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Behavioural Biases and its Impact on Investment Decision-Making: A Review Based Analysis

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ABSTRACT

The study investigates the influence of behavioural biases on investor behaviour in financial markets, focusing on overconfidence, herding behaviour, disposition effect, anchoring, loss aversion, mental accounting, and representativeness bias. Investors often overestimate their ability to predict market movements, which may lead to speculative trading and excessive risk-taking. Such behaviour can increase trading volumes while resulting in suboptimal investment outcomes. Herding behaviour, or the tendency of investors to follow the actions of others, becomes particularly visible during periods of market downturns or financial instability. The disposition effect also affects investor decision-making, as investors tend to sell profitable assets too quickly while holding losing assets for a longer period, which can contribute to market inefficiencies. Anchoring and loss aversion further influence investment choices; investors may rely heavily on initial information when making decisions and often react more strongly to potential losses than to equivalent gains. In addition, mental accounting and representativeness bias may cause investors to evaluate investments in isolation or assume that past trends will continue in the future, leading to unbalanced investment decisions. Overall, the study highlights how behavioural biases shape investor behaviour and influence decision-making in financial markets.

Keywords: Overconfidence, Herding Behavior, Disposition Consequence, Loss Aversion, Mental Accounting
JEL Classifications: G40, G41, D91, D93

1. INTRODUCTION

Numerous theories have been developed as a result of years of logical study of economic market investments. In this field, individual rationality is the foundation of the most widely accepted theoretical frameworks. The ability of standard finance theories to explain occurrences has led to their widespread acceptance, including the modern portfolio theory (MPT) and the efficient market hypothesis (EMH). However, the anomalies and irregularities that often define financial markets cannot be sufficiently captured by these conventional models (Shiller, 2003). Behavioural finance is an alternative approach that considers psychological aspects while making investment choices. Unlike classical finance, which assumes rational behaviour, behavioural finance recognizes that investors' decisions often influenced by cognitive biases and emotional reactions (Ricciardi and Simon, 2000). This emerging field provides a deeper understanding of how investors view and respond to financial data, going beyond the limitations of traditional financial theories (Shefrin, 2000). In recent years, behavioural economics has gained substantial attention as a popular alternative to conventional financial theories that assume investors always act rationally to maximize their wealth. Unlike classical models, behavioural finance recognizes that psychological factors, emotions, and cognitive biases often impact investing decisions, leading to systematic deviations from rationality (Thaler, 1999). Investors' information interpretation, risk and reward analysis, and financial decision-making are all impacted by these biases. According to Barberis and Thaler (2003),

they may respond to short-term market fluctuations by making impulsive trades, adopting a herd mentality, or holding onto lost assets for an extended period of time. Understanding behavioural finance is necessary to comprehend investment trends in the Indian financial system. Some states are mix of urban financial hubs and rural investing groups makes studying investor psychology more intriguing (Sharma and Kumar, 2020). A sizeable section of population invests in a range of methods, ranging from more outdated asset classes like gold and real estate to more modern economic goods like equities, mutual funds, and digital assets (Deo and Sundar, 2015). Investment decisions are increasingly influenced through behavioural biases as more individuals from a greater variety of socioeconomic backgrounds enter the financial markets. Many investors, particularly those are new to the market, usually make decisions based on emotional cues, social pressure, and gut instincts rather than performing in-depth financial analysis (Arti et al., 2011). One of the primary behavioural biases affecting Uttar Pradesh investors is overconfidence bias. People overestimate their knowledge and ability to foresee market changes as a result, which often results in aggressive trading (Barber and Odean, 2001). While loss aversion causes investors to stick onto lost properties for extended period of time in an attempt to avoid suffering losses, herding behavior compels investors to follow crowd without conducting independent research (Waweru et al., 2008). Mental accounting, which leads investors to divide their money unfairly and hinders the success of their overall portfolio, is another important bias (Kahneman and Tversky, 1979). These biases could lead to bad investment choices and lower returns if they are not addressed. The purpose of this review is to examine how behavioural finance affects investment choices of investors. This study intends to demonstrate the need for financial literacy initiatives, advisory services, and behavioural treatments to promote more logical decision-making by identifying and assessing behavioural biases that common among investors (Sushma, 2016). Investors able to make better decisions by developing ways to mitigate the harmful consequences of these biases. It also emphasizes how important it is for advisors, legislators, and financial institutions to use behavioural insights into investing advice in order to enhance regional financial stability and growth. Investors can improve their decision-making, maximize portfolio management, and support the state's overall economic growth by raising understanding of behavioural finance concepts (Thaler and Sunstein, 2008). Gujarat's vibrant metropolis of Baroda City reflects the larger socioeconomic shift taking place in metropolitan India. Examining behavioural factors influence investment decisions becomes increasingly important as financial markets change and investment options grow. The study explores key influences such as investment awareness, financial innovation, purchasing power, online investment trends, and impact of internet usage on saver choices (Patel and Desai, 2021).

