

Trends, Themes and Emerging Frontiers in Behavioral Finance: A Bibliometric Review

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Abstract:

In a world when financial options abound, judgments must be balanced and intelligently made. But the study of behavioral finance sheds light on how people behave and how they diverge from reason when making decisions. The goal of this paper is to map the body of scholarly research on the subject of behavioral biases in investing decision-making. From the Dimensions database, 1160 research papers were obtained for the study. The use of the bibliometric and visualization tool VOS viewer has enriched the literature on behavioral biases by assisting in the identification of significant journals, prolific writers, nations, and associations. Lastly, this review's study directions will serve as a guide for future investigations.

Keywords: Overconfidence, Heuristics, Bibliometric analysis, Herding biases, Behavioral finance, Disposition effect, Psychology

1. INTRODUCTION

Early in the 1980s, behavioral finance emerged as a field of research that challenged the traditional classical theory that assumed individuals always make rational decisions based on all available information. The cornerstone of behavioral finance was established by Daniel Kahneman and Amos Tversky's Prospect Theory (1979), which gave rise to the words Loss Aversion (1979) and representativeness Heuristic (1982). Additionally, several behavioral economists made contributions to the field of behavioral finance in the years that followed. These included the introduction of concepts such as the Framing Effect (1981) by Amos Tversky and Daniel Kahneman, Regret Aversion (1982) by Bell, and De Bondt and Thaler's (1985) overreaction and underreaction hypothesis, Richard H. Thaler's (1985) mental accounting, Shefrin and Statman's Biases in Expectations Formation (2004) by Barberis and Thaler; Barberis, Huang, and Santos; Limited Attention Model (1998).

2. The Literature Review

ONSOMU (2014): Onsomu tried to examine the Impact of behavioral biases on individual investors at the Nairobi Securities Exchange & Relationship between gender and behavioral biases by using the Pearson Chi-square test with a sample size of 58 respondents. The findings concluded that there was a positive relationship between Investment decisions and Availability bias, Confirmation bias, Representativeness bias, and Disposition effect than gender and overconfidence. **Kumar & Goyal (2015):** Satish and Kumar analyzed the 117 research papers published between 1980 & 2013 to write this review paper. They found that a large portion of the body of literature on behavioral biases points out

the paucity of research in this field in emerging economies, the predominance of secondary data-based empirical research, and the lack of primary data-based research on individuals who display herding behavior and tendency to invest in domestic equities instead of foreign equities. **Goyal (2016):** investigated the relationship between behavioral biases and rational decision-making with the help of a structured questionnaire. The sample was collected from 386 respondents by using judgment and snowball sampling and analyzed by using a T-test, analysis of variance (ANOVA)

& Fisher's least significant difference (LSD) test, and structure Equation Modelling (SEM). The findings indicated that there was a positive correlation between information search & overconfidence bias and evaluation of alternatives leading to the disposition effect.

Raja and Umer (2017): Raja and Umer examined the relationship between behavioral biases and investment decisions at the Pakistan stock exchange by using a pre-tested questionnaire adapted from Chaffai & Medhioub (2014) with a sample size of 385 respondents. They found that five behavioral biases regret aversion, representativeness, overconfidence, anchoring, and risk aversion influenced investment decisions in a favorable way than two other behavioral biases mental accounting and availability bias. **Mahina Niyoyita et al. (2017)** examined the effect of behavioral biases on investment in the Rwanda Stock Exchange by taking a sample size of 374 and analyzing it by using the Linear Regression Model. The research revealed that loss aversion bias has a substantial impact on investment in the Rwandan stock market. Subsequent research revealed that investors in the stock market frequently regret losing stocks for an extended period as opposed to regret selling winning stocks too quickly. This is because a lot of stock market investors become depressed when they lose money. **R. Isidore et al. (2018):** This study used the ANOVA test to examine the relationship between income and eight behavioral biases namely gambler's fallacy, mental accounting, anchoring, availability, loss aversion, regret aversion, representativeness, and overconfidence and the behavior of various income groups with respect to behavioral biases with a sample size of 436 secondary equity investors residing in Chennai. The findings suggest that investors with greater yearly incomes were less prone to biases, whereas the investors with lower annual incomes were more prone to biases but with overconfidence bias, the investors who earned greater yearly incomes were more overconfident than those who earned a lower annual income. **Narasimha et al. (2018):** Narasimha tried to examine the relationship between investors' rationality and behavioral biases like self-attribution, and overconfidence by using Structural Equation Modeling & a sample size of 384, 77 respondents from Hyderabad, Mumbai, Bengaluru, New Delhi, and 76 respondents from Kolkata. They found that there was a positive covariance between biased self-attribution and overconfidence behavior. **Raut Kumar & et al. (2018)** tried to determine whether the Theory of Planned Behaviour (TPB) might be used to analyze people's behavioral intention to invest in the stock market by using Structural Equation Modeling & a sample size of 396 respondents. The findings showed that it was important for investors to be aware of behavioral bias problems in order to prevent making irrational decisions and to look for beneficial investing techniques. **Chhapra & Kashif (2018)** attempted to evaluate the impact of behavioral biases in financial decision-making at the Pakistan Stock Exchange by considering five behavioral biases i.e., overconfidence, overthinking, herding, cognitive bias, and hindsight. The data was collected through a questionnaire with a sample size of 250 and analyzed by using Multiple regression analysis. The findings show that overconfidence, overthinking, herding, cognitive bias, and hindsight effect have significant positive impacts on investment decisions. **Nigam & Srivastava (2018)** Evaluated the key findings from studies on behavioral finance that looked at behavioral factors in financial decision-making over the past ten years (2006–2015). To determine the

