

Mapping the Shifting Sands of Overconfidence: Analysis of Evolving Research Trends in Behavioural Finance (1987-2024)

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ABSTRACT

This study aims to systematically map and analyse the evolution of overconfidence research within behavioral finance from 1987 to 2024, identifying key trends, influential works, and emerging research networks. This study uses bibliometric analysis with the database used sourced from the Web of Science from 1987 to 2024. The result showed that overconfidence behaviour in the financial decision-making process can be clustered into five main themes: personal investment, financial markets, mergers & acquisitions, corporate finance and risk management. This study showed that behaviours in the financial context may distort shareholder wealth enhancement and investment asset value maximisation. Development of policies to mitigate overconfidence behaviour by stakeholders on the basis of the clustering conducted so as to support quality financial decision-making processes. The limitation of this studie is clustering behavioural overconfidence in financial contexts only draws on historical evidence.

Keywords: *overconfidence, behavioural finance, bibliometrics.*

Memetakan Pergeseran Kepercayaan Diri yang Berlebihan: Analisis Tren Penelitian yang Terus Berkembang dalam Bidang Keuangan Perilaku (1987–2024)

ABSTRAK

Penelitian ini bertujuan untuk secara sistematis memetakan dan menganalisis evolusi penelitian tentang kepercayaan diri berlebihan dalam bidang keuangan perilaku dari tahun 1987 hingga 2024, mengidentifikasi tren utama, karya-karya berpengaruh, dan jaringan penelitian yang muncul. Studi ini menggunakan analisis bibliometrik dengan basis data yang bersumber dari Web of Science dari tahun 1987 hingga 2024. Hasil penelitian menunjukkan bahwa perilaku terlalu percaya diri dalam proses pengambilan keputusan keuangan dapat dikelompokkan menjadi lima tema utama: investasi pribadi, pasar keuangan, merger & akuisisi, keuangan perusahaan, dan manajemen risiko. Penelitian ini memberikan kontribusi pada identifikasi kelompok perilaku terlalu percaya diri dalam konteks keuangan yang dapat mendistorsi peningkatan kekayaan pemegang saham dan maksimalisasi nilai aset investasi. Pengembangan kebijakan untuk mengurangi perilaku terlalu percaya diri oleh para pemangku kepentingan berdasarkan pengelompokan yang dilakukan guna mendukung proses pengambilan keputusan keuangan yang berkualitas. Keterbatasan dari penelitian ini adalah bahwa pengelompokan perilaku terlalu percaya diri dalam konteks keuangan hanya didasarkan pada *bukti historis*.

Kata kunci: kepercayaan diri berlebihan; keuangan perilaku; bibliometrik.

INTRODUCTION

Behavioural finance constitutes a pivotal discipline that amalgamates psychological perspectives with financial decision-making, thereby contesting the conventional paradigm of rationality within the realm of economics. The results of research conducted by [Baker et al. \(2019\)](#) and [Hadbbaa \(2019\)](#) concluded that in financial decision-making, irony is a key factor in financial decision-making. concluded that in financial decision making, irrationality influenced by cognitive biases and emotions can occur. One concept that has a fundamental role in representing the phenomenon of behavioural finance is overconfidence.

Overconfidence is defined as any form of psychological bias that can have a significant effect on financial decision making, the main characteristics that represent overconfidence behaviour refer to the results of research conducted by [Broihanne et al. \(2014\)](#); [Chuang & Lee \(2006\)](#); [Kaustia & Perttula \(2012\)](#); [Skala \(2008\)](#) consists of miscalibration, better-than-average effect, illusion of control and unrealistic optimism, [Sanchez & Dunning \(2023\)](#) even stated that overconfidence is a contagious disease. The behaviour of overconfidence can distort the increase in shareholder wealth and maximisation of investment asset value, this behaviour specifically impacts on trading volume anomalies that cause significant losses, debt ratio anomalies that can increase the probability of bankruptcy, market overreaction and unnatural volatility ([Bregu, 2020](#); [Carvalho et al., 2024](#); [Rzeszutek et al., 2020](#)).