The goal of behavioural finance, an interdisciplinary field that blends psychology and finance, is to understand how investors make decisions and these decisions deviate from traditional economic models. These differences significantly affect asset price, market volatility, and portfolio performance (Shleifer, 2000). This study offers significant new insights into the preferences, motivations, and challenges experienced by Baroda City investors by analyzing these behavioural characteristics.

With an emphasis on behavioural finance components, the study collected data from 98 respondents using questionnaires and interviews. A comprehensive and demanding evaluation of data is ensured by use of advanced statistical techniques, such as Smart PLS operational equation modeling and SPSS for statistical analysis. At the intersection of psychology, technology, and money, this study highlights the intricate web of variables influencing investing behavior. It is important to understand investor psychology in a regional context since financial markets are increasingly reflecting behavioural dynamics. The goal of study is to bridge knowledge gap by offering investors, financial institutions, and policymakers relevant information (Shukla and Kumar, 2024). Findings will contribute to the growing corpus behavioural finance research and guide decision-makers strategically. This study offers a road map for improving investor participation and financial decision-making in Baroda City's changing economic landscape by acknowledging how elements like investment awareness, financial innovation, purchasing power, and online investment behavior influence financial decisions (Chauhan et al., 2024).

2. REVIEW OF LITERATURE

2.1. Overconfidence

Odean (1998) explained that overconfident traders do not effectively manage or control risk. They tend to gather data from multiple sources and engage in frequent trading. Scheinkman and Xiong (2003) developed a model to analyze financial market bubbles and trading volume, highlighting that high trading activity often results from speculative trading among agents with differing beliefs. These heterogeneous beliefs emerge due to presence of overconfident traders. Nevins (2004) defined overconfidence as an investor's tendency to overestimate their ability to guess market events, often leading them to take extreme risks without achieving proportional returns. Statman et al. (2006) noted that investors become more overconfident in their trading abilities after experiencing positive portfolio returns but exhibit less confidence following negative returns. Glaser et al. (2007) analyzed overconfidence using calibration questions and found no direct relationship between overconfidence and trading volume. Fagerström (2008) conducted a study on overconfidence in financial markets, focusing on factors influencing savings decisions. The research concluded that analysts of the S&P 500 were affected by overconfidence and optimism biases. Deaves et al. (2008) detected that a higher level of overconfidence leads to increased trading activity at both the individual and market levels, with no significant gender differences in trading behavior. Graham et al. (2009) found that highly confident investors tend to trade frequently and have greater exposure to international assets. Puetz et al. (2011) examined fund managers and observed that they generally increase trading activity following strong mutual fund performance. Menkhoff et al. (2013) discovered notable differences in overconfidence levels among investor groups, with institutional investors being the least overconfident and investment advisors exhibiting the highest levels of overconfidence. Jaya (2014) analyzed gender differences in overconfidence and found that men tend to display greater overconfidence, particularly among intraday traders. Investors with extensive trading experience and

those investing in newly listed companies were more susceptible to overconfidence bias. Prosad et al. (2015) reinforced this finding, concluding that men are more overconfident than women regarding their knowledge of the Indian stock market. Seetharaman et al. (2017) identified behavioural biases such as excessive optimism, further emphasizing the role of psychological influences in investment decisions. Investors sometimes exhibit various behavioral biases that influence their investment decisions and lead to deviations from rationality. Biases such as overconfidence, herding, and anchoring affect how investors interpret market information and assess risk. Zahera and Bansal (2018).

2.2. Overconfidence and Investor Behavior

Overconfidence significantly influences investor behavior. Khan et al. (2017) found that overconfidence has a strong and positive impact on investors' returns. Ngacha (2019) examined the relationship between overconfidence and investment decision-making, concluding that there is a high positive correlation between the two. Similarly, Kurniawati et al. (2019) analyzed investor behavior in initial public offerings (IPOs) and found that overconfidence bias, along with self-control bias, plays a crucial role in shaping investment decisions. In contrast, Baker et al. (2019) observed that financial literacy does not have a significant relationship with overconfidence bias. Behavioral biases play a significant role in shaping the investment decisions of individual investors. Factors like overconfidence, herd behavior, and loss aversion often lead investors to make irrational choices rather than relying on fundamental evaluation. Using the fuzzy analytic hierarchy process, Jain, J., Walia et al. (2019).

