A STUDY ON BEHAVIOURAL BIASES IN INVESTMENT DECISION-MAKING

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DECLARATION BY STUDENT

I hereby declare that the data presented in this Dissertation report entitled, “A Study on Behavioural Biases in Investment Decision-Making” is based on the results of investigations carried out by me in the Financial Services Discipline at the Goa Business School, Goa University under the Supervision/Mentorship of Mr. Jick Castanha and the same has not been submitted elsewhere for the award of a degree or diploma by me. Further, I understand that Goa University or its authorities will be not be responsible for the correctness of observations / experimental or other findings given the dissertation.

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COMPLETION CERTIFICATE

This is to certify that the dissertation report **"A Study on Behavioural Biases in Investment Decision-Making"** is a bonafide work carried out by **Ms. Yashvi Parish Mehta** under my supervision/mentorship in partial fulfilment of the requirements for the award of the degree of **MBA (Financial Services)** in the Financial Services Discipline at the Goa Business School, Goa University.

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CHAPTER ONE

INTRODUCTION

1.1 Introduction

In the world of investments, traditional finance theory stated that both the markets and investors act rationally, their aim was to maximize profits and investors were usually risk-averse. In traditional finance, investors are not confused by cognitive errors or information processing errors. Traditional finance was based on four pillars, namely, Arbitrage Pricing Process given by Modigliani and Millar, Capital Asset Pricing Model given by Sharpe, Linter and Black, Option Pricing theory given by Black, Scholes and Merton & Markowitz Principle of Portfolio Management (Jain et al., 2020; S. Kumar & Goyal, 2015). According to efficient market hypothesis, the stock market is always perfect and efficient and the stock prices reflect all prevailing information (Fama, 1970). Traditional finance has been replaced by behavioural finance as a paradigm shift. The advent of empirical studies in the 1970s marked the beginning of behavioural finance. It takes into account the influence of psychology, emotions, and cognitive errors in decision making. Behavioural finance challenges these presumptions by incorporating studies on how people and markets actually behave. It also claims that investors are “normal” and not “rational” and that their own biases affect them in taking decisions.

1.2 Behavioural Finance and Behavioural Biases

Behavioural finance is the study of psychological influences on investors and financial markets. It is relatively new school of thought that explains the psychology about investor behaviour and its influences on decision-making. It has gained massive impetus recently in stock markets investments. Behavioural finance is a sub-field of behavioural economics, linking psychological, cognitive and behavioural premises with traditional economics and finance, to describe why investors make irrational decisions. Unlike traditional finance, the behavioural approach assumes that there are restrictions to arbitrage leverage and that not all investors are rational. Superfluous information and emotional issues are key to individual investors’ investment decision-making (Banerjee, 2011;Suresh G, 2021).

Behavioural biases may be categorized as either cognitive errors or emotional biases. Cognitive errors stem from basic statistical, information-processing, or memory errors. They typically result from faulty reasoning. Whereas, emotional biases stem from impulse or intuition and tend to result from reasoning influenced by feelings. Cognitive errors are more easily corrected because they stem from faulty reasoning rather than an emotional biases. Emotional biases are harder to correct because they are based on feelings, which can be difficult to change.

Cognitive errors can be further classified into two categories that is belief perseverance biases and information-processing biases. Belief perseverance errors reflect an inclination to maintain beliefs. The belief is maintained by committing statistical, information-processing, or memory errors. Belief perseverance biases are closely related to the psychological concept of cognitive dissonance. Whereas, information-processing biases result in information being processed and used illogically or irrationally.

— Belief perseverance biases include conservatism, confirmation, representativeness, illusion of control, and hindsight.
— Information-processing biases include anchoring and adjustment, mental accounting, framing, and availability.
— Emotional biases include loss aversion, overconfidence, self-control, status quo, endowment, and regret aversion.

1.3 Types of Behavioural Biases

The following biases are the different types of behavioural biases which are studied in the earlier existing literature review papers.

1. *Overconfidence bias*: It is a cognitive bias that refers to the tendency of people to overestimate their abilities. Investors often consider themselves smarter than other investors by overly over estimating themselves. This fact was propagated by Odean (1998).

2. *Herding bias*: Investors often blindly follow the actions of large groups without judging the rationality of such actions. This type of behaviour is inbuilt in human nature. (Grinblatt et al., 1995) have conducted few important studies on herd behaviour in investment decision-making. Herd instincts are attributable to the natural inclinations of human beings to be

accepted by the group or community they belong to. In several cases, it has been observed that investors suffering from this bias do not take decisions by themselves but rather seek advice from brokers, friends, family and colleagues for taking their investment decisions.

3. *Loss aversion bias:* The originators of behavioural finance (Tversky & Kahneman, 1992) demonstrated a very powerful bias e.i loss aversion bias. It refers to the tendency of investors towards saving the capital from reduction rather than focusing on increasing the capital. Many studies showcased this kind of behavioural bias in investors in India, whose most preferred investment is bank fixed deposits. For these investors losses are twice powerful than as compared to gains. People who suffer from this bias usually tend to become risk-averse after a prior loss and they sell off shares which are in profits.

4. *Disposition effect*: It is another important behavioural bias wherein investors are more prone to sell off winning stocks and tend to hold on to loss-making securities. On the same grounds, Shefrin and Stateman (1985) developed a theoretical framework related to selling of winning stocks and holding of loss-making stocks.

5. *Self-attribution bias*: Investors suffering from self-attribution bias tend to attribute successful outcomes to their own actions and bad outcomes to external factors or parties. Investors often exhibit this bias as means of self-protection or self-enhancement. Self-attribution bias can cause overconfidence in investors, which can result in excessive trading and underperformance. (Gervais & Odean, 2001) explained this phenomenon in their famous work “Learning to be overconfident”.

6. *Conservatism bias*: It is a mental process where individual investors depend upon their earlier viewpoints to forecast information to acquire new ideas. Investors mainly depend on past experiences than learning new techniques for investment decisions. Conservatism bias demonstrates that investors failed to integrate new information by continuing to clutch their past prediction (Alwathainani, 2012). A recent study also states that the conservatism bias has a negative impact on the investment decision-making if investors' financial literacy is lower (Ahmad & Shah, 2022).

7. *Representative bias*: A dedicated tendency of representative bias is to relate a new event with an intention of knowing the event and through which only investors make investment

(Anderson et al., 2005). Investment decisions are made by comparing the present event with previous events. This can create some bias in terms of investors giving more importance to recent incidents and undervalue the long-term gain in investment (Kubilay & Bayrakdaroglu, 2016; Suresh G, 2021; Zahera & Bansal, 2018).

8. *Confirmation bias*: Investors tend to focus on information that corresponds to their opinions by avoiding themselves from reacting to any other piece of information. A study (Pouget, 2023) represents confirmation bias can lead to formation of bubbles in the financial markets.

9. *Hindsight bias*: It is a psychological phenomenon in which investors become convinced that they accurately predicted an event before its happening. (Shiller, 2000) describes hindsight bias as the tendency to think that one would have known actual events were coming before they actually happened or had reason to pay attention to. Investors believe that some past event was predictable, though in fact it was not. Such faulty beliefs may lead to establishing false casual relationships, which may end up in incorrect decision making.