potential scope of future study, the literature evaluation evaluates 623 qualitative and quantitative studies that have been published in major international refereed publications. The research identifies behavioral mediators impacting financial decision-making at an investor level as well as the stock market at an aggregate level. **Madaan & Singh (2019)**: evaluate how behavioural biases affect the National Stock Exchange's investing decision-making. Using questionnaires, 243 investors' information was gathered. Four behavioral biases—overconfidence, anchoring, disposition effect, and herding behavior—were examined in this study. The findings demonstrate that herding bias and overconfidence have a considerable favorable influence on investment decisions. Overall findings show that individual investors are less knowledgeable and more susceptible to psychological errors. **O Aigbovo et al. (2019)** examined if psychological biases rather than the rationalism offered by conventional financial theories—significantly influence individual investors' investing choices in Nigeria. Using the snowball sampling technique, the study selected a sample of 70 respondents, and multiple regression analysis was used to examine the data. Major findings demonstrated that representativeness, overconfidence/self-attribution, loss aversion, and regret aversion biases were not significantly connected to individual investment decisions. However, the perspective bias of individual investors has a big impact on their choices. Thus, the investors demonstrated that rather than making rational decisions, they are swayed by behavioral variables. **Ricciardi and Simon (2000)** discussed a few general behavioral finance concepts such as prospect theory, financial cognitive dissonance, overconfidence, and the theory of regret. The primary cause of the unreasonable behavior is prejudice resulting from heuristics or prior experiences. On the other hand, cognitive and emotional biases are extremely important when making decisions. In summary, the typical actions of an investor can be divided into the following categories: Investors frequently follow the status quo, show loss aversion, view past performance as a predictor of future performance, and don't engage in all investing options. **Jain et al. (2021)**: This study tried to highlight the significant gaps in the existing literature on behavioral biases by using Systematic literature review (SLR) and bibliometric methods including performance analysis, science mapping, and content analysis. The findings suggested that herding behavior should be examined across several nations and the use of machine learning & robo-advisory services to lessen the influence of behavioral biases. **G. Suresh (2021)** used SEM, a sample size of 250 to assess the combined effects of behavioral bias and financial literacy on investor behavior. The main criteria for sample selection were two years of trading experience and residency in one of the southern states (Andhra Pradesh, Telangana, Karnataka, Kerala, or Tamil Nadu). The findings were that heuristic bias has a considerable positive influence on the framing effect and cognitive illusions in decision-making, but a significant negative influence on the herd mentality. While the herd mentality is negatively impacted by the framing effect, cognitive illusions are positively impacted by it. The herd mentality that investors exhibit while making decisions is adversely affected by cognitive illusions. The active presence of financial literacy in the stock market leads to the conclusion that individual investors behave irrationally while making investment decisions. **Ayaa et al. (2021)** studied how gender affects investing choices among EAIS Ghana employees in terms of risk tolerance, financial literacy, and investment kinds. 100 working-class men and women at the EAIS institution were randomly chosen from a population of 125 to participate in the descriptive research design and respond to survey questions. In SPSS version 22, the researcher performed an independent sample t-test. According to the study's findings, there is a sizable gender gap among Ghana's EAIS personnel in terms of both risk tolerance and financial literacy. **Shukla (2021)** attempted to make a conceptual and descriptive paper by emphasizing on conceptual framework of behavioral biases and their significance in