Research on the role of overconfidence in intervening in the financial decision-making process has been widely carried out, this statement is reinforced by [Costa et al. \(2017\)](#) and [Ikram et al. \(2023\)](#) who concluded that research on overconfidence has experienced exponential growth, especially in the last few decades, indicating increased interest and relevance in the study of finance. However, research on the latest state of the art overconfidence that provides a comprehensive understanding and categorisation of the diverse literature in finance is still minimal, the last research on this matter was conducted by [Singh et al. \(2024\)](#) still limited to peer-reviewed articles, excluding articles that highlight managerial overconfidence in corporate governance and social responsibility, this result has a consequent gap in understanding the broader trends and interconnectedness of overconfidence research across different domains of finance that began since the concept of behavioural finance was introduced in 1987 by searching through databases.

This research aims to provide empirical evidence through trend mapping studies and research networks of the overconfidence phenomenon in the financial decision-making process from 1987 to 2024, to support the achievement of research objectives, the research questions are as follows:

1. What were the major publication trends in overconfidence research within finance during this period? Are there identifiable periods of growth, decline, or shifts in focus?

2. Who are the most influential authors, institutions, and countries driving the research agenda on overconfidence in finance?
3. What are the key thematic clusters and research networks within the overconfidence literature, and how have these networks evolved?
4. What are the emerging trends and potential future directions for research on overconfidence in finance?

This research presents a systematic analysis of the literature on overconfidence in the financial decision-making process covering the years 1987 to 2024. It presents a portrait of the development of this phenomenon, important contributions, knowledge clusters, and reveals emerging trends such as the interaction between overconfidence and other cognitive biases and the impact of technological advances. This systematic investigation elucidates fundamental concepts and theoretical frameworks so as to contribute to the development of financial management science. The implications of the findings have a strategic role for investors, the financial decision-making process, and the formulation of relevant strategies in financial management.

By understanding the complex dynamics inherent in overconfidence research, investors and financial practitioners can mitigate its negative effects, ultimately resulting in informed financial decisions. Moreover, policymakers can adopt these findings to formulate regulations that promote transparency and accountability in financial markets. By using a comprehensive bibliometric analysis, this study provides a more objective perspective that is both theoretically and practically relevant.

METHODOLOGY

Study Design

This research uses the bibliometric analysis method to provide an explanation of the evolution of the concept of overconfidence from period to period which can be identified through the development of existing research trends and networks. Bibliometric analysis is a type of literature review (Öztürk et al., 2024). This analysis is classified into quantitative and qualitative approaches, where there is descriptive statistical analysis or performance analysis and cluster analysis or scientific mapping of bibliographic data (Donthu et al., 2021). In line with this, research using bibliometric analysis methods tends to have a more objective and extensive scope than other types of literature review (Mukherjee et al., 2022).

This method is able to measure and process data using algorithms, arithmetic, and statistics to analyse, explore, organise and investigate large amounts of data, which allows researchers to identify and recognise "hidden patterns" that can help authors in the process of reviewing literature and evaluating articles in related research fields and has experienced a rapid increase in comprehensive use (Donthu et al., 2021; Kraus et al., 2023). In addition, another advantage of this method is that it is able to initiate a

systematic, transparent and repeatable review in describing a field of the research topic in a quality manner (Öztürk et al., 2024).