1.4 Literature Review

For this study, we have reviewed various studies published in reputed journals regarding behavioural finance and biases and their implications on humans for investment decision-making. Some of the prominent studies done previously explain the theoretical base and various experiments conducted also explain and challenge the traditional finance theories. The research was carried out by creating a theoretical and research framework, identifying behavioural biases in investing decisions, and offering a survey of the available literature in the field of behaviour finance-related biases. The paper aimed to present a compressive review of the literature available in the public domain on behaviour finance and biases and its role in the investment decision-making process. It also focused on covering insights on the subject for developing a deeper understanding of the behaviour of investors and related biases. The review was carried out on different parameters such as year of publication, journal of publication, country, type of research, data type, statistical technique used and biases identified. This literature review helps in identifying major research gap in this domain. It helps in identifying the behavioural biases which work dominantly in investment decision-making. The paper worked on literature prevailing on the subject available on various online research data sources and search engines. It covered a long-time frame of almost five decades (1970-2015). This paper attempts to look at the impact of behavioural finance and biases and its role in investment decision-making process of investor behaviour. This study builds up a strong theoretical framework for researchers and academicians by detailed demonstration of available literature on behavioural biases (Mittal, 2022). Similarly, (S. Kumar & Goyal, 2015) systematically reviewed the literature published on behavioural biases in investment decision-making. The study aimed at analysing the impact of cognitive biases on trading behaviour, volatility, market returns and portfolio selection. The prominence of research is assessed by studying the year of publication, journal of publication, country of study, types of statistical method, citation analysis and content analysis on the literature on behavioural biases. The study is based on 117 selected articles published in peer-review journals between 1980 to 2013. To the best of authors' knowledge, this study was the first to use a systematic literature review method in the area of behavioural finance and also the first to examine a combination of four different biases involved in investment decision-making. It was found that much of the existing literature on behavioural biases revealed a lack of research in emerging economies in this area, the dominance of secondary data-based empirical research, a lack of empirical research on individuals who exhibit herd behaviour, a focus on equity in home bias, and indecisive empirical findings on the herding bias.

A study was conducted on investor risk perception on the uncertainty of returns pertaining to financial instruments. This creates uncertainty in the minds of investors resulting in wrong decisions. Explaining the same, the study presented (Saivasan & Lokhande, 2022) identifies key psychological and demographic factors that influence risk perception. It also unravels the complex relationship between demographic attributes and investor's risk attitude towards equity investment. Exploratory factor analysis was used to identify factors that define investor's risk perception. Multiple regression was used to assess the relationship between demographic traits and factor groups. Kruskal–Wallis test was used to ascertain whether the factors extracted differ across demographic categories. A risk perception framework based on these findings was developed to provide deeper insight. Findings of the study shows evidence of the relationship and influence of demographic factors on risk propensity and behavioural bias. It is apparent that return expectation, time horizon and loss aversion, which define the risk propensity construct, vary significantly based on demographic traits. Familiarity, overconfidence, anchoring and experiential biases which define the behavioural bias construct differ across demographic categories. These factors influence the risk perception of an individual with respect to equity investments. (Singh et al., 2022) Study inspected how risk tolerance behaviour moderates the relationship between personality traits and behaviour biases. The study used a cross-sectional research approach to collect questionnaire responses from 847 individual investors. The study considered a convenience sampling technique. Further examination was done using SEM technique and PROCESS macro v3.0 for SPSS. The study's findings imply that conscientiousness and extroversion qualities have a significant influence on behavioural biases. Neuroticism was also linked to herding, disposition, and anchoring bias, according to the findings. The findings revealed that risk-tolerance had a moderating effect on the relationship between personality traits and behavioural biases. The study suggests to its investors on how can they overcome such biases and it also suggests financial advisors to educate their clients by establishing a lock-gain point and stop-loss points in order to reduce effects of such biases.

A similar study (Ahmed et al., 2022) aims to examine the direct and indirect links between behavioural biases and investor's investment decisions via the mediating role of risk perception through structural equation modelling. Purposive sampling technique was used for data collection and 450 questionnaires were collected from investors of Pakistan Stock Exchange. The findings of the study contribute that risk perception mediates between blue-chip stocks and investment decisions. It was also found that risk perception does not play the mediating role between herding bias, disposition effect, and investment decisions. However, the disposition effect has a strong direct relationship with risk perception. An appropriate path to overcome such biases would be to provide proper training and education to investors. Somehow, financial literacy in investors can help eliminate risk and make them more aware of their investment decisions. A study on the same grounds was done (Suresh G, 2021) in which it stated that Investors' financial literacy entails making sound investment decisions. The behavioural biases or irrational behaviour in decision-making that is collectively formed by heuristic bias, framing effect, cognitive illusions and herd mentality factors. The study examines the combined impact of financial literacy and behavioural biases on investment decisions. A questionnaire was developed using Likert scaling technique to elicit study variables and collected data was analysed using SEM technique. The results showed that heuristic bias had a significant positive association with the creation of behavioural bias in decision-making. However, the framing effect, cognitive illusions and herd mentality have negative associations in the formation of behavioural biases. Further, investors often practice and follow heuristic biases rather than other irrational techniques for making investment decisions. Therefore, the financial literacy of individual investors has a significant impact on affecting stock market investment decisions. A similar study, (Weixiang et al., 2022) analysing the importance of financial literacy and behavioural biases on investment decision of small investors. For this study samples from 450 individuals were collected via a structured questionnaire and it was analysed using SEM method. Findings showed a statistically significant link between heuristic bias and the development of behavioural bias in decision-making. Nevertheless, cognitive illusions, the herd mentality, and the framing effect all have a deleterious impact on behavioural biases. In addition, investors often adhere to heuristic biases rather than other irrational strategies when making investment judgments. Therefore, individual investors' financial literacy level greatly influences the choices made about investments in the stock market.

(Jain et al., 2020) Study ranked behavioural biases influencing the investment decision making of individual equity investors from the state of Punjab, by using Fuzzy analytic hierarchy process (F-AHP). The primary factors considered for the study are overconfidence bias, representative bias, anchoring bias, availability bias, regret aversion bias, loss aversion bias, mental accounting bias and herding bias. The three most influential biases were herding bias, loss aversion bias and overconfidence bias. The five most influential finding statements in this paper were "*I readily sell shares that have increased in value* ," "*News about the company (Newspapers, TV and magazines) affects my investment decision* ," "*I invest each element of my investment portfolio separately*" and "*I usually hold loosing stock for long time, expecting trend reversal .*"

(J. Kumar & Prince, 2022) Studies overconfidence bias in the Indian stock markets in diverse market situations, i.e., precrash period (2006–2008), crash period (2008–2010), and post-crash period (2010–2015, 2015–2020, 2020–2021). This study obtained secondary data from BSE 100 index and various econometric techniques were used for data analysis which includes Vector Auto Regression (VAR), Granger causality VAR/Block Exogeneity Wald Test, and Impulse Response Function (IRF). The findings of the study include that the investors were overconfident during pre-crash periods, i.e., before the global market crash of 2008 and the duration between 2015 and March 2020. In post crash periods, i.e., during 2008–2010, 2010–2015, and 2020–2021, investors were not overconfident. A study in UAE was conducted to find the impact of behavioural biases on asset allocation decisions using quantitative model (Pradhan, 2021). This paper addresses analysis of impact of behavioural biases and religiosity in the context of individual investors living in UAE. Data from 129 investors of Arab nationals living in UAE was collected via a questionnaire. The findings showed that these investors were influenced by emotional and cognitive biases, they had good knowledge of religiosity, & placed them as important. This behaviour is consistent with investor behaviour observed from across the world.

