence of behavioral finance and the biases that are being studied. This chapter has been divided into different sub-headings to provide the reader with an ease in understanding the key themes related to the topic addressed in the literature. The third chapter is about how data was collected and the research methodology that was adopted. It explains the process of questionnaire design and sample collection. It also explains the reliability of the questionnaire. The fourth chapter discloses the results and finally, chapter five concludes the study by discussing the results, the limitations, and the future work that can be done in this area of behavioral finance in relation to the real estate sector. The final chapter also includes policy recommendations to boost the real estate sector in order to contribute meaningfully to the national economy.

CHAPTER 2

LITERATURE REVIEW

This chapter presents a literature review of the emergence of behavioral finance. It sheds light on the factors that led to research connecting psychology with conventional finance theories. It will also include a detailed elaboration of the different behavioral biases which the investors show or follow in their investment decision making. At the end, this chapter will also talk about the prevalence of these behavioral factors in the real estate market.

2.1 Emergence of Behavioral Finance

Modern portfolio theory was suggested by Markowitz in the early 1950s. As a result of this, finance emerged as a decision science. To better understand decision making, one needs to study investor’s choices and behaviors. The underlying assumption of these theories is that decision-makers have complete information and uncertainty is included in the model using probability. Simon in 1959 stated that as per classical theory consumers mainly focus on maximizing their utility (Simon, 1959). According to this, human beings are coherent. This claim doesn’t incorporate some serious issues. We know that it is not possible to estimate the probability of every future event but the classical theory makes this claim that investors can estimate the probability of future events. The expected utility theory puts forth the idea that the standard microeconomic model involves estimation of valuation and risk-reward will be compared. The estimates which are calculated are subjective, therefore, will change from person to person and hence influence decisions in different ways. Decisions made every day are risky and the risk is evaluated to maximize reward (Engal & Tahir, 2009).

Investment decision making is not a simple process. An investor has to estimate the profitability and risks associated with a particular investment endeavor. Therein, the investor's decision is often influenced by his/her notions, cognitive biases, and psychological state of mind. Therefore, the efficiency or success of their investment decision is also affected by such psychological biases. The overconfidence effect, disposition effect, herding effect, and several other aspects of behavioral biases come into play in affecting the investment decision of an investor. These biases are also affected by the demographic, age, or other factors associated with an individual. Therefore, it is essential to identify or understand such factors and resulting biases so as to pinpoint the errors which an investor can make in making an investment decision after getting influenced by either of the psychological bias. The field of academics that deals with studying these biases is called behavioral finance. Aftab (2020) explains that the behavioral finance includes studying the cognitive inclinations of investors in investment decision making. It also studies the interaction between the investors and the real estate representatives or financial managers (Aftab, 2020). Scholars and researchers wanted to study the nature and tendencies of such interactions, which gave them the insight to study the behavioral biases shown by investors in interacting with the financial managers. Such biases affect the decisions of investors to a great extent. Therefore, the academic field of behavioral finance emerged to study these biases which investors show in investment decision making.

The concept of Behavioral finance emerged in the mid of the 1980s (Sheriff, 1987). One can say it is a recent field that pools psychology with conventional finance theories and helps in explaining irrational financial decision making (Sheriff, 2002). This introduction of psychology has helped to better understanding investment decisions. The theories of traditional finance are contradicted by many scholars (like Stateman, Shiller, Shafren, Thaler, etc.) and they claimed that these theories do not solve and explain the real-life problems. Among the pioneers of this field are Kahneman and Tversky. They introduced Prospect theory in 1979 which gave importance to individual decision making. They demanded that individual financiers act differently than selecting optimal choices.

Some scholars even regard behavioral finance as an extended branch of behavioral economics. In addition, it also relates with psychology of investors. Behavioral finance particularly employs the knowledge of cognitive psychology in studying the psychological inclinations towards investment. It applies the psychological decision making of people onto the financial market's implications (Kishore, 2021). In addition, Kishore (2021) mentions that behavioral finance also employs anthropological understanding for evaluating the behavioral bias of people for investment into any irrational investment endeavor. By understanding the behavioral bias of investors, the issues in investment in the real estate sector can be better analyzed and solved (Kishore, 2021). Furthermore, the extent of investment decision making of investors can also be improved if the financial managers or the real estate representatives could identify the biases which their client investors show in investing to a venture.

2.2 Impact of Behavioral Biases on Investors' Decision Making

A lot of work has been done to understand the human behavior and the decisions made by humans in certain conditions. Research shows that emotions generate error and behavioral biases in decision making and so the outcomes differ from the expectations of traditional theories. Investors use shortcuts or heuristics for decision making to save time, money and energy which results in a different outcome than is predicted by traditional theories. The model of Behavioral finance has improved how investors behave and react to information and it's a known fact that their behavior eventually affects stock prices

(Kimiley, 2008). It tries to explain the investor decisions that are inconsistent with traditional theories. Illogical behaviors adversely affect investment decision making in the economic market (Kimiley, 2008). Monetary decision taken by investors depends on numerous elements like investor's kind and risk acceptance level of investors (Hrithik, 2010). Zaid and Tani (2014) stated that overconfidence prejudice has a progressive relationship with the investor's kind and stakeholder's investment decisions. Although, some researchers also believe that not all investors follow emotions in making investment decisions (Amin & Pirzada, 2014). They make sound investment decisions through calculating risk and assessing profit margins.

A research conducted by Rasool and Safiullah (2020) affirms this by stating that there exists a negative correlation between financial literacy and behavioral biases. Nonetheless, majority of the researchers agree that investors show behavioral biases in making property investment related decisions. They have identified many factors and biases that affect the decisions made by the investors. For instance, Robin (2020) asserts that behavioral biases affect the investment decisions significantly. In particular, the Herding effect and Overconfidence bias affect the investor in making decision for investing in an endeavor (Robin, 2020). In addition, Javed et. al. (2017) also find out through their research that Herding and Overconfidence bias affect investors decision of investment. Similarly, Ahmed and Noreen (2021) also conclude from their research that the behavioral biases create significant impact on investment decision making. In our research we will also be studying the impact of these behavioral biases to see the significance of their impact on the market. A explanation of these behavioral biases prevalent in the markets have been given below:

2.2.1 The Trust Factor

Trust is a part of decision making by investors and results in biased behavior. People tend to invest with their family, friends and religious groups on the basis of trust. Moreover, the reputation of the party and organization becomes the basis of trust. Mostly, this trust is built upon over time over multiple transactions when the promises made are delivered. This can also result in herding behavior when investors unsure about what to buy or sell, simply follow the people they trust. This can lead to market inefficiency in case the decision is based on wrong information. This is a form of rational behavior unless the information provided by the trusted parties is false and also in case the trusted people have limited or no knowledge about the case. The Asymmetric information can cause lack of trust, on the other hand. The situation of asymmetric information arises when one party of a contract has more and accurate information as compared to the information owned by the other party of the conflict.