investment decision-making. Even while every behavioral bias has been properly identified, all the investors will suffer from all the biases simultaneously. Investors are susceptible to all psychological factors, but certain of them may come into play when making investing decisions. **Tupe & Lokhande (2021)** examined the influence of cognitive and emotional biases on investor decisions. A sample of 150 Aurangabad city respondents provided the data. The Findings showed that the results indicated that investment avenues and investment sources have a positive association. **Gautam & Wadhwa (2022)** Used the exogenous variable of financial literacy, which includes financial attitude (FA), financial behavior (FB), and financial knowledge (FK), to assess the relationship between financial literacy, personal finance planning, and risk behavior with the financial decision-making of working females in the NCR. PLS-SEM was used to gather the data from a sample of 392 working women in the NCR. The research demonstrates that risk behavior hurts financial decision-making. **Akin (2022)** identifies the most prevalent behavioral biases and analyses the data using the average behavioral bias score in order to prevent young adults from making foolish financial decisions using a sample size of 304. The findings showed that Anchoring, conservatism, categorization, and illusion of control were prominent behavioral biases among young adults in Bristol and Istanbul. **Mittal (2022)** presented a compressive review of the literature available on behavior finance, biases, and their impact on the investment decision-making process that has been published in the past 50 years. The work follows a thorough literature review methodology to review the available literature. This literature review helps in identifying the major research gap in this domain. It helps in discovering the behavioral biases that influence investment decision-making the most. Investigating behavioral biases and how they affect Indian individual investors' investment choices might be interesting. **Bihari & Dass (2022)** examined existing research on behavioral bias and investing decisions published in the Scopus database between 2007 and 2022 using VOS viewer and bibliometric biblioshiny. The findings showed that authors from India, China, Pakistan, and the USA have produced the majority of the research. This article's main contribution is to provide insight into the themes and associations prevalent in the field of behavioral biases and investment decisions by examining highly cited research papers written by eminent contributors from a variety of nations and top journals.

3. Objective of the Study

A bibliometric analysis of behavioral finance research from 1995 to 2024 was carried out using Excel, Dimensions, and the VOS viewer. The following research questions will be addressed by mapping the literature review in this field:

RQ1: What patterns of publications and citations are there in the field of behavioral finance? RQ2: Which publications, organizations, authors, countries, journals, and authors are trending in the field of behavioral finance?

RQ3: What areas should future research pursue?

4. Methodology

Secondary data is obtained online and from open sources. Data exploration was done using the Dimensions. The review paper containing the term " Behavioral Biases" AND "investment" OR "investment decision" OR "investment decision making" in the title and abstract served as the main focus of our investigation. The publication dates range from 1995 to 2024, with the most recent one occurring in 2024.

5. Data Analysis of the Study

5.1 The Maps of Bibliometric Information

A software program for bibliographic mapping and visualization, VOS viewer (version 1.6.20), received 1106 exported items. The information generated by the VOS viewer is shown in this paper. To extract information about the relationship and link strength, the study's citation and co-authorship analyses are used. The larger the value, the stronger the bond. For co-authored research, the number of articles co-authored by two connected nations is indicated by the country-to-country link strength.

5.2 Co-Authorship Analysis

With the use of Dimension AI, 1160 studies on behavioral finance were extracted. In the co-authorship analysis, 68 countries were grouped into 7 groups that have made contributions to the field of behavioral finance research. There are 2284 writers in total, arranged into 12 clusters with a minimum of 5 documents required.

5.3 Citation Analysis

Citation analysis is done with 1106 research papers with 5 publications as a minimum criterion to find out the most cited papers / Most cited articles in the area, Most prolific authors, and Most prolific Organizations.