A study conducted aims to investigate the influence of psychological biases on the investment decision of Chinese individual investors after the pandemic of COVID-19 with a moderating role of information availability (Jan et al., 2022). Snowball sampling method was used to collect data through a survey questionnaire from individual investors investing in the Chinese stock market and it was analysed using Smart-PLS statistical software. Findings indicated that overconfidence, representative bias, and anchoring bias have a significant and positive influence on investment decisions during the post-Covid-19 pandemic; however, the availability bias has insignificant and negative effects on the investment decision during the post-COVID-19 pandemic. Moreover, findings indicated that information availability has a significant moderating role in the relationship of psychological biases with the investment decision during the post-COVID-19 pandemic. Lack of information technology infrastructure flexibility and behavioural biases impact investment decision making a study conducted in Iraqi universities confirms the same. IT infrastructure is not well developed, resulting in low performance. A total of 209 valid responses were collected from decision-makers in private universities of the Republic of Iraq and were analysed. A set of statistical analyses were performed with Smart-PLS software. The results showed that there is a significant impact of Information Technology Infrastructure Flexibility (ITIF) factors and behavioural biases on investment decision making. Also, investment decision making influences organizational performance. The research confirms the significance of ITIF and behavioural biases as critical indicators of organizational strategic decision making (Mohmed Al-Sabaawi & Alyouzbaky, 2022).

1.5 Research Gap

For the present study on behavioural biases and investment decisions, based on the above literature review the research gap was identified. The extensive literature review was conducted using systematic literature review technique wherein it was found that many studies have been conducted world-wide in UK, USA, China, Pakistan, Indonesia, South Africa similarly India was also a part of it. When it was further investigated in terms of Indian state wise it was found that prominent studies on behavioural biases were conduct in states Punjab, Gujarat and South Indian states. However, based on the previous papers that were taken into consideration no studies were found pertaining to behavioural biases in the state of Goa. Hence, this research work tries to fill the missing gap. The other research gap which was identified was, in the previous literature based on content analysis it was found that earlier studies considered studying only few biases namely overconfidence bias or herding bias whereas the present study tried to cover most of the behavioural biases affecting investment decisions. Based on this, the present study tries to fill the missing gaps.

1.6 Objectives

1. To perform a systematic literature review on behavioural biases and investment decisions.
2. To identify the behavioural biases affecting investment decisions.

1.7 Methodology

To analyse the first objective, PRISMA approach has been used to conduct a comprehensive literature review for the papers available in public domain on behaviour biases and its role in the investment decision-making process. To conduct a systematic literature review keywords used were, “Investment decisions” and “biases”. We used databases, Scopus and Web of science to find the relevant literature on the subject. The first inclusion criteria selected was papers which were focusing on behavioural biases and investment decisions were taken into consideration. Second criteria was only research papers having open access were selected. Third criteria, only research papers were selected whereas conference proceedings, dissertation, thesis were excluded. Fourth research criteria was research papers in English were only taken into consideration. The total number of research papers got without filtering was 702 that is Scopus 605 papers and Web of science 97 papers. The total number of research papers selected after inclusion criteria were 193 papers that is Scopus 161 papers and Web of science 32 papers. After a thorough analysis, 150 papers were rejected wherein 5 were duplicate papers and 145 were rejected because they were irrelevant to the study being conducted. For the content analysis, a total of 43 papers were selected, as illustrated in fig.1.1. The results of the systematic literature review are presented using frequency tables and charts.

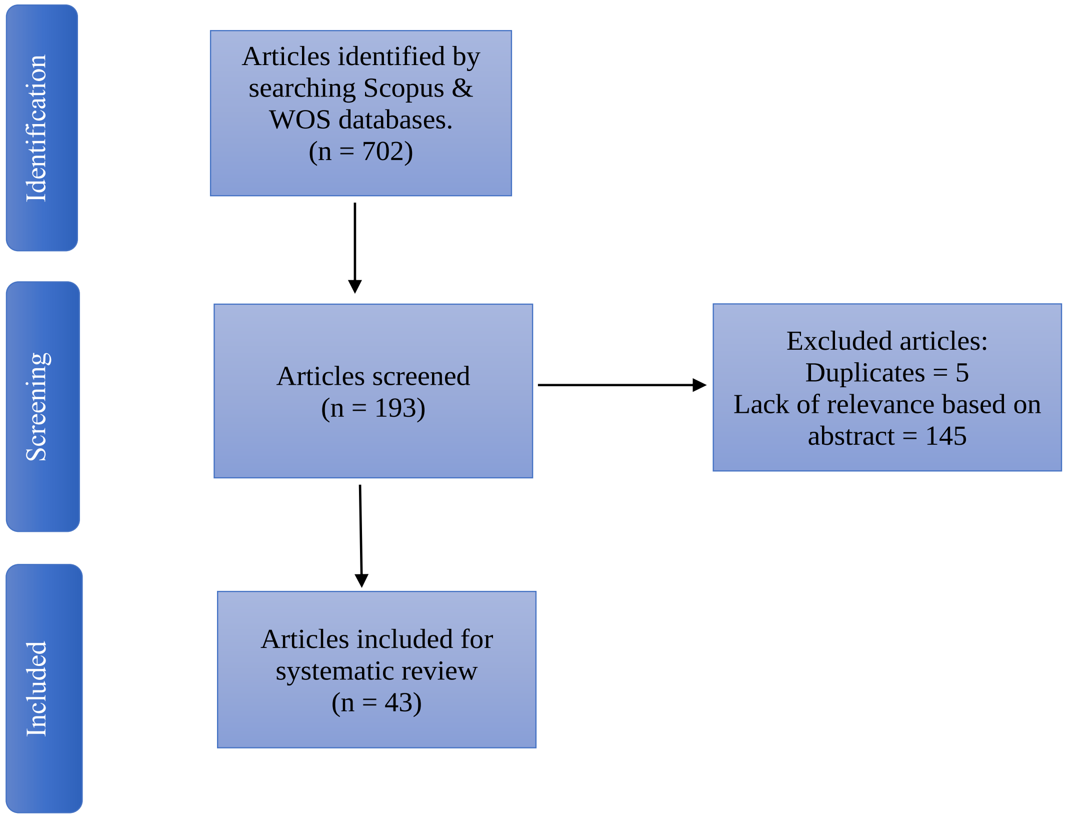

Fig 1.1 PRISMA approach flow diagram for research article selection.
Source Authors representation of analysis using PRISMA template.

To identify the behavioural biases affecting investment decision the study used a qualitative research approach. Personal interviews and telephonic interviews were conducted for collecting detailed responses from investors in the month of April, 2023. Information on demographic profile and biases was collected using survey technique. The flow of questions for interviews, first part focused on understanding the demographic profile and second part focused on behavioural biases and investment decisions. The questionnaire is shown below in, annexure 1. A total of 12 investors were consulted for interviews, finally 8 investors agreed and gave consent to record their statements. The respondents that were selected for the study were investors investing in stock markets and mutual funds. Interview responses from 8 respondents were collected from different age groups, gender, income levels, occupation and education backgrounds. After taking consent from respondents all interviews were recorded and manually coded for further analysis.