Klein, Galit and Shtudiner (2015) show how trusting others makes the investor more risk taking and affects his decision making. On the other hand, Beracha and Skiba (2014) identify that investors in the real estate market express an inclination towards investing during bullish trends in the market. This illustrates their trust on the real estate market due to better market conditions. On the other hand, when there are bearish trends in the market, then the investors show a lack of trust in investing in the real estate market due to loss aversion (Beracha & Skiba, 2014). The lack of trust is out of the behavioral bias expressed by the investors to invest in safe endeavors. They find prices of real estate property inflating during the times of recession and therefore, this observation may lead them to express lack of trust on the real estate sector during bearish trends.

2.2.2 Disposition effect

Disposition, also known as loss aversion refers to the investor’s denial in accepting his losses and so holding on to his assets for longer than he would normally. Velumoni (2017) in his study examined the effect of Loss aversion, regret aversion, and mental accounting on investment decisions in Chennai city. His linear regression analysis showed that behavioral factors have a 6.6% effect on investment decisions. Genesove & Mayer (2001) showed how loss aversion affects seller behavior in the residential real estate market of Boston. They concluded that sellers at loss tend to: set higher selling prices, attain higher selling prices, and have a lower hazard rate of sale. Another study Seiler and Seiler (2010) examined the behavior of real estate investors after experiencing a loss. They confirmed that investors who have incurred a loss are unwilling to sell their bad investments, hence face unavoidable regret in the long run. Kaustia (2018) identified that the household investors are more influenced by the disposition effect in making investment decisions, while professional investors remain less affected by it. However, the investors can learn to avoid the impact of disposition effect by gaining more knowledge about their intended investment endeavor (Kaustia, 2018). Ahmed, Ahmad, and Khan (2011) in their study carried out in Pakistan, identified that the disposition effect prevailed in the investors and they would prefer to keep the investments at loss and sell the investments at profit. This effect plays role in creating an impact on the potential profitability of investment decisions of investors in the real estate market.

Disposition effect plays an important role for individual investors. They get influenced due to the disposition effect and therefore, they also make errors in deciding about investing in an investment endeavor. In particular, this effect has been observed in the real estate sector predominantly in Pakistan. People tend to put a hold on selling their assets until and unless it can be sold at a profitable price. Thus, at the times of economic recessions, people avoid selling their property and wait for the economic boom to sell off their property at better prices. This bias among real estate investors in Pakistan has appeared naturally. According to Kaustia, it is the psychology of an investor that creates the disposition effect (Kaustia, 2018). At most of the times, the investors follow the biases unintentionally and make decisions of investment without knowing that such decisions are being shaped by their psychology. Generally, this psychological response of investors can be influenced or shaped by several factors, for instance, their social or political environment, gender, religious inclination, or any other relevant factors. Studying these factors is beyond the scope of this paper, but, this gives insights to the researchers that they can conduct the future research on this subject.

2.2.3 Illusion of Control

Illusion of control is when an investor believes that he has some control over the outcomes whereas he does not. These investors then make strategies to have some effect on the outcome although the results are determined randomly (Baker & V. Ricciardi). This results in wastage of time, money and energy as this planning is of no use. An example of this is gambling where the gamblers think that they have control over the outcome and so make strategies to win the gambles. These outcomes are probabilistic and random in nature. Qadri & Shabbir (2014) in their research found out that overconfidence and illusion of control have a great effect on the investor's decisions in Islamabad stock exchange. Overconfidence relates with illusion of control, because it tends to create an illusion in the mind of an investor that he/she has control over his/ her investment.

The effect of illusion control leads the investor trapped into his own mindset, which does not guarantee rational investment decision making. At most of the times, the investor thinks that he has control over the investment he did. However, the outcome of investment does not necessarily lead to the same result which the investor has expected and losses occur. Also, the likely profit margin is not achieved all the time. Likewise, it is also possible that luck coupled with other factors such as situational circumstances alter the forecasted profit margin of investment. For example, the Covid-19 like situation can significantly reduce the expected profit margin of an entity. This situation further deprives the investor from control over the investment.

2.2.4 Overconfidence Bias

Overconfidence is the tendency of investors to rely more on their ability rather than relying on knowledge and experience. These investors can actually affect the outcome unlike the case with illusion of control. However, the investor can have a smaller impact on the outcome than they believe they would. They overinvest as a result of this overconfidence bias. Such inexperienced investors make more unwise decisions and attribute their success with skill and their loss with bad luck (Eli &Hilla, 2014). These individuals ignore the probability of a negative return and underestimate the risk involved; hence, they take me risk than is advised.

A research carried out in Pakistan investigated the link between overconfidence and over trading in the Karachi Stock Exchange (Sindhu & Waris, 2014). Their results suggested that investor overconfidence is present in Karachi Stock Exchange. In another study, Zia, Sindhu & Hashmi (2017) explored the presence of overconfidence in Pakistan's stock market. They studied the link between turnover and overconfidence and implied that trade volume as a result of historical market returns is a proof of overconfidence. Similarly, Gul & Akhtar (2016) proposed that the prevalence of several factors like investor turnover, frequency of trading, risk tolerance, and duration of stocks held are the indicators of the presence of Overconfidence in the Karachi Stock Exchange.

In addition to the stock exchange, the overconfidence bias is also present in investors in the real estate sector. This bias causes people to invest overconfidently in their preferred investment opportunities in a sector. In real estate, when people start to having overconfidence in the profitability of a particular housing scheme, property, or any related real estate venture, they invest in an overarching manner and put greater chunk of their wealth to invest on it. Thus, overconfidence bias enhances their trust of investing in a particular property venture. The real estate agents exploit this bias of investors if they get to know that the investor has this behavioral attribute of overconfidence to invest in a particular property venture. In such a scenario, the agents try to further raise their confidence and trust and then, win their investment and get their commission from that investment. Thus, overconfidence bias plays an essential role in maximizing the investment amount of investors.