2.3. Herding Behavior in Financial Markets

Herding behavior in financial markets has been widely studied across different regions and market conditions. Garg et al. (2013) examined herding in the Indian stock market from 2000 to 2013 and found no significant evidence of herding, concluding that it is unrelated to trading volume. In contrast, Poshakwale (2014) observed that herding is more prevalent during bearish market conditions and tends to increase in anticipation of a financial crisis, subsiding just before the crisis unfolds. Filip et al. (2015) analyzed investor behavior in Central and Eastern European stock markets and found that many investors follow the decisions of others, with herding behavior present in both upward and downward market trends. Choi (2016) noted that offline investors exhibit stronger herding behavior than online investors, as older offline investors tend to rely more on information from friends and family due to limited access to fast and reliable market data. Ripoldi (2016) provided evidence of herding bias among investors in the Shanghai and Shenzhen stock markets. Satish et al. (2018) examined herding behavior across different financial periods and found no significant presence of herding before, during, or after the financial crisis. Dewan (2019) explained that herding behavior influences asset prices, with historical examples such as the dot-com bubble and similar trends in the cryptocurrency market. Chauhan et al. (2019) found that herding is a priced risk factor in large-cap stocks but is absent in small-cap stocks due to lower trading volumes. Indārs (2019) analyzed individual investors on the Moscow Exchange and found no significant evidence of herding. Behavioral biases significantly influence investment decision-making, sometimes leading investors away from rational decisions. Biases such as overconfidence, anchoring, and herd behavior affect how individuals perceive risk and return. Kumar and Goyal (2015).

2.4. Effect of Disposition in Financial Markets

The disposition effect, a well-documented behavioural bias, refers to investors' tendency to sell winning shares too early while holding on to losing shares for too long. Shefrin (1985) introduced the conceptual framework of this phenomenon, highlighting that it exists not only in laboratory experiments but also in real financial markets. Odean (1998) provided empirical evidence showing that individual investors generally prefer to sell stocks that have appreciated while holding onto depreciating stocks. Weber and Camerer (1998) further elaborated on the disposition effect, describing it as the tendency of investors to sell assets that have gained value while continuing to hold those that have declined in value. Frazzini (2006) suggested that this effect contributes to market inefficiencies, as it causes underreaction to new information, leading to return predictability and post-announcement price drifts. Lin (2011) examined the presence of the disposition effect in the Chinese and Taiwanese stock markets during the Asian financial crisis and provided strong evidence of its influence during financial downturns. Similarly, Prosad et al. (2017) investigated the Indian financial market from 2006 to 2013 and confirmed the presence of the disposition effect.

2.5. Anchoring and Loss Aversion in Investor Actions

Anchoring occurs when individuals rely heavily on the first piece of information available when making decisions. This bias influences investors' expectations and decisions in financial markets. Investors who base their projections of future returns on past stock prices or current trends may produce biased forecasts. It has also been shown that anchoring affects different groups differently, with professionals often being less affected than students or novice investors (Furnham and Boo, 2011). Loss aversion refers to the tendency of individuals to feel losses more strongly than equivalent gains. This bias significantly affects investor behavior, often making investors overly cautious in order to avoid potential losses (Barberis and Thaler, 2003). Research has shown that investors can become more loss averse during bull markets, hesitating to sell losing assets even when doing so might be beneficial. Loss aversion varies across demographic groups, with older and female investors often displaying higher levels. Myopic loss aversion can also arise when investors focus on short-term fluctuations rather than long-term investment outcomes (Charness and Gneezy, 2012). Understanding these biases helps investors avoid common market pitfalls and make more rational decisions (Shefrin, 2000).

2.6. Representativeness Bias and Mental Accounting

Mental accounting refers to the cognitive process by which individuals categorize and evaluate financial transactions separately instead of considering their entire portfolio (Thaler, 1999). This behavior can lead investors to prioritize short-term gains or losses in specific accounts rather than evaluating overall portfolio performance. Mental accounting may lead to suboptimal investment decisions because investors treat different investments independently instead of considering their combined risk and

return. Representativeness bias occurs when investors rely heavily on recent events and assume that current trends will continue into the future. This bias may cause investors to overreact to recent market movements and ignore broader long-term patterns. Barberis et al. (1998) noted that representativeness bias can significantly influence investment decisions when investors believe that past performance predicts future returns.

2.7. Behavioural Bias Scale

In total, 487 participants from various socioeconomic backgrounds in Uttar Pradesh were randomly selected for the study. The results indicated that heuristic-related biases such as availability bias, gambler's fallacy, overconfidence, and representativeness were more common among men than women. In contrast, prospect-related biases such as regret aversion, loss aversion, and mental accounting were more prevalent among women. These findings are consistent with previous research (Arti et al., 2011; Barberis and Thaler, 2003; Deo and Sundar, 2015; Sushma, 2016).

2.8. Evaluating Behavioural Biases of Investors

Research indicates that men who take greater risks are more prone to heuristic biases, whereas women tend to exhibit higher levels of prospect and herding biases (Deo and Sundar, 2015). Arti et al. (2011) also found that women are more prone to herding and loss aversion, whereas men show higher levels of overconfidence and representativeness (Dickason and Ferreira, 2018). The study used a 47-item questionnaire to assess eight behavioural biases among investors. This tool helps policymakers and financial professionals better understand the behavioural characteristics of investors and design investment strategies that minimize irrational decision-making.