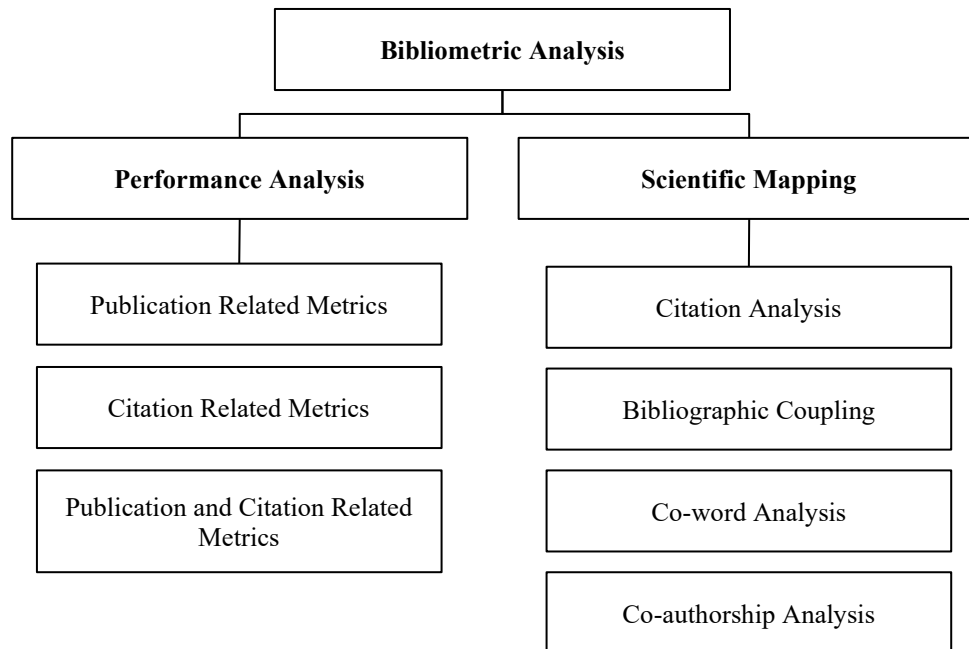


Figure 1. Bibliometric Analysis Method

Source: Donthu et al. (2021)

As explained by Donthu et al. (2021) in more detail, there are two categories of bibliometric analysis methods, namely performance analysis and scientific mapping.

- a. **Performance Analysis:** allows researchers to determine the level of productivity (in the form of publications), as well as the level of impact (in the form of citations) of the literature related to a domain, methodology, or theory using various quantitative measures (in the form of average citation rate per publication or per year, h-index, g-index, and i-index) (Donthu et al., 2021; Kraus et al., 2022; Mukherjee et al., 2022). Based on this analysis, it is possible to identify the most influential authors, institutions and countries in research on overconfidence from period to period, enabling potential collaboration with the subject in relation to future research.
- b. **Scientific Mapping:** allows researchers to map the literature of a domain, method, or theory based on bibliographic data, e.g. bibliographic coupling which is able to create thematic clusters based on similarities in bibliographic data, co-citation analysis which is able to create thematic clusters based on frequently cited articles, co-occurrence analysis which is able to create thematic clusters based on frequently co-occurring keywords (Donthu et al., 2021; Kraus et al., 2022; Mukherjee et al., 2022). Based on this analysis, it can be seen how the development of the concept of overconfidence from period to period, which allows the potential development of research directions to be more comprehensive on existing research topics with the methods in this study can be seen as follows.

Database Selection

Furthermore, in data collection, the Web of Science (WoS) database (www.webofscience.com) was used as a source of bibliographic data. Web of Science itself is one of the databases that contains the largest collection of scientific articles that are widely recommended in research (Paul et al., 2021; Pranckutė, 2021), and the advantage of this database is that it presents the data needed in bibliometric analysis more comprehensively, which can be in the form of the availability of inclusion impact factors, which can indicate the quality of the journals used (Birkle et al., 2020; Sauer & Seuring, 2023).