2.2.5 Over-optimism

Overoptimism occurs when an investor is more optimistic about his situation/decision i.e. he believes that he will get a high rate of return and is at less risk than others. These beliefs aren’t based on any calculations or previous findings rather they are just his perceptions. Overoptimisim is related to overconfidence as such individuals tend to take higher risks than is wise. Faris (2019) in his work showed how overconfidence, Overoptimisim and herding have a statistically significant effect on decision making of an investor. Overoptimisim causes an investor to invest more profoundly i.e. the investor chooses to invest high amount and foresees high profits in return. The Overoptimism can occur due to any reason. For instance, it can be a psychological attitude or behavior of an investor that he/she remains optimistic in every endeavor whether that is related to investment or any other aspect in life. Or, on the other hand, the overoptimism can also be the consequence of trusting on the opinions of others and making the mind to invest after getting optimistic by such opinions. Such overoptimism also relates to lack of financial literacy or herding effect as people start investing out of the biases of overoptimism by following either other investors or the real estate agents.

2.2.6 Illusion of Certainty

Both Overoptimisim and Overconfidence are related to this in which the individual believes something to be true whereas that might not be the case. Tabassum and Haroon (2015) conducted a study on Karachi Stock Exchange to explore the impact of optimism, overconfidence, illusion of control and self-control on Investment Decision making. They found out that all these biases had a significant and positive impact on investment decision making (Tabassum & Haroon, 2015). These biases raise the probability or improve the certainty that an investor is likely to participate in investment in a particular investment venture. Therefore, these biases positively impact the real estate sector in terms of increasing the monetary investment in the sector.

2.2.7 Hindsight Bias

In this bias the investors feel that they are responsible for the occurrence of an event. There is a relation between past actions and the present outcomes but this might not be the case every time. Such people believe that they can correctly predict the outcome of an event based on their previous predictions coming true. Hence, this is closely related to illusion of certainty. Muntazir et al. (2013) found the prevalence of hindsight bias in the investors of Islamabad Stock Exchange (ISE). They found that errors that resulted from wrong prediction led to investors bearing higher risks. Sometimes, such predictions lead to losses to the investors, whereas, sometimes, the investors remain lucky when the high risk gives them high return. The application of this effect is more common in the stock exchange market.

However, certain instances of Hindsight Bias can also be observed in the real estate sector. For example, when investors predict the present profitability of a property while keeping in mind the past trends, then they follow the Hindsight Bias. This implies that they compare the prices of property in past with the current prices. From this, they analyze how much the prices have risen and also how fast the prices have gone up. The rapid rise in prices depicts that the property is attracting more investors at present, while the extent of price rise indicates the high number of investors which the property has attracted so far. Thus, the investors decide about investing in such a property in accordance to such trends of price rise, which leads them to make predictions about the increase in price of the property in the future. Through such prediction, they estimate whether they should invest in that property if their estimations predict that the price of that property would go up in the near or distant future. Sometimes, such predictions also go wrong and investors make errors in predicting the future trends of price rise. The representatives of real estate also sometimes make mistakes in predicting the prices. Abnormal incidents such as the arrival of pandemic or sudden security challenge in the region can also significantly affect the prices of property and can nullify the estimated trends of price rise of a particular property.

2.2.8 Herding Effect

Herding is when an investor ignores his knowledge and follows the investment decision of other investors. It happens when investor is unsure about the prices of the assets being purchased and trusts the wisdom of the crowd or the leaders. Several studies have been carried out to find the effect of herding along with some other factors on investor decisions. One study carried out at Pakistan stock by Anum & Ameer (2017) identified that several behavioral factors including herding have a positive impact on decision making. They also found out that herding variables have a major influence on investor performance in the Pakistan Stock Exchange. Another study by Bakar & Yi (2016) investigated the impact the several behavioral factors on the Malaysian stock market and concluded that herding has no significant impact on the investors' decision making. A study by Waweru, Munyoki & Uliana (2008) carried out in the Nairobi Stock Exchange showed that the buying and selling decisions were mainly affected by the decision of other investors. In the Colombo Stock Exchange, the most prominent factors affecting investor decision making included: overconfidence, availability bias, and herding (Mahanthe & Sugathadasa, 2018).

It is pertinent to mention here that herding is mostly caused by the lack of information about a desired investment opportunity. The opinions of other investors about a particular investment opportunity create a general public opinion about the feasibility of investing in that. Therefore, those investors who lack detailed information about the pros and cons or who have only superficial knowledge about an investment endeavor tend to create biasness against or in favor of investing in that endeavor based on the information they retrieve from other investors about it. This herding effect can cause significant impact on a stock or an entire market if the general public opinion about that stock or market becomes viral in the society. In the contemporary era of social media advancement, the tendency of information to go viral has increased many folds (Shiller 2019). For example, if a particular narrative also becomes viral in the stock market or in real estate sector against a certain investment venture, then the valuation of that venture can fall significantly. This phenomenon has also been explained in 'Narrative Economics' which is a field that discusses the impact of narratives on economy and society. Narratives have caused the fall of stock market several times in history (Shiller, 2019a; Wallison, 2013). Sometimes, such narratives are resulted due to stories or rumors about any social or political aspect which can affect the valuation of stocks (Shiller, 2019a). The investors with lack of knowledge about the market tend to believe such rumors or stories more quickly and therefore, can make irrational investment decisions (Shiller, 2017, p.29).

A study by (Kanwal, Alam & Agha, 2019) showed a strong effect of herding behavior on investors investing in the Pakistani stock market as their decision making was influenced by investment decisions of more qualified investors. Having better information of the asset being purchased and knowing the true risks can reduce the effect of herding on investor decision. In addition, investors always want to invest in such real estate projects which entail higher profit margins and minimum loss or risks (Amin & Pirzada, 2014).

In Pakistan, the herding effect has been observed in the stock exchange market as well as in the real estate market. When investors see that many people around them are aiming for buying property from a particular real estate company, they also start thinking about investing in the property of the same company without estimating the profit margins or risks. The calculations or estimations of profit though come into play but the psychological biasness has already made their mind about investing in that particular endeavor. This biasness further affects their estimations of profitability of investment.

In order to limit the scope of this research, the impact of only three of the above-mentioned biases: Herding, Disposition effect, and Overconfidence have been studied. The other factors are linked to these factors directly or indirectly.

2.3 Behavioral Finance and Real Estate Market

Like Traditional financial markets, participants investing in the real estate market show psychological biases while making their investment decisions. The effect of these biases on real estate valuations is generally magnified compared to traditional financial markets due to severe limits to arbitrage. As a result of this, difference between intrinsic value and market price of a property exists in the short and medium tenure. In addition, sometimes, there also appears a significant difference between the market price and actual price of a real estate property due to the behavioral biases shown by investors towards that particular property (Saleem, et. al., 2021). The behavioral biases can increase or decrease the demand of a real estate property, which affects its monetary valuation. In this regard, the behavioral biases occur naturally inn the real estate sector. Black et. al. (2020) explains this phenomenon by stating that the real estate investors are naturally bounded by their psychological limitations. Therefore, it becomes unpredictably difficult for them to prevent those biases from affecting their investment decisions.