3. RESEARCH METHODOLOGY

This study adopts a bibliometric review approach to examine the existing body of literature on behavioural finance and its influence on investment decision-making. Bibliometric analysis is widely used to evaluate research trends, intellectual structures, and the development of a specific academic field through quantitative analysis of published literature. The present study focuses on identifying key themes, influential authors, and major research trends related to behavioural biases affecting investor behavior.

To ensure a systematic and transparent selection of literature, the study follows the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework. The PRISMA model provides a structured procedure for identifying, screening, and selecting relevant studies for systematic reviews and bibliometric investigations (Motahari-Nezhad et al., 2021). This approach helps in maintaining transparency and replicability in the research process. The research process began with an extensive search of academic databases to identify relevant studies related to behavioural finance, investor behaviour, and psychological biases in financial decision-making. Keywords such as behavioural finance, investor behaviour, overconfidence bias, herding behaviour, disposition effect, anchoring, loss aversion, and mental accounting were used during the search process. The initial search generated a large number of publications from journals, conference papers, and scholarly articles.

Following the identification stage, the screening process was conducted by reviewing the titles and abstracts of the retrieved studies. Articles that were not directly related to behavioural finance or investment decision-making were excluded at this stage (Rosni and Zainol, 2020). The remaining studies were then subjected to a detailed eligibility assessment in which full texts were examined to determine their relevance and quality.

After the eligibility assessment, the final set of studies was selected for bibliometric analysis. These studies were analyzed to identify publication trends, major research themes, frequently cited authors, and the relationships between different behavioural biases affecting investor decision-making (Vu-Ngoc et al., 2018). The bibliometric approach enables the identification of the intellectual structure of the field and highlights emerging research directions in behavioural finance.

The findings of the bibliometric analysis provide insights into the growing importance of behavioural finance in understanding investment decisions and help in identifying research gaps for future studies, particularly in the context of emerging economies such as India.

3.1. Research Objectives

1. To examine the existing literature on behavioural finance and investor decision-making using bibliometric analysis
2. To identify the major behavioural biases influencing investment decisions in financial markets
3. To analyze the trends, influential authors, and key themes in behavioural finance research
4. To explore research gaps in behavioural finance literature with particular reference to emerging economies such as India.

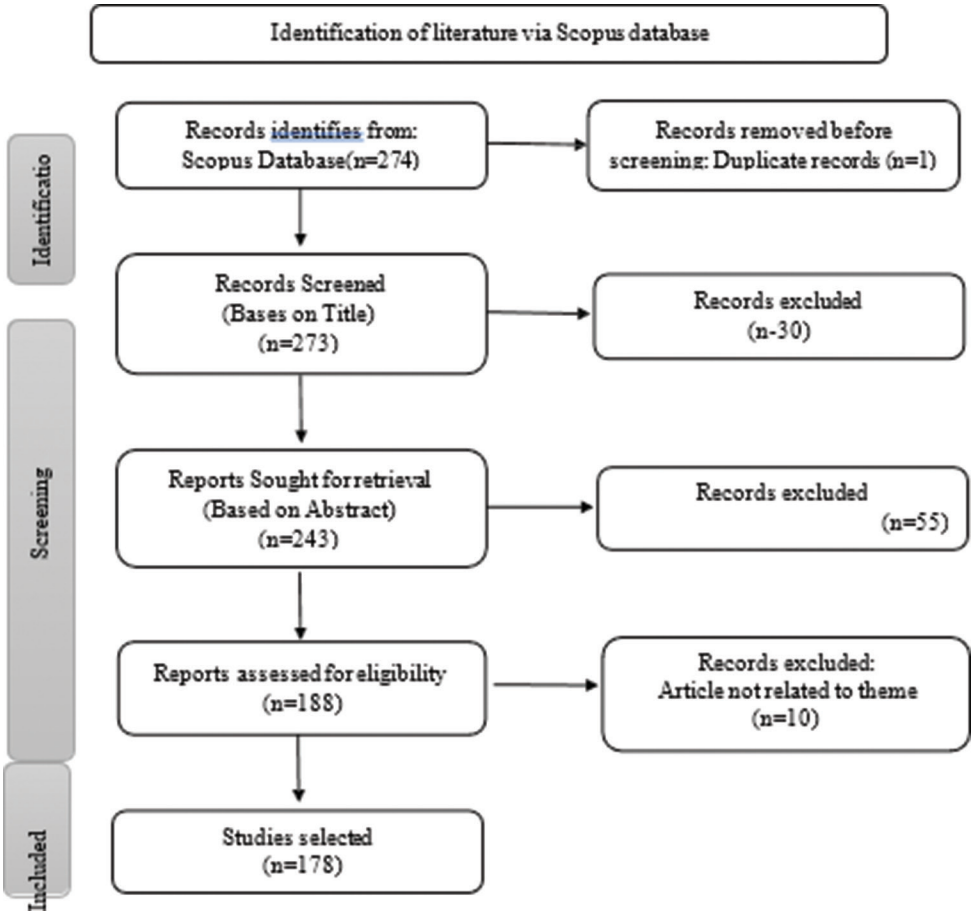
3.2. Research Questions

1. What are the major behavioural biases influencing investor decision-making in financial markets?
2. What are the key research trends and thematic developments in behavioural finance literature?
3. Which authors, journals, and publications have significantly contributed to behavioural finance research?
4. What research gaps exist in the current literature on behavioural finance and investor behaviour?