6. Results and Findings

A. Year-wise publication

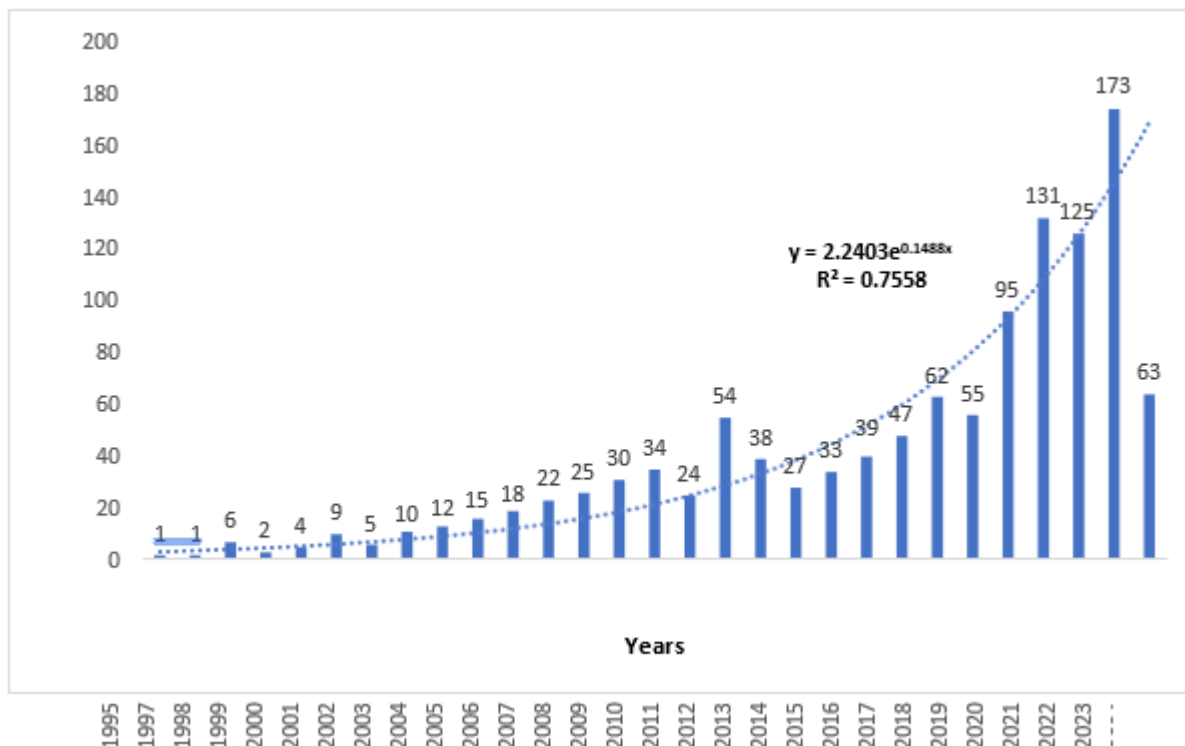


Figure 1: Behavioral Finance: A chronology of publication trends.

No. of Publications

Eleven hundred sixty research publications were released in twenty years (Figure 1). There was a further indication of publication as late as 2024, while the first publication occurred in 1995. There has been a lot of interest in this subject since 1995. Since 2003, the number of yearly publications has steadily

increased, making contributions to this discipline, and this trend is expected to continue. However, behavioral finance (BF) is a diverse topic, and it is thought that the first step in defining Behavioral finance is to develop precise definitions for psychology, sociology, and finance (Ricciardi and Simon, 2000).

B. Year-wise Citations

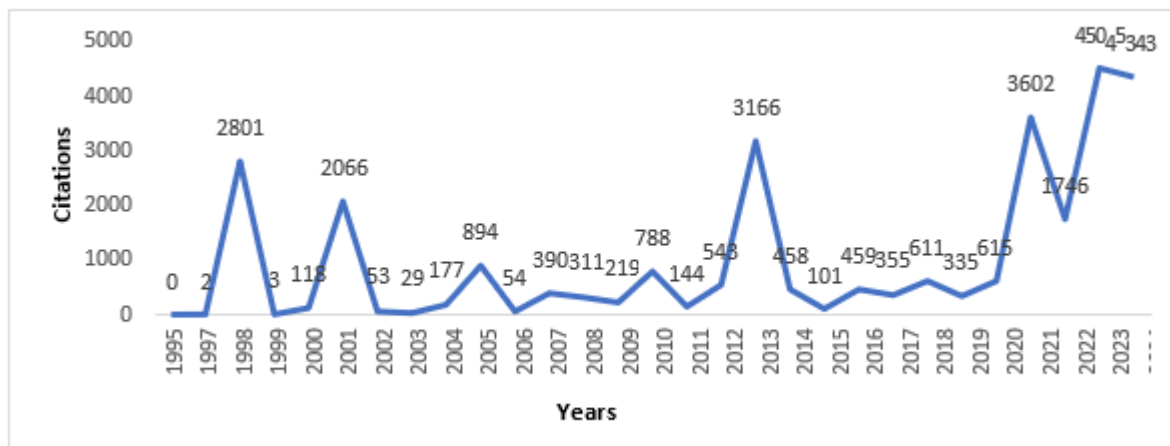


Figure 2: Behavioral Finance: A chronology of publication Citations.

C. Most cited papers / Most cited articles in the area

Table 1: Most cited papers / Most cited articles

Rank	Title	References	Times Cited	Pub. Year
1	Investor Psychology and Security Market Underreactions and Overreactions	Daniel et al.,1998	3992	1998
2	CEO Overconfidence and Corporate Investment	MALMENDIER et al.,2005	2761	2005
3	Are Investors Reluctant to Realize Their Losses?	Odean et al.,1998	2751	1998
4	Investor Sentiment in the Stock Market	Baker et al.,2007	2384	2007
5	Who makes acquisitions? CEO overconfidence and the market's reaction	Malmendier et al.,2008	2073	2008
6	Are Overconfident CEOs Better Innovators?	HIRSHLEIFER et al.,2012	1330	2012
7	Home bias and high turnover	Tesar et al.,1995	813	1995
8	Information costs and home bias: an analysis of US holdings of foreign equities	Ahearne et al.,2004	602	2004
9	Information Immobility and the Home Bias Puzzle	VAN NIEUWERBURGH et al.,2009	574	2009

10	Overconfidence and trading volume	Glaser et al.,2007	471	2007
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D. Most prolific authors

In the topic of behavioral finance, Table 2 lists the most eminent authors who meet the minimum criterion of five documents. These authors are: With 11, 9 publications and 3266, 5485 citations, Terrance Odean and Ulrike Malmendier, the top two writers, were from the University of California, Berkeley in the United States. Carol C. Bertaut, ranked eighth on the Federal Reserve Board of Governors, had 6 publications and 37 citations.