2.3.1 Limits to arbitrage in the Real Estate Market

Arbitrageurs try to make quick profit by exploiting price difference between similar or identical financial instruments. In case of real estate, arbitrage is severely limited due to the following reasons:

- A residential or a commercial property generally takes weeks or months before a deal for it is finalized. Also, unlike stocks owners, owners of real estate properties cannot observe directly the tradeable value of their asset. These factors enhance the illiquidity factor which adversely impacts arbitrage.

- In real estate market, buyers and sellers both hire dealers/agents to help achieve their objective and pay higher commissions and taxes compared to the financial markets. These higher overall costs limit the opportunity for arbitrage and increase market inefficiency.

- Real estate properties are heterogeneous whereas bonds and stocks are homogenous. Also, you cannot “short-sell” in the real estate market. Hence, Price inefficiency exists in the market for long periods because investors cannot take short positions even if they consider a property to be over-valued.

2.3.2 Evidence of Cognitive Biases in Real Estate Market

According to a research study conducted by Zahera and Bansal (2019), the individual investors are influenced largely by the disposition effect (Zahera & Bansal, 2019). In particular, the factors such as demographics, age, and gender also contribute towards the adoption of disposition effect of individual investors. However, the study also found that the investors who remain associated with a particular investment company and do not make investment decisions individually, tend to show lesser inclination towards expressing disposition effect. For example, the institutional investors or mutual fund managers show less or almost no disposition effect and tend to make calculated and sound investment decisions (Zahera & Bansal, 2019).

During recessions, abnormal trends of investment have been observed not only in Pakistan but also in the entire world. For instance, the financial crunch of 2007 led the investors to hold on to their assets and not invest further. World financial crisis in year 2007-08 was primarily driven by the irrational behavior of the real estate participants. Thus, the investors tend to express disposition effect in such times. This effect has been particularly noticed in the real estate investors in Pakistan (Parveen & Siddiqui, 2018). Investors tend to hold on their property whether going in losses so as to ensure themselves that they will sell it only on profits. This effect ultimately leads them to earn profits on their property and gives a higher positive return as compared to when they are influenced by the overconfidence bias (Parveen & Siddiqui, 2018).

On the other hand, Malik et. al. (2021) describe that the prices of real estate property are affected more by the overconfidence bias as compared to other factors. Malik et. al. (2021) deduced this inference from their study conducted on the real estate sector in Pakistan. Malik et. al. (2021) argue that the prices of real estate property inflate due to overconfidence expressed by the investors. In addition, the herding also plays significant role after overconfidence, which induces investors decision making and convinces them to invest or sometimes, over-invest in the real estate sector in Pakistan (Malik et. al., 2021). The significant level of marketing and advertising by the real estate giant companies on media and elsewhere further boosts the herding effect and enhances the overconfidence bias of investors. Likewise, the different schemes and payment plans made by the housing schemes makes it easier for people with different income slabs to choose real estate as their likely investment target in Pakistan. These factors induce overconfidence bias and herding at a high rate. Nonetheless, this impact is stronger and holds more plausibly during normal economic conditions, economic booms, or during bullish trends in market in Pakistan.

Odion (2001) documented that as experience of investments increases, the effect of overconfidence bias decreases. Majority of real estate investors being unsophisticated and amateurs are highly affected by overconfidence. Also, inexperienced investors make irrational investments and attribute their failures to external market factors. In a survey based study conducted by Nelson (1999), he found out that investors with less information were more overconfident compared to their opposites.

Presence of loss aversion bias in the real estate market is proven by Mayers (2000). As per his research, sales volumes and price levels of properties are positively highly correlated which shows that people tend to hold and not realize losses when prices are going down. False reference point is a major issue present in many real estate investors (Tyrion 2011). For example, people generally value their property in reference to their purchase price without fully analyzing the change in market conditions. McQueen and Slade (2003) explained the effect of anchoring bias in housing market. People who are buying property in a different city compared to their home state are willing to pay a higher price. A percentage of higher cost is due to extra search cost that they have to incur but partially due to the effect of anchoring as they compare the price of the property, they are purchasing with the prices in their home town. Sailer et al. (2009) used survey method to analyze effect of regret aversion in real estate participants. He documents that demographic have an impact with respect to regret aversion bias. Female participants and USA based investors tend to show more regret compared to their Asian counterparts.

According to a research study conducted by Saleem et. al. (2021) on the real estate sector in Pakistan, the overconfidence expressed by the investor causes a significant impact on the prices of real estate property. This effect is greater than the effect of herding and loss aversion expressed by investors on the real estate property in Pakistan. The impact is strongly significant that other factors such as the demographics, financial literacy, and other aspects of the investor show inability to affect the relationship. The overconfidence can either cause a decline or a rise of prices of real estate property. That is the reason why the prices of real estate property sometimes do not denote the actual monetary value of the property (Saleem, et. al., 2021). The biases distort the market pricing and sometimes tend to lower or increase the prices of property from the market prices. This indicates a strong impact which the biases of investors cause on the real estate property in Pakistan.

CHAPTER 3

DATA AND METHODOLOGY

3.1 Data Sources and Research Methodology

Primary data for this study has been collected using a semi-structured questionnaire. Therefore, a survey is conducted as a tactic to collect data. On the time horizon, this study is cross-sectional. The population of this study consists of real estate investors in Islamabad. A purposive sampling technique is used to collect survey responses. This technique helps the researcher to get more responses from respondents who can be easily reached. The first part of this questionnaire had questions regarding demographic info to categorize investors based on age, gender, and income level. The effect of disposition, herding, and overconfidence effect measures via questionnaire is implemented from Kengatharan, (2014).

The method of survey is usually criticized as it is considered very simple. Sometimes the replies are very limited and reply may not be accurate which can result in imprecise results. Hence, the outcomes of this study rely on respondent's morality and honesty. Survey studies are considered unsuitable by some as they observed that; there can be a crack between the reply submitted and their real mindset. As per them, the individual view is often tilted towards popular answers and they evade unwanted answers. Hence, people don't share their factual experiences and view. However, we tried to get demonstrative data as much as possible by adding a few questions in our questionnaire.

The data study will include both descriptive and inferential statistics. Descriptive categorization used to determine which categories most of the investors belong to. To determine whether biases i.e. overconfidence, herding, and disposition effect happen in Islamabad or not this study has used the factor analysis, the sample mean values and the regression analysis. The figure 1 shows the link between investment decision making and Behavioral Biases i.e. disposition, overconfidence, and herding.