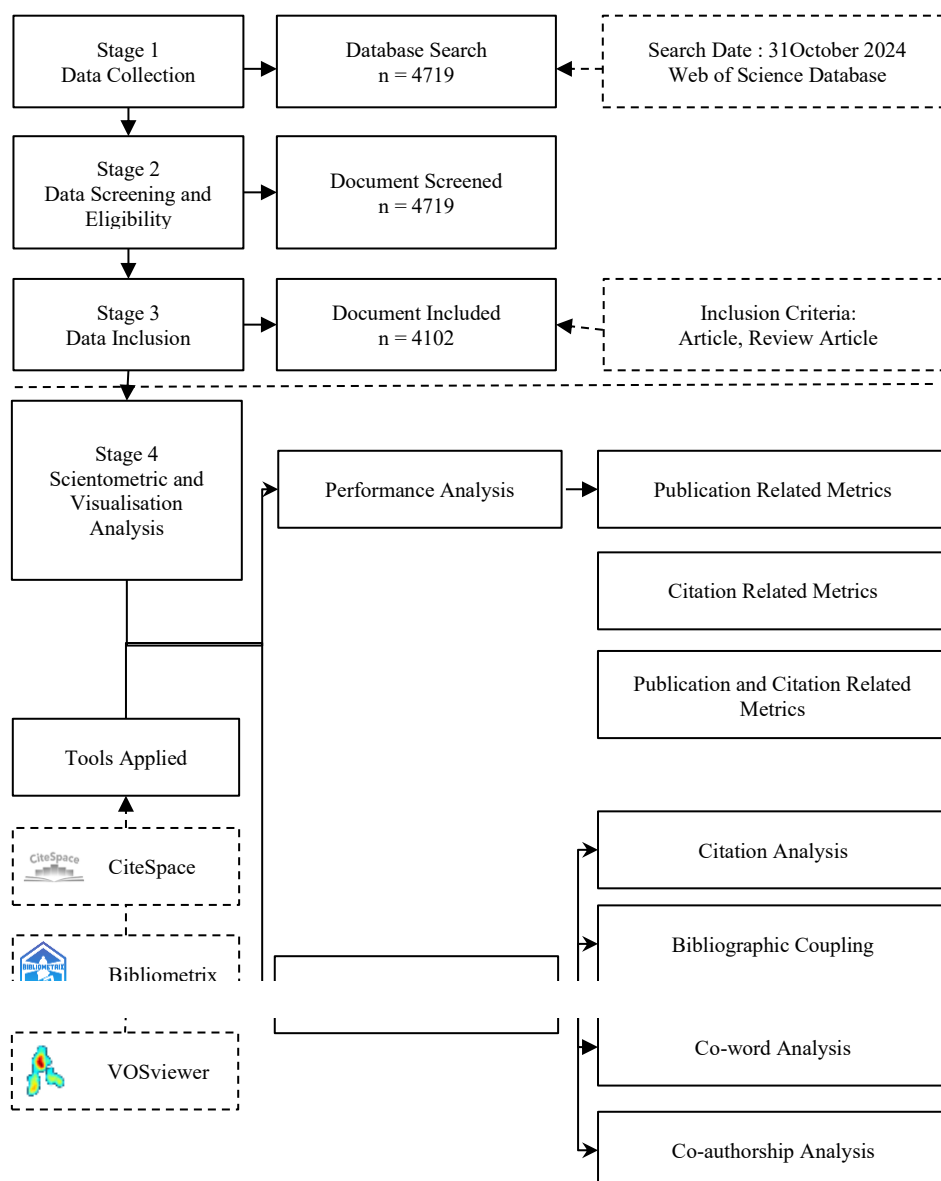


Figure 2. Research Procedure

Identifying Search Terms

In searching for data through databases, search keywords are used to determine the development of databases, journals, periodisation and automated approaches based on text mining and machine learning. The search keywords must reflect the purpose of the research, in this case a synonymised approach of the research topic is used (Palmaccio et al., 2023). This approach is certainly very helpful in creating a basic sample that will be processed further, especially if the terms in the field are used in parallel in different journals (Sauer & Seuring, 2023). These synonyms are of course also linked through Boolean operators (in the form of "OR" and "AND") to determine the saturation point of the pre-selected keyword set. The set of keywords used in the search through the Web of Science (WoS) database are:

("Behavioural Finance" OR "Managerial Overconfidence" OR "Overconfidence") AND ("Finance" OR "Corporate Finance" OR "Financing" OR "Investment")

In line with the relevant keywords identified, a search of the dataset from the database with the search string "article title, abstract and keyword" was conducted on 31 October, 2024.

Data Selection and Collection

In bibliometric research, it is important to provide boundaries of scope and which papers to use, this is to ensure the dataset is relevant and keep the research fit for purpose through filtering (Öztürk et al., 2024). In this stage, clear inclusion and exclusion criteria are crucial in sorting the dataset from the Web of Science (WoS) database to ensure that only literature with a high degree of relevance to the research topic is included. The inclusion and exclusion criteria used in this study can be seen in Table 1.

Along with the use of keywords and filters used in the search, a dataset was produced that was published from January 1987 to October 2024, with document types of articles and review articles that have passed the final publication stage, so of course they have passed peer review rigorously and systematically. In line with this, a more detailed dataset of 4,105 data was obtained.