The Figure 1 presents the process used to identify and select relevant studies for the bibliometric review. The selection procedure follows the PRISMA framework, which provides a transparent method for reporting the identification and screening of academic literature in systematic reviews. In the identification stage, the literature search was conducted in the Scopus database. The search produced 274 records related to behavioural finance, investor behaviour, and investment decision-making. After removing duplicate records (n = 1), a total of 273 records remained for further screening.

During the screening stage, the titles of the retrieved articles were examined to determine their relevance to the research topic. At this stage, 30 records were excluded because their titles indicated that they were not directly related to behavioural finance or investor

Figure 1: PRISMA flow diagram (authors compilation)



decision-making. After this step, 243 articles were retained for the next stage of evaluation.

The abstract screening stage involved reviewing the abstracts of the remaining studies to evaluate their relevance to the research theme. Based on this review, 55 records were excluded because their abstracts did not sufficiently address behavioural biases or investment behaviour.

The eligibility assessment stage involved examining the full texts of the remaining 188 articles. During this stage, 10 studies were excluded because they were not directly aligned with the research objectives or did not provide relevant empirical or theoretical insights into behavioural finance. After completing all screening and eligibility procedures, 178 studies were selected for the final bibliometric analysis. These studies form the dataset used to identify research trends, influential authors, and major themes in the behavioural finance literature.

The PRISMA-based selection process ensures transparency and methodological rigor in the literature selection procedure. By clearly documenting each stage of article inclusion and exclusion, the review maintains consistency and reliability in the identification of relevant research. The PRISMA framework is widely used to enhance transparency and rigor in systematic literature reviews (SLR). It provides a structured approach for identifying, screening, and selecting relevant studies, ensuring the reliability of research findings. Motahari-Nezhad et al. (2021).

4. RESULTS AND DISCUSSION

This section presents the results of the bibliometric review conducted on the selected studies related to behavioural finance and investor decision-making. After applying the PRISMA screening process, a total of 178 relevant studies were included in the final analysis. These studies were examined to identify major research themes, behavioural biases affecting investors, and the overall development of behavioural finance literature.

The bibliometric analysis indicates that research on behavioural finance has grown significantly over the past two decades. The increasing number of publications reflects the growing recognition that traditional financial theories cannot fully explain investor behaviour in financial markets. Several studies have emphasized that psychological and emotional factors play an important role in shaping investment decisions (Barberis and Thaler, 2003; Shefrin, 2007). The literature reveals that investors do not always behave rationally and are often influenced by cognitive biases when making financial decisions.

Among the various behavioural biases identified in the literature, overconfidence emerges as one of the most widely studied biases influencing investor behaviour. Many studies report that overconfident investors tend to overestimate their knowledge and ability to predict market movements, which often results in excessive trading and increased risk exposure (Odean, 1998;

Statman et al., 2006). Frequent trading driven by overconfidence can lead to higher transaction costs and lower investment returns. Herding behaviour is another significant bias observed in financial markets. The literature suggests that investors often follow the actions of other market participants rather than relying on their own information or analysis. This behaviour is particularly visible during periods of market uncertainty or financial crises, when investors tend to imitate the decisions of others to reduce perceived risk (Filip et al., 2015; Chauhan et al., 2019). Such collective behaviour may contribute to market bubbles and price volatility.

The disposition effect is also widely documented in behavioural finance research. Investors tend to sell profitable investments quickly while holding losing investments for a longer period. This behaviour is often driven by psychological factors such as regret avoidance and loss aversion (Shefrin and Statman, 1985; Odean, 1998). As a result, investors may fail to optimize their portfolio performance.

Loss aversion and anchoring are additional behavioural biases that significantly influence investment decision-making. Loss aversion refers to the tendency of investors to react more strongly to potential losses than to equivalent gains (Barberis and Thaler, 2003). Anchoring occurs when investors rely heavily on initial information, such as past stock prices, when evaluating investment opportunities (Furnham and Boo, 2011). These biases can distort investors' expectations and lead to suboptimal financial decisions.

Mental accounting and representativeness bias also play important roles in shaping investor behaviour. Mental accounting leads investors to treat different financial decisions separately rather than evaluating their overall portfolio performance (Thaler, 1999). Representativeness bias causes investors to rely on recent trends or past performance when predicting future market movements (Barberis et al., 1998). These biases can lead to systematic errors in judgment and affect market efficiency. The results of the bibliometric analysis highlight that behavioural biases significantly influence investor behaviour across different financial markets. The findings support the view that psychological factors must be considered in order to better understand investment decisions and market dynamics. The growing body of behavioural finance literature provides valuable insights for investors, financial advisors, and policymakers seeking to improve financial decision-making and market stability.