1.8 Limitations

For the study conducted on behavioural biases and investment decisions some investors were contacted but due to their busy schedules they were not able to be a part of it and therefore we were able to interview and get responses from only 8 investors. Analysis of literature used only two keywords for search of literature, “investment decision” and “biases” other than any other keywords, a limitation of the study.

1.9 Chapterisation

Chapter 1: - Introduction

This chapter includes introduction, meaning, types of behavioural biases, literature review, research gap, objectives of the study, research methodology, and limitations of the study.

Chapter 2: - Systematic literature review

This chapter includes introduction, years of publication, geographical distribution, behavioural biases, sample size, techniques/models, area of study and summary.

Chapter 3: - Analysis and Discussion

This chapter includes introduction, analysis and discussion and summary.

Chapter 4: - Summary findings and Conclusion

This chapter includes summary findings, conclusion, implications and scope for further research.

CHAPTER TWO

SYSTEMATIC LITERATURE REVIEW

2.1 Introduction

In this chapter, we comprehensively reviewed the selected research papers based on the following criteria such as year of publication, geographical distribution, behavioural biases, research approach and sample size, statistical techniques or models used for the study and area of study. Thus, it helped in analysing the previous work done in the area of behavioural finance and developing a framework for future research.

2.2 Results and Findings

2.2.1 Years of Publication

Figure 2.1: - Publication years
Source: - Authors own compilation

Figure 2.1, shows the distribution of research papers published from 2013 to 2023. It can be observed that over the years the interest towards the topic has increased. Number of researchers feel the need to study the topic on behavioural biases and publish the same. The number of papers being published per year shows an increasing trend after 2018. Highest number of papers e.i 16 papers on behavioural biases were published in the year 2022. The increasing number of studies conducted indicate that behavioural approach has been considered in investors' financial decision- making.

2.2.2 Geographical Distribution

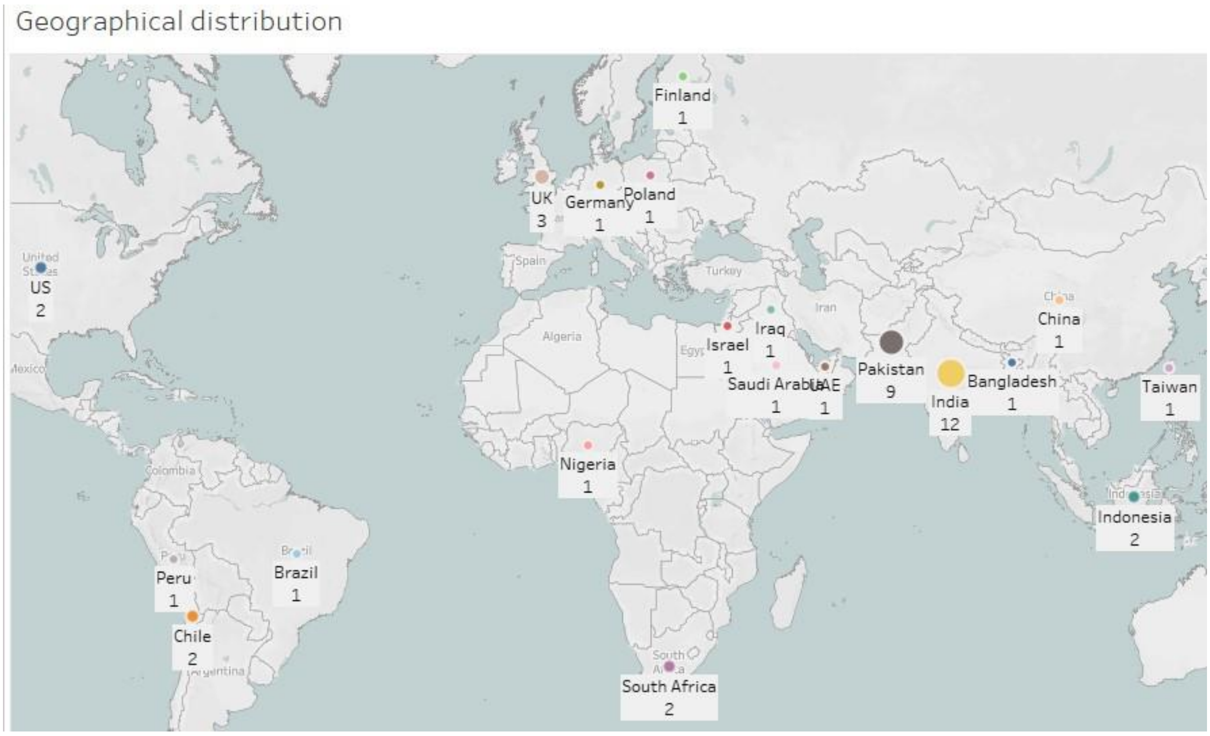

Figure 2.2: - Geographical distribution
Source: - Authors own compilation

Figure 2.2, gives a clear picture of countries from where sample data have been obtained in the research papers for the review. The classification showed that the majority of studies were conducted in 21 single countries, whereas a few studies were conducted in multiple countries. The highest number of studies on behavioural biases e.i 12 papers, is conducted in India followed by Pakistan 9 papers, UK 3 papers, US 2 papers, Indonesia 2 papers, Chile 2p papers and South Africa 2 papers. The major factor considered for the study is to develop equity markets as well as the economic growth in a country.