Table 1. Inclusion and Exclusion Criteria Applied

Criteria	Inclusion	Exclusion
Year of Publication	Published literature up to 2024	Literature scheduled for publication in the next 2024 (2025 etc.)
Document Type	Literature with types of articles and review articles	Literature with the type of proceeding paper, book chapter, editorial material etc.
Publication Stage	Literature that has entered the final stage	Literature in early access, article retracted, and article in press stages

Language	Literature is not limited to a particular language	-
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Data Analysis

To reveal the intellectual structure and dynamics of the research topic, it is necessary to analyse the field of the topic more macro (Öztürk et al., 2024). To achieve this, this research uses CiteSpace (v6.4.R1 Advanced), Bibliometrix (vR4.1.1) and VOSViewer (v.1.6.20) as software tools in conducting bibliometric analysis. The three of them have their own advantages and focus (Xu & Wang, 2024).

CiteSpace is a Java-based application that has the function of analysing and visualising bibliometric data (Chen, 2017). The main advantage of this application is that it is able to compile scientific mapping and scientific evolution of the entire information landscape and focus on the most important publication points, such as research topics, and specific scientific development directions using computational algorithms and produce a comprehensive overview of the scientific domain (Chen, 2006).

Bibliometrix from R is an application based on the R programming language with an open source platform designed for quantitative research related to scientometric and bibliometric analyses (Aria & Cuccurullo, 2017). The main advantage of this application is that it is able to produce visualisations of statistical algorithms in an efficient and integrated manner.

VOSviewer is a Java-based application capable of generating and visualising bibliometric data mapping based on co-citation, co-occurrence and bibliographic coupling. VOSviewer can perform mapping with several methods, each of which focuses on different aspects, which makes it easier to interpret the resulting visualization (Eck & Waltman, 2010).

RESULTS

Descriptive and Trend Analysis

The number of publications reflects the intensity of research and interest in a field. The total number of articles published in the Web of Science database is 4102. In importing the data, remove duplicated is done to remove duplicates that may appear. Furthermore, the addition of a publication year filter was only used until October 2024 so that 4102 valid articles could be obtained and further analysis could be carried out.

1. Through analysis using biblioshiny

The annual publication trend of the overall research can be seen that there has been an increase in the publication of overconfidence research, from 1 publication in 1987 to 461 publications in 2023, although there is a slight decrease in 2023 and 2024. There were 416 articles found in 2024.

The first article that has a connection with overconfidence is "Applying Behavioural Finance to Capital-Budgeting - Project Terminations" (Statman & Caldwell, 1987). This study was able to identify two dimensions of commitment: as a drive to achieve goals and as an entrapment of costs that trigger irrational decisions explained through the concept of mental accounting.

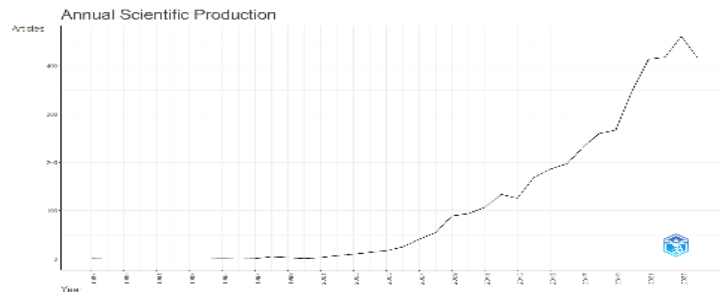


Figure 3. Number of Overconfidence Annual Publications From 1987-2024

In the Web of Science database, research on the topic of overconfidence has increased dramatically. In the period 1987 to 1997, only one article was produced each year. Furthermore, there began to be a significant increase in publications in the period 1998 to 2010. Starting from 2011 to 2024, the publication trend of overconfidence topics is increasing until it reaches hundreds of publications each year with the highest publication achieved in 2023 as many as 461.