Table 2: Authors with most articles and Citation (Dimensions)

Rank	Authors	Publications	Citations	Current Affiliation	Country
1	Terrance Odean	11	3266	University of California Berkeley	United States
2	Ulrike Malmendier	9	5485	University of California Berkeley	United States
3	Francis E. Warnock	8	304	University of Virginia	United States
4	Martin Weber	8	621	University of Mannheim	Germany
5	Brad M. Barber	7	408	University of California, Davis	United States
6	Piet Sercu	7	97	KU Leuven	Belgium
7	Rosanne Vanpee	7	78	KU Leuven	Belgium
8	Carol C. Bertaut	6	37	Federal Reserve Board of Governors	United States

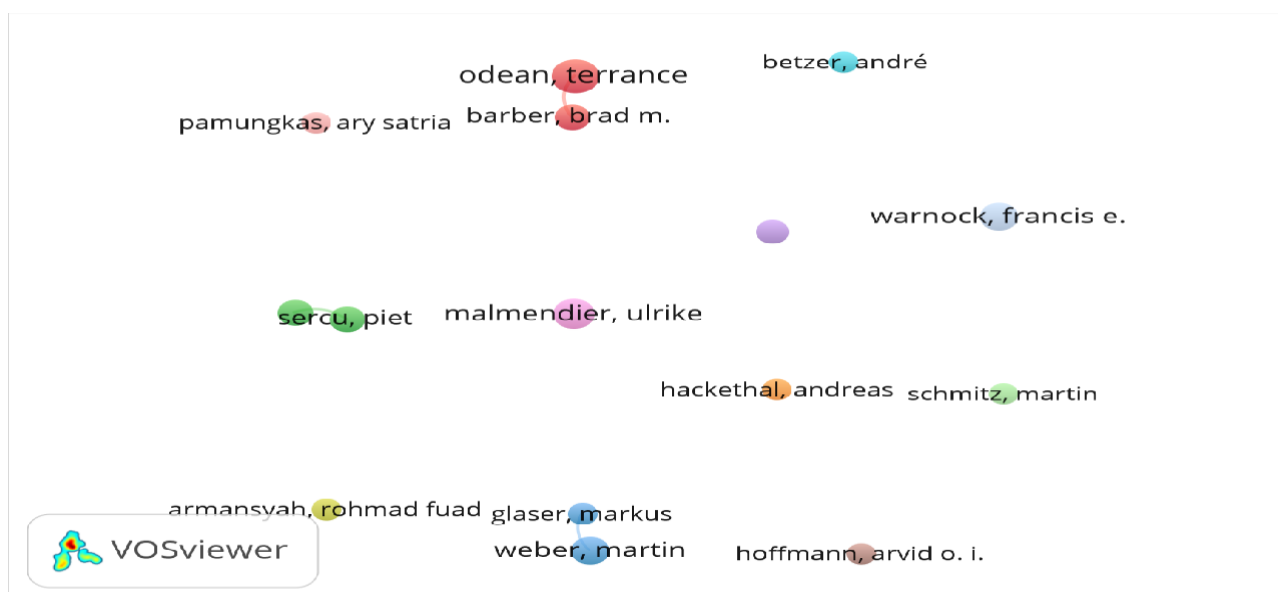


Figure 3: Behavioral Finance- The prominent authors.

Most prolific Organizations

Table 3: Organizations with publication & Citations (Dimensions)

Rank	Organizations	Publications	Citations	Average Citations per article
1	National Bureau of Economic Research (NBER)	27	164	6.07
2	University Of California, Berkeley	18	2885	160.28
3	University Of Mannheim	16	703	43.94
4	Centre For Economic Policy Research (CEPR)	15	69	4.60
5	Federal Reserve Board of Governors	12	685	57.08
6	Affiliation Not Provided to Ssrn	11	12	1.09
7	European Central Bank	10	54	5.40
8	University Of California, Davis	10	479	47.90
9	Tarumanagara University	9	2	0.22
10	University Of Melbourne	9	70	7.78
11	Goethe University Frankfurt	8	48	6.00