Figure 2 illustrates the annual distribution of publications related to behavioural finance between 2003 and 2023. The analysis indicates a steady increase in the number of academic publications over time, reflecting the growing interest of researchers in behavioural finance and investor decision-making. The year 2023 recorded the highest number of publications with 51 articles, followed by 28 publications in 2022. This upward trend suggests that behavioural finance has become an important area of research in financial economics. Increasing attention toward psychological factors influencing investment decisions has contributed to the expansion of scholarly work in this field (Barberis and Thaler, 2003; Shefrin, 2007).

Research on behavioural finance has been published across a wide range of scientific journals. Authors generally consider the relevance of the journal to their research topic and the visibility of the journal within the academic community when selecting publication outlets. The analysis shows that 45 publications appear in the leading journals listed in Table 1. The journal Qualitative Research in Financial Markets ranks first with 11 publications, followed by Review of Behavioural Finance, which has 9 publications. Other journals such as Investment Management and Financial Innovations, Frontiers in Psychology, and Journal of Behavioural and Experimental Finance also contribute to the dissemination of research in behavioural finance.

Figure 3 presents the average number of citations per article between 2003 and 2023. The results indicate that the highest average citation rate occurred in 2005, with approximately 130 citations per article, followed by 95 citations in 2004. The trend suggests that earlier publications in behavioural finance

Figure 2: Scholarly works overtime

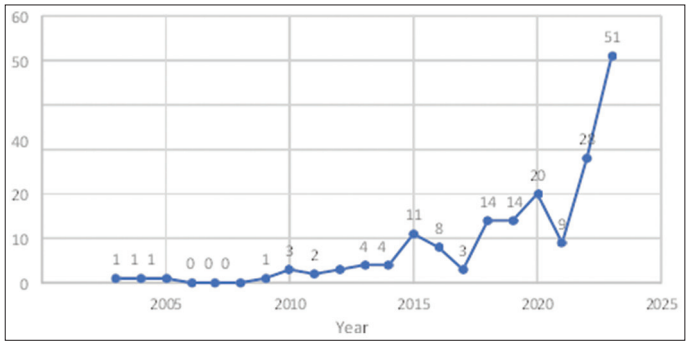


Figure 3: Average total citations

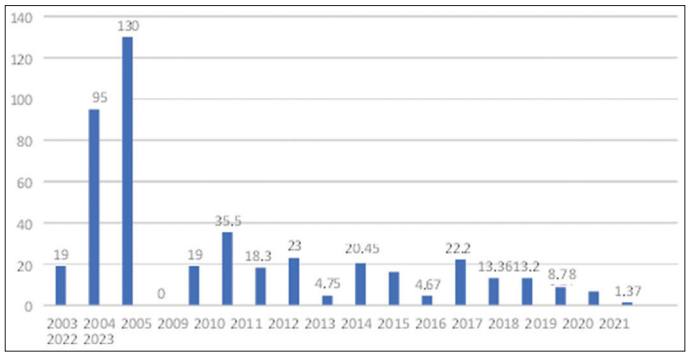
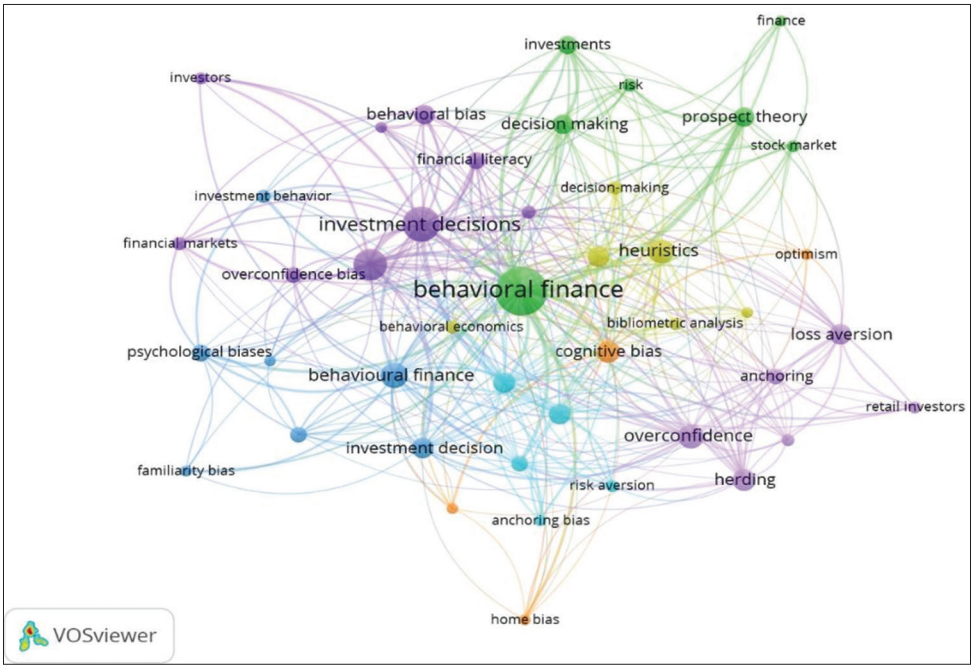