2. Publication Main Information.

The analysis revealed that there is a comprehensive dataset on overconfidence covering 4,102 documents from 1987 to 2024, with a steady annual growth rate of 17.7%. The dataset includes contributions from 7,695 authors, with 664 documents written by a single author and an average of 2.62 co-authors per document, highlighting significant collaboration. Notably, international co-authors accounted for 28.3%, reflecting a strong global research network. The documents, sourced from 764 journals and books, had an average of 24.94 citations per document, indicating a significant impact. Furthermore, in the document type category, 3,986 were articles, and 119 were reviews, providing a diverse perspective. Keyword plus (3,876) and author keywords (8,050) offer rich analytical insights into thematic trends.

Table 2. Main Information

Description	Results
Main Information About Data	
Timespan	1987 : 2024
Sources (Journals, Books, etc)	764
Documents	4102
Annual Growth Rate %	17.7%
Document Average Age	5.8
Average citations per document	24.94
References	104633

Document Contents

Keywords Plus (ID)	3876
Author's Keywords (DE)	8050
AUTHORS	
Authors	7695
Authors of single-authored docs	568
Authors Collaboration	
Single-authored docs	664
Co-Authors per Doc	2.62
International co-authorships %	28.3
Document Types	
Article	3983
REVIEW	119

3. Emerging Trends

The colour changes in the co-occurrence overlay visualisation in figure 4 from blue to yellow indicates the development of research trends from 1987 to 2024. This analysis reveals that behavioural finance has become a research trend in 1987 with a total of 1219 studies discussing this keyword. In 2015, research on behavioural finance focused more on the study of market efficiency and overreaction. Over time, the research trend on overconfidence developed and expanded in recent years, namely in 2017 where there was a significant increase in publications on this topic. New themes such as CEO overconfidence, overinvestment, managerial optimism, mergers and acquisitions, and personality traits emerged with network linkages to emotional intelligence, individual investors, underconfidence, trading volume and decision making. This indicates that research in that year was more about the impact of overconfidence on individual financial behaviour and organisational dynamics, and its implications for decision-making success and risk. Then in 2022, the research trend develops marked by the number of studies examining investor sentiment, financial psychology and psychological factors which then develops again with the emergence of trends in the keyword financial decision-making solutions in 2023.

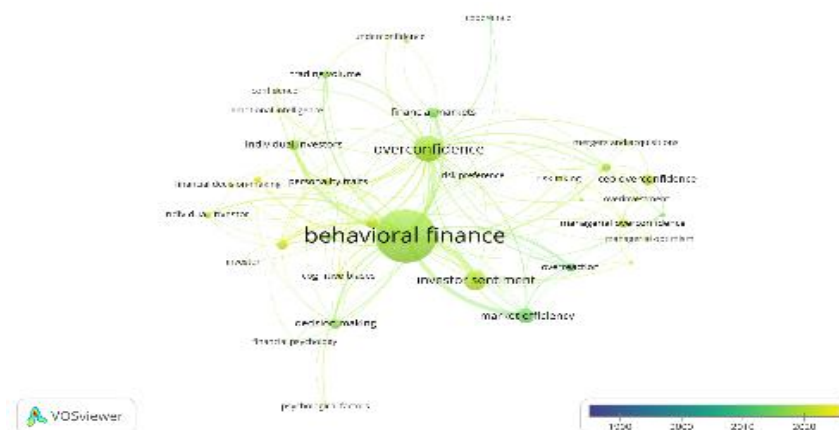


Figure 4. Emerging Trends in Overconfidence Research

Citation Analysis

Citation analysis focuses on the direct relationship between documents, i.e. documents that cite or are cited by other documents, where this analysis is useful for identifying the most influential documents, authors, or journals (highly cited works) (Donthu et al., 2021).