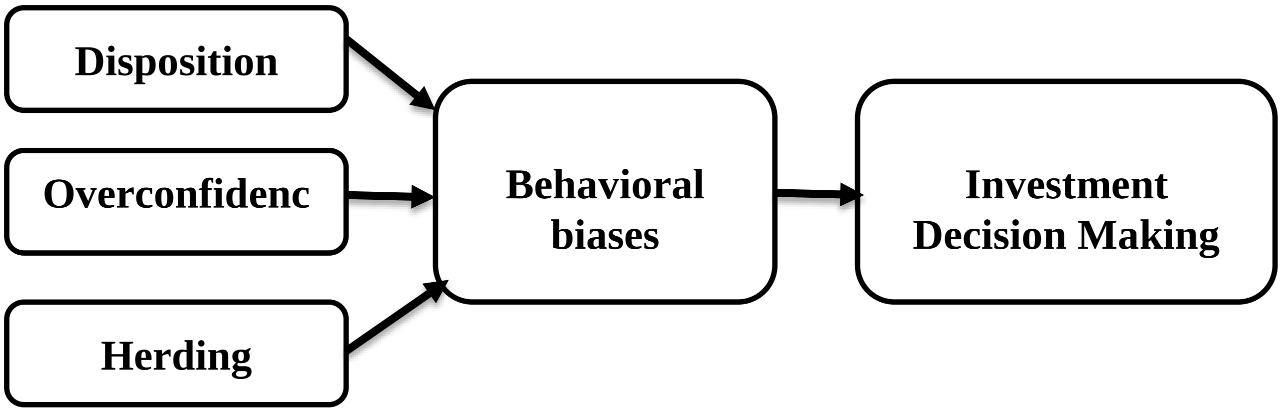

Figure 1: Conceptual Frame Work

3.2 Survey Sample Size

A sample needs to be of adequate size to minimize errors and sampling biases. As the sample size increases, the chances of one's findings being biased decreases but over a specific size diminishing returns set in (Gill et al., 2010). Numerous approaches and formulas have been developed to measure the appropriate sample size. As per the sample size table published by Gill et al. (2010) using a confidence level of 95% and an error margin of 5% the appropriate sample size for this study is 384.

3.3 Questionnaire Design

The survey consists of 15 questions in total where the first three were related to demographic details such as gender, age, and income level. Questions 4-6 are related to herding behavior, questions 7-9 measure overconfidence, 9-12 are used for capturing the impact of the disposition effect and 12-15 are used to monitor investment decision making. 5- point Likert scales, which are used famously to rate the replies of the respondents of the survey, are used to ask the investors how much do they rate the degree of the impact of a certain behavioral variable. The scale ranges from 1 to 5 where 1= strongly disagree, 2= disagree, 3= no opinion, 4= agree, and 5= strongly agree.

3.4 Questionnaire Reliability

To measure the reliability of the questionnaire and set of the scale used, Cronbach's alpha was used. This formula was developed in 1951 by Cronbach to evaluate answers in multiple answers categories and check the reliability of a questionnaire.

Table 1: Cronbach's Alpha Values

Variables	Cronbach's Alpha
All questions	0.872
Herding bias	0.710
Overconfidence bias	0.732
Disposition bias	0.779
Investment decision making	0.728

The Cronbach's alpha value of **0.872** for the whole questionnaire is an indication of high reliability.

3.5 Research Hypothesis

The three hypotheses that are tested in this study are as follows:

H1: Disposition bias affects investment decision making in Islamabad's real estate market

H2: Herding bias affects investment decision making in Islamabad's real estate market

H3: Overconfidence bias affects investment decision making in Islamabad's real estate market.

3.6 Econometric Model

The econometric model used for this study is as follows:

$Y = b0 + b1X1 + b2X2 + b3X3 + b4X4 + e$

Where:-
Y = Investment Decision Making

X1 = Overconfidence Bias

X2 = Herding Effect

X3 = Disposition Effect

b0 = y intercept

e = error

Investment decision making is the dependent variable which is captured through questions related to the real estate market prices such as "Real estate prices in Islamabad are cheap". Overconfidence, herding and disposition are the three independent variables.

CHAPTER 4

Qualitative Section

One of the most important contemporary challenges facing policy-makers and regulators in the field of financial markets refers to the impact of individual and institutional investor cognitive (behavioral) biases on the choice of investments and the pursuit of welfare enhancing trading and investment strategies. The regulatory framework governing the workings of investment markets is based on the model of rational investor who possesses unlimited capacity to process information in order to maximize profit. Arguably, most investors' computational capacity and trading behavior does not conform to this model.

The analysis of the impact of cognitive processes (heuristics) and biases on the rational investor model, as incorporated in contemporary financial market regulation, has followed closely the more general assault carried by Behavioral Decision Theory (BDT). BDT is defined as the interdisciplinary intellectual movement that incorporates empirical theories of decision making has its roots mostly in cognitive psychology and, to some extent, in the laboratory tests of economic theory doctrines.

In Pakistan, no substantial measures have been taken to protect real estate investors against cognitive biases which results in irrational decision making. In most developed countries, Investment firms have developed forms and questionnaires for new investors coming on board so that they get a fair idea about the return and risk requirement of the new investor and they manage his investment accordingly. The use of questionnaires for new investors have resulted in minimizing the impact of cognitive biases and more efficient decision making (Ning, 2012).

4.1 Real Estate Regulatory Authority (RERA)

In 2020, real estate regulatory bill was presented and passed in the national assembly of Pakistan. Real Estate Regulatory Authority for regulation and promotion of the real estate sector and to protect the interest of buyers in the real estate sector by ensuring that the sale and purchase of plot, apartment or building, as the case may be, or sale of real estate project, to the buyer by a developer or owner holding title by himself or through a company or an agent is by an efficient and transparent manner and to regulate mega Projects in the real estate sector by any developer and provide a mechanism for speedy dispute redressed by establishing an Appellate Tribunal to hear appeals from the decisions, directions or orders of the Real Estate Regulatory Authority (RERA) and recommendations of the inquiry office.

This bill and all its clauses apply to Islamabad Capital territory for now hence it's also called "Islamabad Real Estate (Regulation and Development) Act, 2020. RERA can be considered as a big thing in the evolution and betterment of the real estate market. All the market participants of the real estate sector be it the brokers or the investors have been demanding for the establishment of such as authority which would overall make the real estate investment environment more conducive.