2.2.3 Behavioural Biases

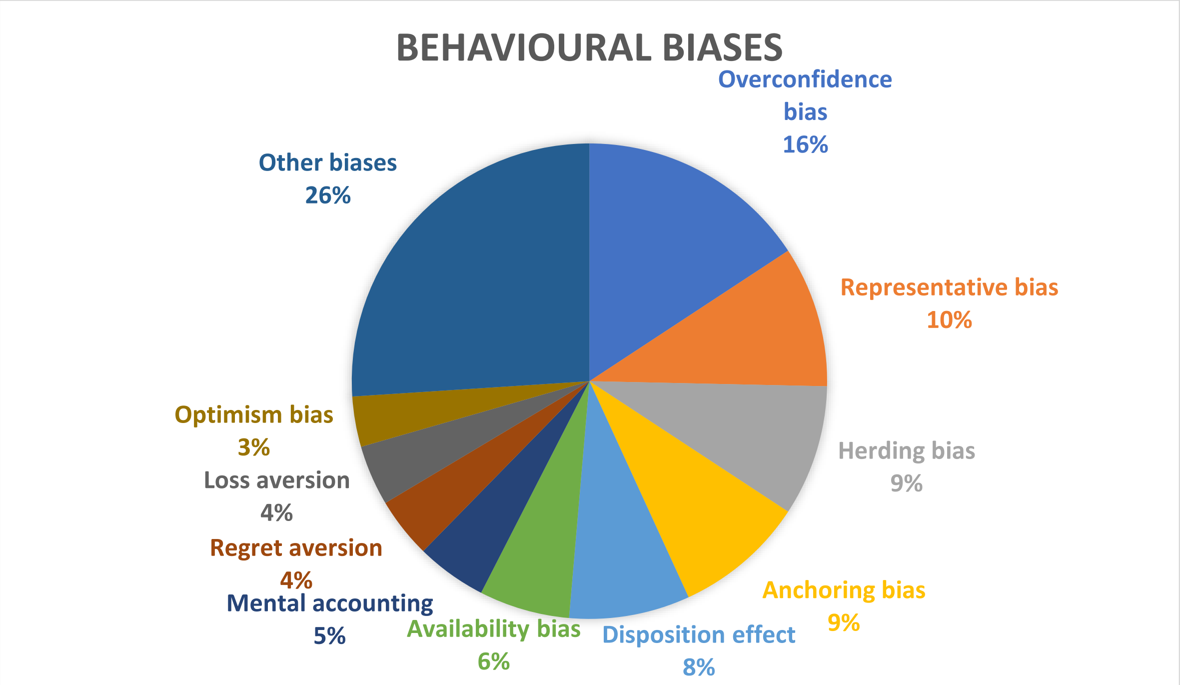

Figure 2.3: - Behavioural biases
Source: - Authors own compilation

Figure 2.3, shows the biases considered for the study by researchers. Analysis of selected 43 papers found studying a total mix of 48 biases. 16% researchers e.i is 23 papers considered studying overconfidence bias, a very commonly found bias in human. 10% e.i 14 papers considered studying representative bias, followed by 9% study in herding bias and anchoring bias. Mostly, the papers prove the importance of behaviour biases and its impact on investment decision making. 8% papers studies disposition effect, whereas 6% studies availability bias and 5% study mental accounting bias. Only 4% researchers conducted a study on loss aversion and regret aversion whereas optimism bias is the least considered for study. Less number of studies considered studying other biases like self-attribution bias, hindsight, framing bias, illusion of control bias, confirmation bias, familiarity bias and many others.

2.2.4 Sample Sizes

Table 2.1. Frequency of sample sizes

Sample size	Frequency
<100 respondents	5
100 - 500 respondents	27
500 – 1000 respondents	5
> 1000 respondents	3

Source: - Authors own compilation

Table 2.1, shows sample sizes considered per study. 42 papers adopted quantitative research approach whereas 1 paper conducted qualitative research. Researchers mostly considered taking a sample size between 100 to 500 respondents for conducting their study, 27 papers considered the same. Very few papers e.i 5 papers considered a sample size of less than 100 respondents and respondents between 500- 1000 respondents. Least number of papers considered studying behavioural biases with sample size of more than 1000 respondents.

2.2.5 Technique/Model

Table 2.2. Technique/ Model

Technique/Model	Frequency	Percentage
Structural equation model technique (SEM)	12	29%
OLS regression analysis	8	20%
Partial least squares (PLS) method	5	12%
Confirmatory factor analysis	5	12%
Binary logistic regression	1	2%
Covariance-based structural model analysis	1	2%
Mean variance (MV) model	1	2%
Black-litterman (BL) model	1	2%
Content analysis	1	2%
Artificial Neural Network (ANN)	1	2%
Logit regression	1	2%
Survival analysis method	1	2%
Proportional intensity model	1	2%
Proportional hazard model	1	2%
Cox model	1	2%
Total	41	100%

Source: - Authors own compilation

Researchers considered different models and techniques in conducting research on behavioural biases to check its significance level on investment decision making in investors. Structural equation model technique (SEM) is a widely used model to study the significance level, as illustrated in Table 2.2. 12 research papers that amounts to 29% make use of SEM to study the significance level. 20% researchers e.i 8 papers conducted their study using ordinary least square regression analysis. Partial least squares (PLS) method and confirmatory factor analysis was considered by 5 papers that amounts to 12% study using these techniques. Less number of papers used other techniques to study the impact of behavioural biases on investment decision- making.

2.2.6 Area of Study

Table 2.3. Area of study

Area	**Frequency**	**Percentage**
Stock markets	32	62%
Financial Literacy	5	10%
Real assets	4	8%
Real estates	3	6%
Currency markets	2	4%
Bond markets	1	2%
Money markets	1	2%
Futures market	1	2%
Cryptocurrency	1	2%
Mutual funds	1	2%
Fixed income securities	1	2%
Total	52	100%

Source: - Authors own compilation

Table 2.3, shows the area of study considered by researchers in studying different biases. 32 papers that amounts to 62% researchers considered studying the impact of stock market and behavioural biases on investors in their decision making. Level of financial literacy does impact investors in investment decision- making. 10% study indicated the effect of financial literacy impacting decision making in investors. A knowledgeable investor can make informed decisions in stock markets with relevant financial literacy. In comparison, to stock markets a smaller number of studies are conducted in areas like real estates and real assets.

Papers examined conducting their research in both a single area and a combination of all areas. Least number of studies are conducted in currency markets, bond markets, futures markets, cryptocurrency markets, mutual funds and fixed income securities. Investors are less knowledgeable about these markets.

2.3 Summary

Researchers in the field of behaviour finance examined the relevance of behaviour finance in financial decision-making. Many developing economies to have found the need to study human behaviour as it helps understand human minds and their decision- making patterns. Researchers have been studying human behaviour for over decades to find its influence on stock markets and economic growth. As a result, it is evident from the study of the literature in this field that behavioural factors and biases are important in micro level decision-making process for investments. Cognitive psychology of investor plays an important role in investment decision-making process and individual investors are the unit of study. Thus, behavioural finance is becoming an integral part of studying decision- making process as it heavily impacts investors performance.

CHAPTER THREE
ANALYSIS AND DISCUSSION

3.1 Introduction

In this chapter, we study the demographic profile of investors and identify different behavioural biases that affect decision-making in investors.

3.2 Analysis and Discussions

3.2.1 Demographic Profile of Investors

Table 3.1. Demographic Profile of Investors

Respondents	Age	Gender	Occupation	Annual Income	Market Experience	Broker/Advisor	Education	Courses taken related to stock markets (YES/NO) (Yes- Paid/free)
Respondent 1	51	Male	Business	5L-10L	20+ years	HDFC Securities/ Hari Kamat	BCOM	NO
Respondent 2	23	Female	Student	>1L	1+ years	Groww	BCOM, CFA L2	YES (Pd)
Respondent 3	52	Male	Business	5L-10L	30+ years	HDFC Securities	BCOM	NO
Respondent 4	24	Male	Equity Research Analyst	5L-10L	7+years	IIFL Securities	BCOM, MCOM(Finance)	NO
Respondent 5	24	Male	Student	1L-5L	3+ years	HDFC Securities, Zerodha	BCOM, LLB, CS Professional	NO
Respondent 6	28	Male	Advocate	1L-5L	7+ years	Karvy, Trade bulls	BCOM, LLB, LLM, CFA L2	NO
Respondent 7	42	Female	Entrepreneur	5L-10L	20+ years	HDFC Securities	BSC Chemistry	NO
Respondent 8	79	Male	Export- Business	10L & Above	40+ years	Kotak Securities	BCOM	NO

Source: - Authors own compilation

Table 3.1, describes the demographic profile of investors. A total of 8 respondents were interviewed out of which 6 were male and 2 were female. For the following study on behaviour biases different age group investors were considered out of which 4 respondents were young adults, 3 respondents were middle-aged adults and 1 respondent belonged to senior citizen group. Respondents from various occupational backgrounds were considered for the study. Respondent 1 is a business person and a BCOM graduate having 20+ years of equity market experience who is broking with HDFC securities and Hari Kamat as his advisor. Respondent 2 is a student pursuing a professional course in the field of financial analysis having 1+ years of market experience and is broking with Groww app and has also taken a paid course related to stock markets for better learning. Respondent 3 is a business person and a graduate in commerce is having 30+ years of market experience and is broking with HDFC securities. Respondent 4 is an equity research analyst and is a postgraduate in commerce having 7+ years of experience and its broker is IIFL securities. Respondent 5 is a student pursuing his professional course, has 3+ years of market experience and is broking with HDFC securities and Zerodha. Respondent 6 an advocate having 7+ years of market experience is broking with Karvy and Trade bulls. Respondent 7 is an entrepreneur and a BSC in chemistry having 20+ years of experience and is broking with HDFC securities. Respondent 8 is a commerce graduate and a business person having 40+ years of market experience and is broking with Kotak securities.