Table 1: Top publishing journals

Sources	Articles
Qualitative research in financial markets	11
Review of behavioural finance	9
Investment management and financial innovations	4
Advances in intelligent systems and computing	3
ECS transactions	3
Frontiers in psychology	3
Indian journal of finance	3
International journal of applied economics and business studies	3
International journal of emerging markets	3
Journal of behavioural and experimental finance	3

Figure 4: Keyword analysis



received relatively higher citation counts, which may reflect their foundational role in shaping subsequent research in the field. Over time, the average number of citations per article has shown a gradual decline, which is common in expanding research fields as the number of publications increases.

Table 2 presents the most frequently cited research papers published in Scopus-indexed journals between 2003 and 2023. The article titled "Behavioural Biases in Investment Decision Making – A Systematic Literature Review" has received the highest number of citations (146). The study "An Empirical Test of Heuristics and Biases Affecting Real Option Valuation" follows with 95 citations. High citation counts indicate that these studies have made significant contributions to the development of behavioural finance research.

Table 3 highlights the most productive authors contributing to the literature on behavioural biases and investor behaviour between 2003 and 2023. Jain J ranks first with 6 publications, followed by Singh S with 5 publications. Other authors such as Gupta S, Sood K, and Walia N have also contributed significantly with four publications each. The presence of multiple active contributors indicates the growing academic engagement in behavioural finance research.

Figure 4 presents the keyword co-occurrence network generated using VOSviewer. The analysis identifies 42 frequently used keywords in the selected studies. The most prominent keywords include behavioural finance, behavioural biases, and investment decisions, which have total link strengths of 70, 43, and 29, respectively. Other frequently occurring keywords include psychological biases, behavioural economics, prospect theory, heuristics, overconfidence, loss aversion, cognitive bias, and

Table 2: Top cited research papers

S. No.	Paper title	Total citations
1	Behavioural biases in investment decision making-a systematic literature review	146
2	An empirical test of heuristics and biases affecting real option valuation	95
3	Do investors exhibit behavioural biases investment decision making? A systematic review	93
4	Herding and anchoring in cryptocurrency markets: Investor reaction to fear and uncertainty	89
5	Evidence on rationality and behavioural biases in savings decision making	81
6	Using a fuzzy analytic hierarchy process, behavioural biases influencing individual equities investors' investing decisions are evaluated.	75
7	An exploratory inquiry into the psychological biases in financial investment behavior	69
8	Behavioural economics and behavioural finance: a bibliometric analysis of the scientific fields	68
9	Investors' trading activity: A behavioural perspective and empirical results	64
10	Factors influencing investor's decision making in Pakistan: Moderating role of locus of control	55

Table 3: Top contributing authors

Authors	Articles
Jain J	6
Singh S	5
Gupta S	4
Sood K	4
Walia N	4
Kumar S	3
Adil M	2
Ahmad M	2
Alam Pa	2
Arora M	2

Table 4: Type of study, data, and tools in top 10 research papers

Title of the paper	Type of study	Type of data	Tools/techniques applied
Behavioural biases in investment decision making-a systematic literature review	Qualitative	Secondary	Bibliometric and content analysis
An empirical test of heuristics and biases affecting real option valuation	Quantitative	Primary	ANOVA
Do investors exhibit behavioural biases investment decision making? A systematic review	Qualitative	Secondary	Systematic review
Herding and anchoring in cryptocurrency markets: Investor reaction to fear and uncertainty	Qualitative	Secondary	Correlation matrix
Evidence on rationality and behavioural biases investment decision making	Quantitative	Primary	Confirmatory factor analysis, structure equation modelling, ANOVA
Fuzzy analytic hierarchy process for evaluating behavioural biases impacting individual equity investors' investment decisions	Qualitative	Primary	Fuzzy analytic hierarchy process (AHP), multi-criteria decision-making (MCDM) technique
An exploratory inquiry into the psychological biases in financial investment behavior	Qualitative	Primary	Open analysis (A type of content analysis)
Behavioural economics and behavioural finance: A bibliometric analysis of the scientific fields	Qualitative	Secondary	Bibliometric analysis
Investors' trading activity: A behavioural perspective and empirical results	Quantitative	Primary	K-means cluster analysis, ANOVA
Factors influencing investor's decision making in Pakistan: Moderating the role of locus of control	Qualitative	Primary	Correlation, structure equation modelling

herding behaviour. The keyword analysis highlights the central themes and conceptual focus of behavioural finance research.