The real estate sector of Pakistan has been facing multiple problems which can now be addressed and resolved through this authority. For example, conflicts and cases related to properties take a lot of time to get resolved and settled sometimes even decades. These issues result in lesser transactions, lack of trust, lower public confidence and pushes away new investor's from investing the market.

An authority was also needed to regulate the existing development authorities like Capital Development Authority, Rawalpindi Development Authority etc and address complaints registered against them.

4.2 Effect of Real Estate Regulatory Authority on Real Estate Sector

As per the Real Estate Regulatory bill, the real estate sector will be affected in the following ways:

- The Government of Pakistan will select and appoint the head (Chairman) of the authority
- All real estate brokers will have to register with the authority in order to sell/buy any sort of property
- In order to market any sort of real estate project, marketers will have to get registered with RERA
- Mandatory approval from RERA will be required by developer before initiating any new project
- Project developers will have to submit all details regarding his past and current projects
- The rights of developers, brokers and clients will be protected by the Real Estate Regulatory Authority
- All real estate cases and disputed falling within the domain of RERA will not be taken up by civil courts

One of the biggest benefits of the Real Estate Regulatory Authority in Pakistan is that it will protect the rights of both the buyer and the broker. Also, development-related disputes would be addressed in a professional and timely manner, saving people from losing any money and drawing more investors. Thus, RERA can play a pivotal role when it comes to the oversight, modernization and welfare of the real estate sector in Pakistan.

CHAPTER 5

RESULTS AND DISCUSSION

4.1 Descriptive Statistics

A total of 400 questionnaires were sent to various real estate investors investing in Islamabad's market via physical handouts and email. Out of 400, 372 full responses were returned which results in a response rate of 93%.

Title	Category	Number	%
Gender	Male	299	80%
	Female	73	20%
	Prefer not to say	-	
Age	18-30	38	10.2%
	30-45	124	33.3%
	46-60	163	43.8%
	Over 60	47	12.6%
Monthly Income	0-50,000	78	20.9%
	50,000-100,000	97	26%
	100,000-150,000	116	31.1%
	Above 150,000	81	21.7%

Table 2: Responses from investors investing in Islamabad's market.

The majority of the respondents were males (80%) which gives an idea that most investments are done by them. Concerning age, middle age that is from 30 to 60 had the highest frequency. Almost 75% of respondents belonged to this age group which indicates that people start investing once they cross 30 till the age of 60 which is generally the age of retirement. Investors belonging to different income levels are investing in the real estate sector which shows that the real estate investing instruments are the go-to thing for people wanting to do investment.

4.2 Exploratory Factor Analysis (EFA)

Exploratory factor analysis is a famous technique used for the reduction of variables into a lesser number of factors. Multiple observable variables are strongly associated with an unobservable variable and hence show similar responses. Factor loading is calculated to show the relationship between the variable and the underlying factor.

As per research by Hair (1998) when the sample size is greater than 100, a factor loading value greater than 0.5 indicates that the factor is significant and should not be removed. In our analysis, each factor loading is greater than 5 which is primarily because the questions have been specifically picked from past published research. In total, variables are grouped into three factors that are herding, overconfidence, and disposition bias.

The results of factor analysis are shown below in table 3.

Table 3. Factor analysis results

Factors	Variables	Factor loadings			
		Factor	Factor 2	Factor 3	Factor 4
Herding	Other investors' decisions of choosing property types have impact on your investment decisions	0.712			
	Other investor's decisions of buying and selling property have impact on your investment decisions	0.822			
	Other investor's decisions of how much to invest in property have impact on your investment decisions	0.792			
Overconfidence	You believe that your skills and knowledge of real estate market can help you to outperform the market.		0.741		
	You rely on your previous experiences in the real estate market for your next investment		0.727		
	You forecast the changes in property prices in the future based on your personal experience		0.829		
Disposition	When faced with a sure gain in real estate market, you are risk averse			0.852	
	When faced with a sure loss in real estate market, you are a risk taker			0.687	
	You avoid selling shares that have decreased in value and readily sell shares that have increased in value.			0.752	
Investment Decision Making	Real Estate prices in Islamabad are cheap				0.693
	Information related to real estate prices are known and available to me				0.733
	Real Estate prices in Islamabad are affordable				0.714

To check the suitability of factor analysis, the widely used Bartlett's test of sphericity was used and sample adequacy was calculated using KMO measure. Both suggested the use of factor analysis.

Table 4. The relevance of Factor analysis

Kaiser-Meyer-Olkin (KMO)		0.630
Bartlett's Test	Approx. chi-square Sig.	1598 .000

4.3 Level of the impact of behavioral biases on investment decision making

We calculated the impact of behavioral variables on investment decision making by measuring the sample average of each question (variable). 5-point Likert scale was used to quantify the effect and the following rules were applied to gauge the level of impact.

- Impact of the variable is negligible if the mean value is less than 1
- Impact of variable low if the mean value is between 1 and 2
- Impact of variable moderate if the mean value is between 2 and 3
- Impact of variable high if the mean value is between 3 and 4
- Impact of variable very high if the mean value is between 4 and 5

Table 5. Impact of Herding on investor’s decision making

Factor	**Variables**	**Mean**	**St. Dev**
Herding	Your investment decisions regarding choosing property types are impacted by others’ decisions in choosing property types.	4.21	0.531
	Your investment decisions regarding buying and selling property are affected by others’ decision of buying and selling property.	3.57	0.487
	Your investment decision regarding the amount/size/value of the investment is influenced by other’s decision of how much to invest in property	3.98	0.425

Table 5 shows the effect of other’s decisions on the investment decision making of the investors in Islamabad. All three variables have a high impact (M>3) on the investor’s decision making. However, others’ decision regarding property types has the highest impact on Investor’s decision in Islamabad’s real estate market.

Table 6. Impact of Overconfidence on investor's decision making.

Factor	Variables	Mean	St. Dev
Overconfidence	You presume that your ability and knowledge of the real estate market can help you to perform better than the market.	3.9	0.422
	Your next investment decision is dependent on your previous experiences in the real estate market.	4.22	0.311
	You estimate property price changes in the future based on your personal experience.	4.62	0.457

Overconfidence bias is prevalent in Islamabad's real estate market as can be seen in table 6. All the variables have a high impact on the investor's decision making (M>3). Previous experiences play a significant role in choosing the next investment (M>4) and the investors very highly rely on estimating property prices based on their personal experiences (M=4.62).

Table 7. Impact of Disposition on investor's decision making.