3.2.2 Behavioural Biases

In this section of study, we have identified, respondents as investor or trader, objective for investing and most preferred investment avenue. Respondent 1,3,5,6 and 8 are investors whereas, respondent 2,4 and 7 are investors and traders. Objective for investments vary from investor to investor. Respondent1, invests into stocks and mutual funds schemes in order to earn additional income other than business income. Respondent2, prefers investing in stocks and mutual funds with the purpose of enhancing learnings. Respondent3, prefers to invest in stock markets, mutual funds, debt funds and other asset classes with an aim of capital appreciation, Childrens' education fund and securing future. Respondent4, prefers investing into stock markets, mutual funds, bonds, balanced funds with an aim of protecting capital from inflation and capital appreciation. Respondent5, prefers investing in stocks and mutual funds with the aim of securing capital and capital appreciation. Respondent6, aims at wealth creation and prefer investing funds in stocks and mutual funds. Respondent7, aims in securing future and capital protection and prefer investing in stocks and mutual funds. Respondent8, prefers investing in stocks, mutual funds, bank fixed deposit schemes, fixed income securities, debt funds, gold bonds and real estates with an aim of capital appreciation. Furthermore, different biases that investors face in decision making are identified by asking questions and respondents responses were noted.

3.2.2.1 Overconfidence Bias

Overconfidence bias over estimates one's own ability and therefore, investors consider themselves smarter than other investors. Here, overconfidence is based on portfolio management skills and markets performance. Investors believe, "*I am pretty confident, like I can say but I don't have the education or any formal training as such so I feel a little handicapped regarding that. If I had a formal education or something of that sought then maybe I would have done little better*"; "*I am moderately confident about outperforming the markets with my portfolio management skills*"; "*I am moderately confident about outperforming the markets with my portfolio management skills*"; "*I am not very confident about outperforming the markets*"; "*I am quite confident of outperforming the markets". Investors show a lower level of overconfidence in their decision making. It would only lead to overconfidence only if they got adequate amount of knowledge and education. Traders on the other hand said, "Yes I will just take decisions based on what I feel might happen or considering the information I have I'll try to make the best of that"; " I am quite confident, and If you ask me to rate myself from 1 to 10 then, I would rate myself from 7.5 or 8"; "Not very confident because I am not trained in managing portfolios, but I do look at the market trends and keep my portfolio updated and since I am investing for past 20 years and I have lot of experience*". Traders on the other hand show case high level of overconfidence in their investment decision making.

We also asked investors whether they would consider recommendations from friends, family or any other. Investors say that, "*I do listen to them if anybody has to say anything but I wouldn't completely rely on them"; "Generally, I consider recommendations from friends and family but I take decisions by myself"; "Yes, I do take recommendations from them and I go through it first and then I make my own decision"; "I would take recommendations, but do not 100% follow as I prefer doing my own research".* Traders said that, *"Yes, taking recommendations but at the same time I feel you should do your own research"; "Yes, I am open to recommendations but I research before I take the final decision and it doesn't make sense to me that I don't bother.".* Investors and traders showcased high level of overconfidence in their investment decisions by considering their own research and strategy before investing.

3.2.2.2 Herding Bias

Herding bias means to blindly follow the crowd at large without considering the rationality of such actions. It is also the fear of missing out on the opportunity that they would have got; it is the natural inclination of human beings to be accepted by large group or community they belong to. Herding bias in this study is considered if investors consider taking recommendations from friends and family or any other. A very few Investors say that, "*Yes, I do consider recommendations from friends, family and others"; "I take advice from investment advisors and also take recommendations from friends to make investment decisions."*. Traders don't show herding behaviour while taking investment decisions. Most of the investors also are low on showcasing herding bias in investment decision making.

3.2.2.3 Loss aversion Bias

Loss aversion explains people's tendency to prefer avoiding losses to acquiring equivalent gains. It is like better not to lose rs.500 than to gain rs.500. Such behaviour often leads people to stay away from profitable opportunities. Here loss aversion is based on the investor's reaction to pain of losses than pleasure of gain. Investors said that, "*Once you are into markets you have to take both in your stride"; "No I don't think that pain of loss is more than the pleasure of gains because sometimes you are gaining and sometimes because of wrong decisions you make losses also so it's a part of the business"; "The pleasure of gain is more no doubt losses do give me pain but eventually I recover them through profits in some other stocks. Therefore, the pain of losses doesn't affect me to a very high extend".* Losses don't affect investors as they tend to recover losses in the long run by making profits in some other stocks. Investors showcased high level of patients and low levels of loss aversion bias in their investment decision making.

Traders said, "*Yes, I totally agree to that pain of loss is more than the pleasure of gain, as it has happened to me also"; "Losses would be painful but I reach a point where the gains I make is more than the losses I make so it's because of that also and I am able to protect my downside risk very well"; "No, definitely no pain of losses because I always match it with the gains I make. I create a balance between the both so no pain of losses".* A very few traders felt pain of loss, as the other traders know to mitigate risk and maintain a balance in their portfolios by gaining in other stocks.

3.2.2.4 Disposition effect

Disposition effect, investors tend to sell off profit making stocks and tend to hold on to loss making securities. Here disposition effect is based on holding on to loss-making securities and selling or holding of profit-making securities. Investors said that, "*No, the reason is that I do hold on to a loss-making script for some time but the market is such that it keeps on giving you opportunities because there are thousands of scripts here and there."; "If I get my returns in that than I book profits and sell it off"; "If you are confident that a particular stock is not doing well, future is totally blind then I prefer squaring off that script"; "If I see my stocks are in profits then I'll take out my initial investment and transfer or switch to other good script and remaining profit remain as it is"; "Yes, In fact you do tend to hold on to loss making stocks for a longer period thinking that this stock is really worth it"; "I used to do that earlier, that hold on to loss making stocks, but not anymore now"; "I generally wait for longer periods to sell stocks which are fundamentally good and blue chip stocks or if market stake of the companies are voluminous"; "I tend to hold onto loss-making positions till my purchase price is recovered and then sell off but it so happens sometimes that it doesn't come to those levels then book losses and adjust against profits in some other stocks which gives you tax benefits also."; "In times of profits if the company is fundamentally strong then we hold it".* A very few investors are affected by disposition effect.