Table 4 summarizes the research design, data sources, and analytical tools used in the top cited studies. The table indicates that both qualitative and quantitative approaches are widely used in behavioural finance research. Several studies rely on primary data collected through surveys and questionnaires, while others employ secondary data from financial databases and published literature. Analytical techniques such as structural equation modelling, ANOVA, cluster analysis, and bibliometric analysis are commonly used to examine behavioural biases and investor behaviour.

5. CONCLUSION, IMPLICATIONS, FUTURE RESEARCH DIRECTIONS

Research on behavioural biases, behavioural finance, and investment decision-making has increased significantly at the global level, highlighting the growing importance of this field in financial research. The present study conducted a bibliometric analysis of the existing literature using data obtained from the Scopus database in order to identify research trends and provide useful insights for future scholars. The analysis was carried out using PRISMA guidelines along with analytical tools such as MS Excel, RStudio, and VOSviewer.

The results show that a total of 274 documents were published between 2003 and 2023. The analysis indicates a substantial increase in research output in recent years, with 51 publications in 2023 and 28 publications in 2022. The findings also reveal that the leading journals contributing to this field include "Qualitative Research in Financial Markets," which published 11 articles, and "Review of Behavioural Finance," which published 9 articles. Citation analysis indicates that the highest average citation rate occurred in 2005 with approximately 130 citations per article, followed by 2004 with an average of 95 citations per article. However, the overall trend in average citations per article shows a gradual decline over time.

The study also identified the most influential research papers in the field. The article titled "Behavioural Biases in Investment Decision Making: A Systematic Literature Review" has received the highest number of citations (146), followed by "An Empirical Test of Heuristics and Biases Affecting Real Option Valuation," which has received 95 citations. In terms of author productivity, Jain J has contributed the highest number of publications, followed by Singh S, Gupta S, Sood K, and Walia N with publication counts of 6, 5, 4, and 4 respectively.

Keyword analysis highlights that the most frequently used keywords in the literature are behavioural finance, behavioural biases, and investment decisions, with total link strengths of 70, 43, and 29 respectively. Other commonly used keywords include psychological biases, behavioural economics, prospect theory, heuristics, overconfidence, loss aversion, cognitive bias, and herding behaviour. These keywords reflect the central themes of behavioural finance research and demonstrate the strong focus on psychological factors influencing investor behaviour. Although the study provides useful insights into the development of behavioural finance research, it also has certain limitations. First, the study relies only on published documents available in the Scopus database and does not include unpublished studies, which may lead to publication bias. Second, the search strategy is limited to studies containing specific keywords related to behavioural biases and investment decision-making, which may restrict the scope of the analysis. Future researchers are encouraged to expand the search criteria and include additional databases to obtain a broader representation of the literature.

Behavioural biases have significant practical implications for investment decision-making. Investors often make suboptimal financial decisions due to cognitive and emotional biases such

as confirmation bias, herding behaviour, loss aversion, and overconfidence. Recognizing these biases can help investors develop more rational and disciplined investment strategies. The use of structured decision-making tools, such as automated investment systems and decision checklists, may help reduce the influence of emotional reactions during financial decision-making (Ahmad et al., 2015).

Financial advisors can also benefit from a deeper understanding of behavioural finance. Knowledge of behavioural biases enables advisors to better evaluate the psychological tendencies of their clients, provide appropriate guidance during periods of market volatility, and develop stronger and more effective advisory relationships. By incorporating behavioural insights into financial planning, advisors can assist investors in maintaining long-term investment strategies and avoiding impulsive decisions (Ahmad et al., 2023). At the institutional level, behavioural finance insights can be used to design financial products and services that better align with investor behaviour. Policymakers and regulatory authorities can also use behavioural insights to develop investor protection mechanisms and promote financial stability. Behavioural interventions such as default enrolment in retirement savings plans and simplified financial disclosures can encourage long-term saving behaviour and improve financial decision-making (Bano et al., 2025). Integrating behavioural finance principles into investment practices can therefore contribute to more informed financial decisions, reduced exposure to unnecessary risks, and improved financial outcomes for both individual investors and financial institutions.

Future research can explore several promising directions. One important area is the examination of cross-cultural differences in behavioural biases, as investor behaviour may vary across different cultural and socio-economic contexts. Another potential research direction involves analyzing the impact of financial technology and artificial intelligence–based investment platforms on investor behaviour and behavioural biases. In addition, longitudinal studies could examine how behavioural biases evolve over time with increased market experience and financial education. Future studies may also focus on emerging financial assets such as cryptocurrencies, non-fungible tokens (NFTs), and environmental, social, and governance (ESG) investments, which are gaining popularity but remain relatively underexplored within behavioural finance research. The emerging field of neurofinance, which integrates neuroscience with behavioural economics, may also provide deeper insights into the psychological and physiological mechanisms underlying investor decision-making. future research should consider demographic factors such as age, gender, and financial literacy in order to better understand how different groups of investors are affected by behavioural biases. Such research can contribute to the development of more effective financial advisory services, investor education programs, and policy frameworks aimed at improving investment decision-making and financial market stability.

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