Factor	**Variables**	**Mean**	**St. Dev**
Disposition	You are reluctant to take risks if you see a sure gain in the real estate market.	4.33	0.622
	You are willing to take risks if you see a sure loss in the real estate market.	3.87	0.537
	You hold onto the property that suffers loss and readily sell away property that increases in value.	3.51	0.576

Like the previous two biases, the Disposition effect has a strong impact on the investment decision making of Islamabad's real estate investors. The mean value is greater than 3 for all three variables. The strongest effect on an investor's decision making is when they see a sure gain in the market (M=4.33). In this case, investors are reluctant to take any risks.

4.4 Multiple Regression Analysis

Multiple regression Analysis was performed on the data and the results are given in the Table below.

Regression Analysis					
	Unstandardized Coefficients		Standardized Coefficients		
	Beta	Std. Error	Beta	T value	P value
(Constant)	11.642	0.18		0.848	0.31
Overconfidence bias	1.733	0.026	0.781	33.781	0.022
Herding bias	0.874	0.037	0.032	4.089	0.001
Disposition bias	0.583	0.031	0.017	2.309	0.013
R^2	0.753				
Adjusted R^2	0.732				
f value	15.755				

Table 8: Multiple Regression Analysis.

The Regression analysis shows that all three biases i.e., Overconfidence, Herding and Disposition have a significant and positive impact on the real estate market of Islamabad. Overconfidence bias significantly affects the real estate market (B= 1.733, S.D = 0.18, T= 33.781, P = 0.022). The data analysis also shows that Herding bias has a positive impact on the real estate market (B= 0.874, S.D = 0.037, T = 4.089, P = 0.001). The herding bias influences the market prices and they increase as a result of this bias. As shown in the table, Disposition bias also has a positive and significant impact on the real estate market (B= 0.583, S.D = 0.031, T=2.309 , P=0.013) .

The results obtained are similar to prior research in this domain showing a significant impact of behavioral biases on the real-estate market of Islamabad. Moreover, the results are also in line with the research study conducted by Saleem et. al. (2021) on the real estate sector in Pakistan which showed that the overconfidence expressed by the investor causes a significant impact on the prices of real estate property. The impact is greater than the impact of herding and disposition effect. Our results confirm their results and also prove the significance of this work.

CHAPTER 5

SUMMARY AND POLICY RECOMMENDATION

5.1 Conclusion

Similar to the traditional financial sector, the real estate sector also expresses the behavioral biases of investors. The investors show these biases while investing in the real estate property, which leads them to make rational or sometimes, irrational investment decisions. Similarly, the behavioral biases of investors also cause an impact on the prices of the real estate property. Sometime, the prices of a certain real estate property do not reflect its market price due to the behavioral biases expressed by the investors in terms of either showing an inclination towards buying or selling that particular property. The psychological biases can be caused by the religious, social, or psychological inclinations of investors related to a certain property. When these biases combine with other market factors such as with the lack of liquidity of the market or with the high transaction costs, then this combination further raises the impact of biases on the prices of real estate property. This leads to diversion of the prices of real estate property from its market value especially in the short run. The behavioral biases particularly become relevant in the housing real estate sector because most of the investors in that sector do not have significant market literacy or information about the pitfalls of investing in a particular property (Beracha & Skiba, 2014). Therefore, they make their investment decisions by the biases they make from the information they retrieve from other people, from the real estate representatives, or from the society about their desired real estate housing property. It is pertinent to mention here that the irrational decisions made by the investors in the real estate residential sector often result in increasing the prices of the real estate housing property (Beracha & Skiba, 2014).

Compared to financial markets, investor's participants in the real estate market are found to be less knowledgeable and more emotional. This is related to lack of knowledge about the potential profitability and loss of the investment endeavor. The lack of knowledge is often termed as financial illiteracy when discussing behavioral biases in stock exchange. In real estate sector, lack of knowledge of investors is common among the investors in Pakistan as people do not attempt to conduct extensive research to gain knowledge about investment endeavors in real estate sector; instead, they rely more on the knowledge sharing of the real estate representatives about potential investment opportunities.

The Herding effect emerges from the lack of financial literacy, as investors tend to believe more on the knowledge of either their property advisers or on other people. This phenomenon is very common in the real estate sector. This effect gets strengthened in urban regions because the real estate representatives have conducted vast research about the profitability of certain desired real estate endeavors. Therefore, they have rich knowledge and vast information to convince with the investors to invest or not invest in a particular real estate investment venture. Consequently, the investors trust the knowledge of real estate representatives more than their own knowledge about the potential profitability of an investment venture in the real estate sector. This contradicts the overconfidence bias. That is, the investors here have more confidence on the knowledge of real estate representatives than they have confidence on their own decision making. Due to such over-reliance on the knowledge of the real estate representatives, the real estate companies advertise extensively on media including on TV channels and on newspapers. It is pertinent to mention here that those investors who have lack of financial literacy also become vulnerable to making irrational and mostly incorrect investment decisions without the knowledge support of the real estate agents and representatives.

Often, it is the real estate representative that informs the investors about potential investment opportunity. Therein, depending upon the extent of trust, the investors believe the information shared by the real estate representative and accepts to invest in the suggested investment endeavor. This is how the real estate sector continues to grow without taking into consideration of actual knowledge of the investors. Thanks to the Herding effect and financial illiteracy which makes the real estate representatives stronger in bargain between the real estate agent and the investor.

In the field of behavioral finance, the Heuristic and Prospect theories are the most popular among researchers despite the fact these theories have not been rigorously tested or scientifically proven. Nonetheless, when these theories were applied on the real estate sector in Pakistan, the findings deduced the inference that the real estate sector entails strong loss aversion shown by the real estate investors (Zain-ul-Abdin, et. al., 2019). In addition, sociological theories can be used to study and explain the behavioral biases exhibited by investors in the real estate sector. Such a study, when employing sociological theories, becomes similar to conducting consumer behavior research; through this angle, the biases shown by the investors individually as well as in group can be studied and compared (Black, et. al., 2020; Black et. al., 2003). This kind of consumer behavior research has been the initially employed by the field of behavioral finance for studying the psychological biases. Later on, the other academic fields such as Economics, Psychology, and core Finance have been employed as well for studying the behavioral biases of investors.

The main objective of this work was to find the impact of behavioral factors on investment decision making of investors in Islamabad's real estate market. Traditional theories assume that the investor is a rational individual and hence, they ignore the behavioral factors and their effect on decision making on investors. In developed countries, a lot of work has been done to find the presence of these behavioral factors and to gauge their impact on investment decision making of investors. However, in developing countries like Pakistan, only some amount of research has been conducted in the field of behavioral finance in relation to its application on the real estate sector. Therefore, there exists a huge research gap on the application of behavioral finance on real estate market in Pakistan. Most of the work in Pakistan has been done concerning the investors of the Stock exchange. In particular, the association of Disposition Effect, Herding Effect, and Overconfidence Bias has been particularly studied in relation to the Stock Market. Our study aimed to find the presence of these behavioral factors in the investors of the real estate market at Islamabad. Therefore, this study attempts to fill the gap in literature by providing insights of the application of behavior factors on the real estate market.