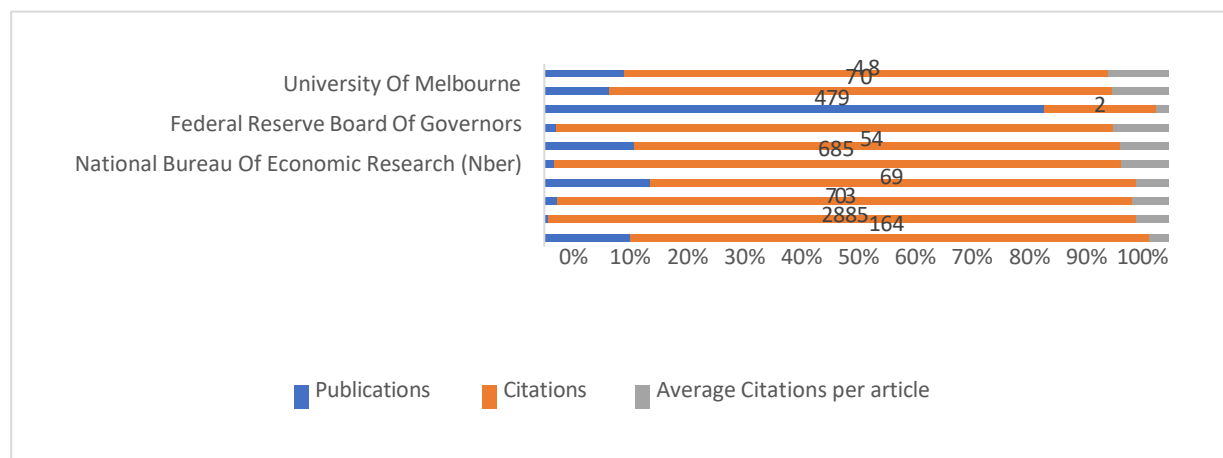


Figure 4: Behavioral Finance- The Contributing Organizations.

E. Most Prolific Countries

The top 10 countries in the world for behavioral finance research activities are shown in Table 4. More than half of all articles published worldwide were produced in China and the US, suggesting the significance of these two countries in the development of research. With 200 papers, the US took the lead. China, with 81 papers, was ranked as the second most prolific country. India had the fewest publications (19), with the United States, China, the United Kingdom, Germany, and Indonesia dominating the other side.

Table 4: Most prolific Countries (Dimensions)

Rank	Country	Publications	Citations	Average citation per article
1	United States	200	10083	50.42
2	China	81	1206	14.89
3	United Kingdom	78	1295	16.60
4	Germany	73	1364	18.68
5	Indonesia	64	65	1.02
6	Australia	43	280	6.51
7	Pakistan	23	274	11.91
8	Canada	21	741	35.29
9	Netherlands	20	301	15.05
10	India	19	100	5.26

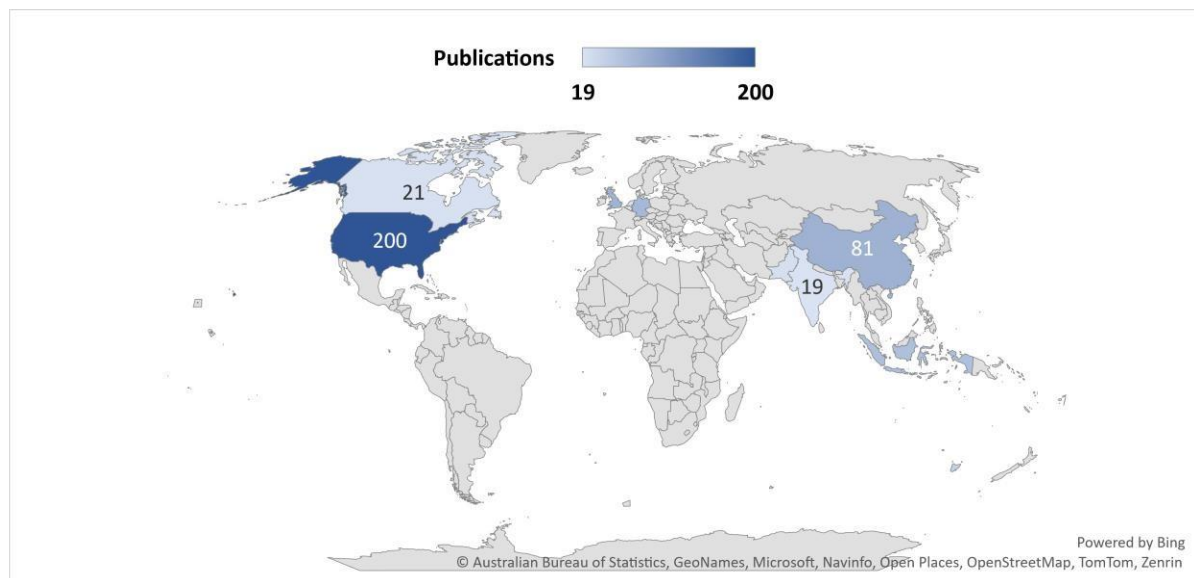


Figure 5: Locations of all the participating organizations.