Traders said that, "*If I have loss-making securities I do hold it for a longer period expecting it to rise further and I instead of booking losses I start buying more stocks just to average the price and if I make profits I did sell it quickly thinking that this is a good amount of profit and I should sell it and if not then I will lose out on profits."; " No, I cut my losses and I ride winners"; "If it's in profits, then ill analyse the markets and see what the reasonable levels would look like based on that I would take a decision on whether to hold or sell."; "Yes, I have done that in past where, stocks have gone down then my investment levels and but I kept holding them and now they have given me good returns. Depending on the script I decide to hold on or no."; "if I'm holding blue chip stocks then I would still keep them even if they are* *in profits”*. Most of the traders are affected by disposition effect which hampers their decision-making process.

3.2.2.5 Self-attribution Bias

In self- attribution bias investors tend to attribute successful outcomes to their own actions and bad outcomes to external factors. Here self-attribution is based on praising oneself for making all good decisions and for wrong decisions made on whom the blame be on. Investors said that, “*I feel very proud when my decisions goes right no doubt about it, it goes wrong then it is pure “bad luck” and I have got only myself to be blamed and I do this research only because I don’t have to blame them and I can blame myself only”; “Not fair to blame that person when you’re not going to share that profit, that person doesn’t share the blame also, this is how I feel.”; “I wouldn’t have blamed anyone, I would rather blame myself because it’s my duty to do my research first and then accordingly take the right call.”; “Nothing to blame, say if things are vis-e-versa then what are we doing”; “Generally, I would blame myself as the decision was taken by myself and I also do praise myself in good decisions I take and made some money”; “I would take the blame on myself as well as take the credit for my investment decisions”*. Investors shows low levels of self-attribution bias. In taking good and bad decisions they would hold themselves accountable and no one else.

Traders say that, *“Yes, initially I would definitely blame the person who gave me advise because of whom things went wrong but then again I guess I will realise that eventually it was my decision to listen to them and take decision so in a way it was my own fault and I guess in markets you make mistakes and that’s how you learn.”; “I would not blame anyone because, simply because having been in the markets for the past 7 years I understand the risk involved but if I would blame someone for this taking a decision then I would blame myself because I haven’t done the right research”; “I do not blame anyone totally because ultimately it has to be my research also which has gone wrong. So I cannot blame anyone.”* Traders also showcased low on self-attribution bias. Therefore, investors and traders believe that it has to be your own findings and research before taking any decision. Hence, self-attribution bias does not affect investors in investment decision making.

3.2.2.6 Conservatism Bias

Conservatism bias is a bias where investors hold on to their past ideas or views while carefully accepting new disruptive or contradictory information. Here conservatism bias is based on past experiences impacting future decisions of investors. investors believe that, "*Yes, to some extent it does because you have to learn from your past mistakes that always helps and it helps me in my decision making. Say whether you have done a mistake or whether you have done a good call or anything"; "Yes, past experiences, knowledge its helpful in taking future decision making. I have seen market events like 1992, Harshad Mehta scam, Iran Iraq war, 2008 depression so I have got lot of experience, but my experience says that when markets are going down that is the best time to invest in particular scripts"; "Yes, past experiences would make an impact on future decision making because if you have taken a decision and it has worked in your favour then I think you will consider that in the future decisions also. But in case if you have made a loss or a wrong move then you would revalue your research techniques and then accordingly make a decision so that you don't make the same mistake again."; "Yes, past experiences do impact future investment decision making. Initially, when I started trading, I used to hold any stock which is not performing well and I would hold it till I make profits but now the scenario is that I strictly make use of stop losses and do my investments or trading."; "Yes, past experiences do impact future decision-making like I had previously made investments in some blue-chip stocks which even today are giving me good returns. If any decisions by me are taken hastily then I book losses and avoid those type of securities".* Conservatism bias effects investors in investment making decisions.

Traders believe that, "*Yes and no both I guess initially when you are new in the market there might be a chance that past experience will impact future decision making but as you get more and more experience you actually realise that its more about the decisions that you take right now and that's what leads to making good returns and money."; "Yes, very much because the reason is that in the last 7 years the first 3.5 years were only loss making, post that I began making profits"; " Yes definitely, because as I said I invested and been in markets since past 20 years there were many past experiences like traded and invested without any knowledge and those have gone wrong some stocks also got delisted. So since then, I started looking at the company details and scripts performances, I intend to invest in.".* Conservatism bias impacts traders' investment decision making.

3.2.2.7 Representative bias

Representative bias, investors tend to make investment decisions by considering present event with previous events. Here representative bias is based on available information to investors for taking their investment decisions. Investors believe that, "*Yes these are such unfortunate events like covid, war and other things, nobody would like these things to happen but as an investor from my past experience these are blessings in disguise for investors. Like for those who are savvy investors they take opportunity in these falling markets and top-up their investments"; "Depending upon current affairs say some script may be in plus or minus so in that case ill patiently take my investment decisions and not hastily take any decisions"; "Current affairs does play a big role before making an investment decision. We have all seen in the covid times and I think it was the best time to buy as markets had drastically fallen and such things are good for the new investors in the market. So, it does make an impact"; "Current affairs does have an impact on investment decision like when covid hit I sold some of the securities which became a loss to me now. It's better to wait and watch and be patient and avoid taking hasty decisions."*. Investors are affected by representative bias as they create a pattern by analysing present happenings with past events.

Traders believe that, "*Yes considering the current markets scenario I would still try and continue to investing in the markets because that has been a correction"; "I would kind of understand what the impact would be on the market on certain sectors and depending whether its negative or positive I would take a decision"; "Yes, current affairs do have a lot of impact on decision making in stock markets in India. So, I look into it example during covid or war happenings the markets have reacted, say during covid good market strategy which was going, used to trade and make profits wherein I stopped investing and did trading for one and a half year. Similarly, when Russia Ukraine war took place, it had an impact on markets and I just kept calm wherein I dint trade nor invested"*. Traders are also affected by representative bias.

3.2.2.8 Confirmation Bias

Confirmation bias is the tendency of investors to pay close attention to information that confirms their belief and they tend to ignore information that contradicts it. Here confirmation bias is considered by different sources that investors take to consider in investment decision making. Investors said that, *"The different sources considered are reading a lot of articles in the business apps, I read a lot of that. I look at interviews of mutual fund gurus or look at interviews of other great investors. If I get time I see some programmes on the business channels, read quite of it, follow market trends and even I surf a lot of mutual fund websites on the net and do a lot of study and homework and then take informed decision when it comes to investing"; " I read news articles, I read all related corporate news and I personally believe that corporate giants like Ambani, Tata, Birla what their views are and future plannings made by them I always read on them from that I take my investment decisions."; " Depending upon the annual reports of the company, how well they are performing, whether issuing bonus shares. Secondly, would be on amount I am investing accordingly I would decide on buying blue chip stocks or small caps so yes these are the things I would look into"; "Sources considered are current affairs, annual reports and overall market situations"*. Investors tend to confirm their decisions before taking them.