In this study, the three biases that are disposition, herding, and overconfidence were selected based on a review of previous literature which showed that most previous papers used these three biases for checking the impact on investment decision making. A detailed questionnaire inquiring about the demographics and the investment decisions was prepared and a purposive sampling technique was used. Findings of the questionnaire were gathered and inferences have been deduced.

5.2 Key Findings

From the Responses, it was found that the majority of the investors were male and were older than 30 years of age. We also found that investors belonged to different income class groups giving the impressions that real-estate investment is the go-to thing for investors. In regards to the behavioral factors, our results showed the prevalence of overconfidence, herding, and disposition in the real estate market of Islamabad.

Investors were found to be overconfident and relied heavily on their past experiences to estimate property prices. Moreover, the investment decision of investors was affected by other's choices concerning property types and investment amount. Investors tend to hold onto the property that suffers a loss and readily sell that which has profited.

These results are in line with previous studies of behavioral biases impact on investment decision making conducted in Pakistan such as done by Kanwal, K., Alam, S. & Agha, H. (2019) and Sindu, M.I. & Waris, F. (2014).

5.3 Limitations

The research is restricted to analyze investor behavior in Islamabad's real estate market. On time limit, the investment can be branded into different categories. The study didn't analyze the entire procedure of how people make decisions rather it only focuses on the presence of a few biases in people. The investment decision making in real estate markets is affected by many factors and has many influences. Behavioral biases are of various types and it is out of the scope of the paper to study every bias. This research is an effort to check the impact of three behavioral biases only. Furthermore, a questionnaire was used and a purposive sampling method was employed both of which have their limitations.

5.4 Policy Recommendation

Financial choices are significant in people's life and bad decision making can adversely impact their living standards. Therefore, exertion is needed to make sure these biases decrease. One of the ways to lessen the impact of these prejudices is to educate and teach investors. Small investors generally decide on fake news and advice of senior gurus as an alternative to investigating on their own. Inquiry culture needs to be enhanced among the investors and technical analysis should be taught to them. Overall, this would help in improving investment decisions, and the tendency to follow emotions and biases will reduce.

This paper will aid financial consultants to recognize the various types of biases that exist and their impact on investment decisions. The study can also be used to assist in portfolio development of individuals as well as companies. In particular, it can enlighten the real estate representatives that the behavioral biases of investors affect their decisions of investment. Therefore, the real estate representatives can follow appropriate strategies to guide their clients to make investment decisions in a better way. This would boost the real estate sector. Likewise, this study can also give insights to the investors of real estate sector that they need to make investment decisions rationally by limiting their behavioral and psychological biases while choosing to buy or sell a particular real estate property. Thus, they can make decisions rationally. In addition, the field of Behavioral finance arena is an emerging field for researchers. At present, a limited amount of research on behavioral finance in relation to relation to the real estate sector has been conducted. Therefore, this paper will add to that research and may invite the interest of researchers and academicians to conduct further research on the subject matter. Hence, this piece of research will aid other research academics to further study people's behavior and how it affects decision making in the real estate market.

After considering the aforementioned significance of this research (in terms of its value addition to the real estate sector and in the field of academics), this study presents some policy recommendations to the policy makers and analysts. A pertinent policy recommendation is to setup a real estate committee to overview the growth of the real estate sector and its value addition. This committee should work on the national and sub-national level and should devise strategies for maximizing the contribution of the real estate sector into the national economy. In particular, the committee should share up-to-date and correct information about the real estate property endeavors to the potential real estate investors. In this regard, both, the commercial and residential property aspects can be studied to aid the real estate investors. Such information can add value to the property investors who can make wise investment decisions by minimizing their irrational behavioral biases. As a result of more availability of sound information, more people would start thinking of becoming real estate investors and would show their interest in investing in the commercial or housing real estate sector. Consequently, it would lead to the growth of the real estate sector which can increase the real estate sector's monetary value addition into the national economy.

5.5 Future Research

It is suggested that future research should employ the Data Analytics using data analysis tools after gathering rich datasets of real estate investors. Such datasets should include the biases shown by real estate investors, the decisions made by them on the basis of such biases, and the consequence in terms of profitability margin gained by them from their biases-affected investment decisions. Such data should be interpreted, studied, and visualized to find any patterns of expression of behavioral biases which may be present in a particular market, especially in real estate sector. The interpretations can give insights to the researchers for conducting future research pertaining to the application of behavioral biases in the real estate sector or in any other sector depending in accordance to the availability and richness of the collected data. The researchers can make a plan to investigate this and collect data in the real estate sector for future research.

The data collection through surveys using purposive sampling has its limits. Advanced statistical tools can be employed for future research related to this area. Moreover, in future research, other variables such as culture or other types of factors for example investor type can be included in the study as a moderation variable to better understand decision making. This study focuses on investment decision making in the real estate market, while there are various other kinds of financial decisions like financing decisions, investment in other sectors of the economy. Therefore, future research should also explore in relation to the aforementioned areas after collecting adequate data from the real estate sector.

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APPENDIX

QUESTIONNAIRE

Investment in Islamabad's Real Estate Market

We are conducting a small survey regarding real estate investment in Islamabad. The following survey will not take more than 2 minutes of your time. Your participation is highly appreciated.

*Required

1. Gender *

   Mark only one oval.

   - F
   - M
   - Prefer not to say
   - Other: ____________________

2. Age *

   Mark only one oval.

   - 18-30
   - 31-45
   - 46-60
   - Over 60

3. Average Monthly Income *

   Mark only one oval.

   - 0-50,000
   - 50,000-100,000
   - 100,000-150,000
   - Above 150,000

4. Your investment decisions regarding choosing property types are impacted by others' decisions in choosing property types.

Mark only one oval.

	1	2	3	4	5	
Strong disagree	⬭	⬭	⬭	⬭	⬭	Strongly agree

5. Your investment decisions regarding buying and selling property are affected by others' decision of buying and selling property.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	⬭	⬭	⬭	⬭	⬭	Strongly agree

6. Your investment decision regarding the amount/size/value of the investment is influenced by other's decision of how much to invest in property

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	⬭	⬭	⬭	⬭	⬭	Strongly agree

7. You presume that your ability and knowledge of the real estate market can help you to perform better than the market.

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	⬭	⬭	⬭	⬭	⬭	Strongly agre