F. Most Fruitful Journals

Table 4: Most prolific Journals (Dimensions)

Rank	Journal Name	Publications	Citations	Average Citation per article
1	Ssrn Electronic Journal	408	2363	5.79
2	Advances In Economics, Business, And Management Research	12	11	0.92
3	Plos One	10	37	3.70
4	Sustainability	9	131	14.56
5	Frontiers In Psychology	8	34	4.25
6	Advances In Economics Management and Political Sciences	7	0	0.00
7	Arxiv	7	0	0.00
8	International Journal of Application on Economics And Business	7	1	0.14
9	The Journal of Finance	7	11617	1659.57
10	Advances In Social Science, Education and Humanities Research	6	1	0.17

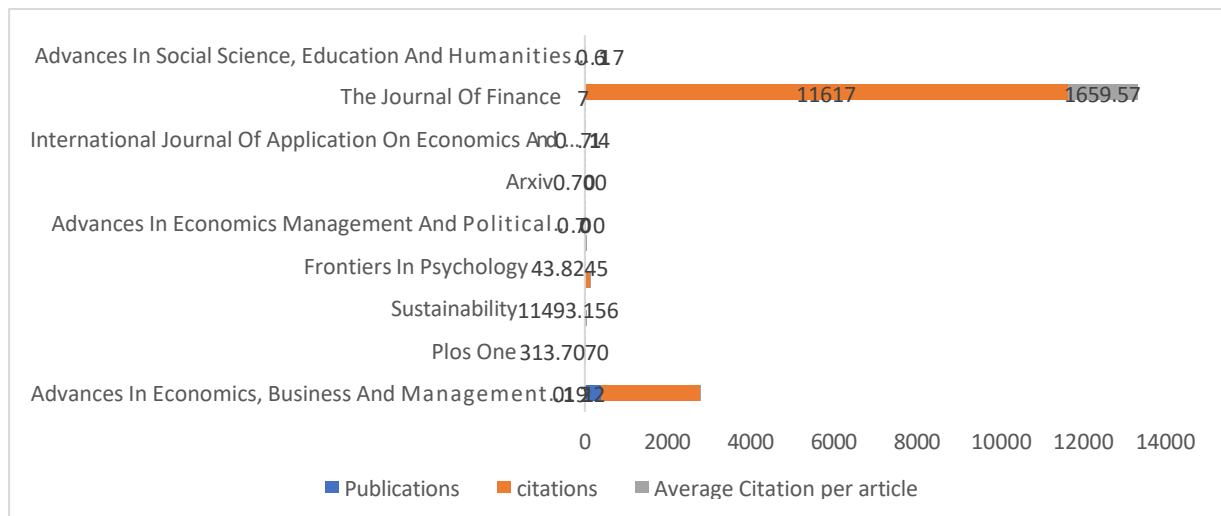


Figure 6: Behavioral Finance- The Fruitful Journals.

G. Network analysis of international co-authorship

1160 studies on behavioral finance were retrieved using Dimension AI. 68 nations have contributed to behavioral finance research out of 1160 studies. In the VOS viewer, only 36 out of 68 countries match the minimal criterion of 5 documents; however, 4 items are not connected, and the largest set of connected things is comprised of 32 items organized into 7 clusters. The United States leads the world in publications with 200 and citations (10083), followed by China and the United Kingdom with 81 and 78 publications and 1206 and 1295 citations, respectively. China has the greatest total link strength, at 58. The USA and the UK are next, with total link strengths of 57 and 41, respectively. Moreover, the VOS viewer is used to create a network visualization map for the intercountry co-authorship network analysis, as seen in the figure:

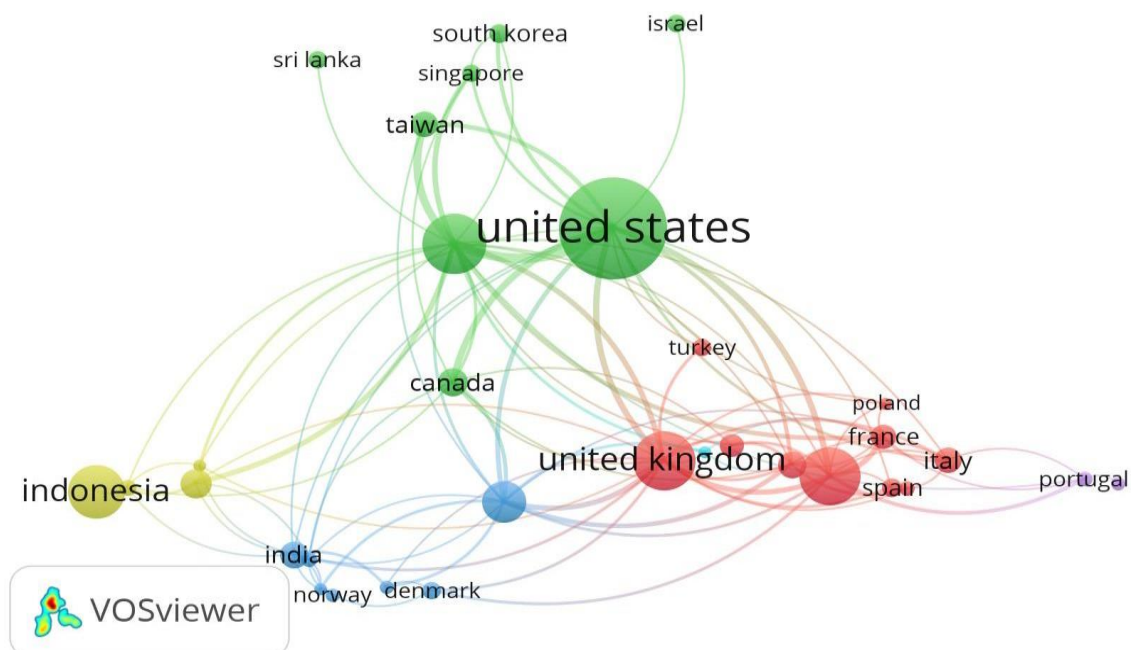


Figure 7: Network analysis of international co-authorship

H. Network analysis of Co-authorship who Co-authored each other

In the VOS viewer, only 15 out of 2284 authors match the minimal criterion of 5 documents; organized into 12 clusters. The author Terrance Odean leads the world in publications with 11 and citations (3266), followed by Ulrike Malmendier, Martin Weber, and Francis e. Warnock with 9,8 and 8 publications and 5485,621 and 304 citations, respectively. China has the greatest total link strength, at 58. Moreover, the VOS viewer is used to create a network visualization map for the inter-author co- authorship network analysis, as seen in the figure.



Figure 8: Network analysis of Co-authorship

7. Discussions and scope for future research

Behavioral finance emerged due to the pioneering contributions of psychologists Amos Tversky and Daniel Kahneman who recognized that psychological and emotional factors significantly impact financial decisions. Prospect Theory, introduced by Tversky and Kahneman in 1979 showed that people are influenced by cognitive biases and heuristics. Additionally, the observations of market anomalies, inefficient market hypothesis, and the work of economists like Richard Thaler and the categorization of behavioral biases, such as loss aversion and overconfidence, to understand how individuals deviate from rational decision-making.

We have used bibliometric analysis in the current study to examine the literature and look into the direction of the field of study. The Dimensions database was the only resource used to retrieve the literature for this investigation. As a result, different databases may be used for future research.

However, there is a significant research gap evaluating the effectiveness of measures taken to lessen biases and improve the investment decisions made by female investors, as well as how these biases affect the ability of female investors to accumulate and invest their wealth over the long term.

The fields of psychology, sociology, and finance are where behavioral finance definitions originated (Ricciardi and Simon, 2000). Thus, an emotional quotient could help someone overcome behavioral biases.

8. Conclusions

In a world when financial possibilities abound, making decisions must be rationally balanced. However, the field of behavioral finance provides insight into human behavior and how it deviates from reason in decision-making. This work uses a combination of bibliometric analysis to present the research on behavioral biases. Through the use of bibliometric analysis, we are able to obtain trends in publications and citations as well as information about authors, countries, journals, organizations, and writers.

Based on the overall placement of the works, the results demonstrate the significance of China and the US for the advancement of research, as they account for over half of all articles published worldwide. With 200 papers, the United States was first. 81 papers were published in China, making it the second

most prolific nation. As far as publications go, India came in bottom with 19, followed closely by the US, China, UK, Germany, and Indonesia. Among the leading institutions are the University of California, Berkeley and the National Bureau of Economic Research (NBER). Additionally, the *Ssrn Electronic Journal*, *Advances in Economics, Business, and Management Research*, and the *Journal of Finance* are also extremely prolific publications.

The study adds to the body of knowledge on behavioral finance in a number of ways. For example, by including the majority of recent studies, it provides potential avenues for research that scholars may pursue.

Even though it is done with just one database, leveraging numerous databases can provide more insights. Only open-access articles were included in this analysis; others were disregarded. The incorporation of these sources could provide insightful information.

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