Traders said that*, "I take decisions basically preferring analysis of the company"; "Personal analysis and also speaking to my mentors, so if my mentors run and idea by me or ask me to check something out is also one way how I collect ideas. Second is, I am a part of many of the groups because I am working for a hedge fund so I have access to a lot of sources and contacts and things like that so I end up getting some good ideas that I can research but ultimately, I do my own research and then take a decision."; " Going through annual reports , going on company websites and then probably you can read research reports from brokerage firms and watch YouTube videos because as we currently have "Finfluencers" who provide you with very good information, so I consider that as well".* Traders also confirm before taking trades in the market. Hence, we can say that traders and investors confirm their ideas before taking investment decisions. Therefore, confirmation bias positively impacts investors in their investment decisions.

3.2.2.9 Hindsight Bias

Investors tend to believe that some past event was predicted by them, but actually it was not. Here hindsight bias is based on predictions made by investors in investment decision-making. Investors said that, "*Predictions, I can't say about the markets but yes of certain scripts, yes it* *has happened that I was waiting for a certain target of certain scripts and it was like god answering my prayers it did come down to those levels"; "Yes, a lot of times and generally they have come true. Predicted from my past experiences so it has often happened"; "No I have never predicted the markets as such. But in case war and all is happening then maybe for that period the market will be a bit lean and down."; "According to me Yes, predicted the covid effect, yes predictions failed also example corona effect because it out performed rather than the market fall." "Not Really, I don't predict as such but I do follow market trends".* *Traders said that, "So, considering my level of experience I haven't had such a situation wherein I tried to predict a certain situation and it turned out to be true. Not come across anything of that sort."; "Yes, I have predicted. I have predicted the Vodaphone idea collapse back in 2017 when everyone thought it was a booming company and Yes bank also is a company, I predicted again one of the best trades I made because of that. And another call that I predicted was also a company called Gokuldas Exports, basically I forecasted the impact that the rising dollar would have on the company so ended up picking it up at a very good level and made a lot of money out of it. A company called Kelton tech I thought had a great prospect but what I dint analyse was the corporate governance factor that ended up leading to a nearly of 80% decline in that holding of mine. So, I lost like 80% on that company.".* Investors and traders showcased low levels of hindsight bias.

3.3 Summary

This chapter, studied various biases affecting investors in their decision making. Respondents were divided as traders and investors. Overconfidence bias, herding behaviour, loss aversion, disposition effect, self-attribution bias, conservatism bias, representative bias, confirmation bias and hindsight bias were identified for the study. In case of portfolio management skills investors were not affected by overconfidence bias, whereas traders were affected positively. In the case of considering recommendations from friends, family or any other sources traders and investors were affected by overconfidence bias pertaining to their own decision-making skills. Herding bias did not affect decision making in traders, only some investors were affected by it. Investors were not affected by loss-aversion bias as they were confident in recovering losses by investing in other securities. Disposition effect affected a very few investors and traders. Self-attribution bias and hindsight bias does not affect investors and traders to large extend in investment decision. Conservatism bias, representative bias and confirmation bias affects investors and traders in making investment decisions.

CHAPTER FOUR

SUMMARY FINDINGS AND CONCLUSIONS

4.1 Introduction

This chapter, discusses summary findings of the study and conclusion on the subject behavioural biases and its impact on decision-making in investors.

4.2 Summary Findings

Major findings of the study are included in this section. In the year 2022, highest number of papers studying behavioural biases were published. The highest number of studies were conducted in India followed by Pakistan, UK, US, Indonesia, Chile and South Africa. Overconfidence bias is the most widely studied bias by researchers. Sample size between 100-500 individuals is appropriately considered by researchers for their study. Structural equation model technique is widely used technique to find significance level of behavioural biases impacting decision making. Stock markets are the most considered area of study by researchers to understand the impact of behavioural biases on investment decisions.

Investors showcased low levels of confidence in managing their portfolios by themselves than traders. Traders showed high levels of confidence in managing their portfolios. Investors and traders showcased high levels of overconfidence with their decision-making skills when considering taking advices from friends or family. A very few investors showcased herding behaviour in their decision making. Most of the investors and traders don’t show herding bias while taking investment decisions as they prefer doing their own research and analysis rather than following the crowd. Investors showcased high levels of patients and low levels of loss aversion bias in their investment decision making. Loss aversion bias affects a very few traders in their investment decision making process. The investors maintain a good balance in their portfolios by gaining returns in other stocks. Traders and investors showcased low on self-attribution bias. They believe that it has to be their own research before investing. Self-attribution has negative impact on decision-making. Investors and traders tend to confirm their decision before taking them. Confirmation bias positively impacts investment decision making in investors. A very few investors are affected by disposition effect. Most of the traders are affected by disposition effect that affects their investment decision. Conservatism bias positively affects investors and traders in decision making process. Representative bias positively affects investors and traders in taking their investment decision. Investors and traders are negatively impacted by hindsight bias.

4.3 Conclusions

Behavioural finance as a domain studies psychological aspects that can affect financial decision making in human beings. The rationale of this study is to examine the influence of behavioural biases on investment-decision making. In this study we have identified nine biases that would impact decision making, those are overconfidence bias, herding bias, loss aversion, self-attribution bias, confirmation bias, disposition effect, conservatism bias, representative bias and hindsight bias. The evidence of behavioural finance suggests that individual investors need to control their behavioural emotions in making investment decision. Identifying the relative importance of biases influencing a decision may help investors gain better understanding of behavioural psychology, which will help them build or develop a better investment strategy.

4.4 Implications

The study on behavioural biases and its impact on investors in investment decisions is useful for financial service companies, stock broking companies, corporate houses, stock exchanges and economic participants.

4.5 Future research directions

For future research, it is recommended to increase the number of respondents and area of study. The scope of the study can be enhanced by considering more behavioural biases and expanding geographical locations.

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ANNEXURE I

Dear Respondent,

This interview process is a part of my Post graduation research. I am conducting a study on "the behavioural biases impacting investment decision-making". I request you to kindly co-operate in the interview process. Your valuable responses will be kept confidential and will be used only for the purpose of academic research. Thank you for your time, co-operation and valuable inputs.

Respondent: -

Date:-

Demographic profile: -

Age	Gender	Occupation	Income level p.a (> 1lakh 1lakh-5 lakh 5lakh- 10lakh 10 lakh & above)	Years of Market Experience	Name of Broker/ advisor

- Formal Education -
- Courses taken related to Stock market - Yes / no
- (Yes- Paid / Free)

1. What was your purpose for investing & do you consider yourself as an investor/trader?

2. What are your most preferred investment avenues (eg. Stocks, Mutual Funds, Gold, Bonds, etc). What is the considerable proportion of debt & equity, Do you feel that the pain of loss is more than the pleasure of gain?

3. What are the different sources considered by you in taking investment decisions? Do you consider taking recommendations from friends, family, news or any other? For all the good decisions made by you, you praise yourself, say you take decision listening to others and it goes wrong then how would you react and who would you blame?

4. How confident are you about outperforming the markets with your portfolio management skills? What if it underperforms then how would you react?

5. Depending upon the information that is available to you about current affairs, how would it impact your decision-making & what if the full disclosure of the happening Is not available, then what would your take be?

6. Do past experiences impact future decision-making?

7. Do you tend to hold a loss-making security for a longer period expecting it to rise further on may be at same levels or even more, and say if the stock is in profits then what would your take be sell or hold for an even longer period?

8. Ever happened to you that you predicted a certain situation about the market and it came true, then which one and if false then which?

9. What is the best investment advice / rule of thumb & what is the worst investment advice according to you?