1. Author Network Analysis

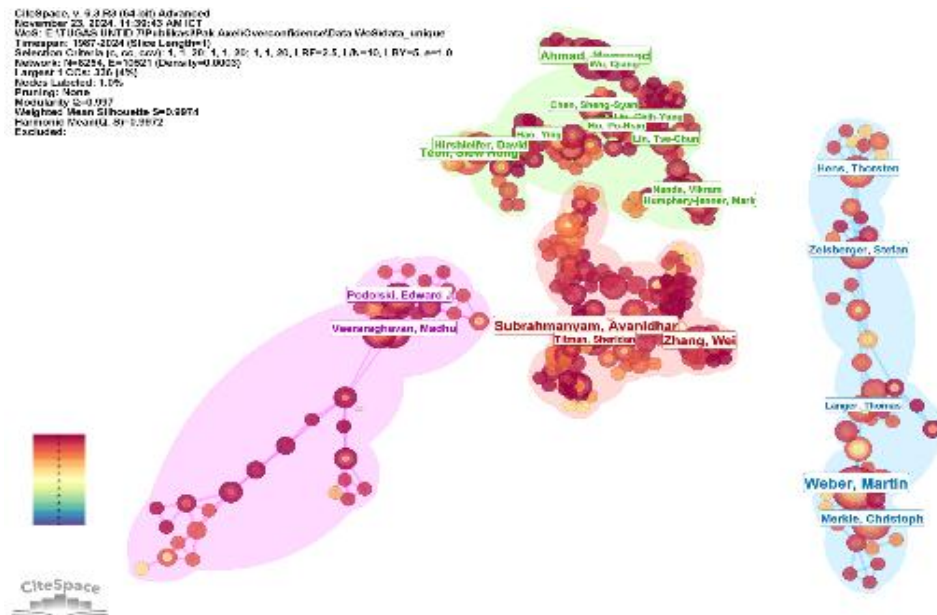


Figure 5. Visualisation of the Author Collaboration Network

Author analysis is the process of analysing to identify the contributions, influence, and publication patterns of an author or a group of authors in a particular field. In academic and research contexts, author analysis is used to evaluate the social relationships, impact and productivity of an author. The impact and productivity can be evaluated using citation analysis (Donthu et al., 2021; Öztürk et al., 2024). A visualisation of this concept can be seen in Figure 5 below, which shows authors who contributed significantly within overconfidence in recent years.

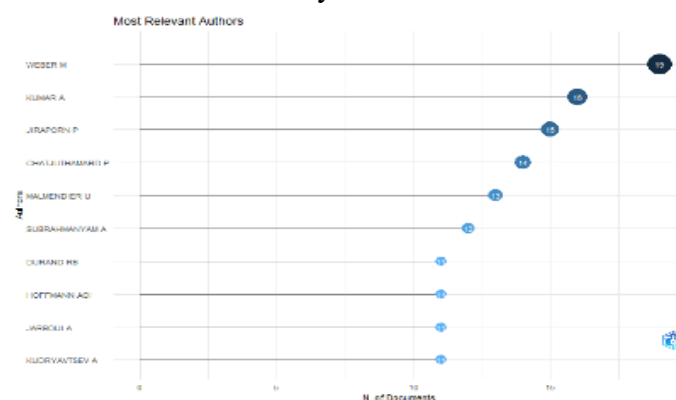


Figure 6. Most Relevant Authors

Based on the results of the analysis using CiteSpace and Biblioshiny, visualised in [figure 5](#), several authors stand out in advancing this research agenda. The most influential authors can be identified based on the size and intensity of their relationships within the research network. Weber M emerges as one of the central figures with significant contributions to this topic, indicated by his position at the centre of the largest cluster with a publication count of 19 articles. This demonstrates his widespread influence through frequently cited research and serving as a nucleus in the research network. In addition, names such as Kumar A with a publication count of 16 articles, Jiraporn P with a publication count of 15 articles indicate intense collaboration and relevant influence in the development of literature related to overconfidence in finance.

Furthermore, Chatjuthamard P also stands out as an influential author with 14 publications. Malmendier U with 13 and Subrahmanyam A with 12, followed by other authors such as Durand RB, Hoffman AOI, Jarboui A and Kudryavtsev A with 11 publications each. Clusters in CiteSpace are identified with authors such as Thorsten Hens and Martin Weber, who are at the centre of different research groups focusing on other behavioural finance perspectives. These authors made significant contributions in broadening the discussion on overconfidence with experimental and theoretical-based approaches. Thus authors such as Weber M, Kumar A, Jiraporn P can be considered as prime movers in the overconfidence research agenda, with their work having a major impact on the academic community in this area.

2. Institution Network Analysis

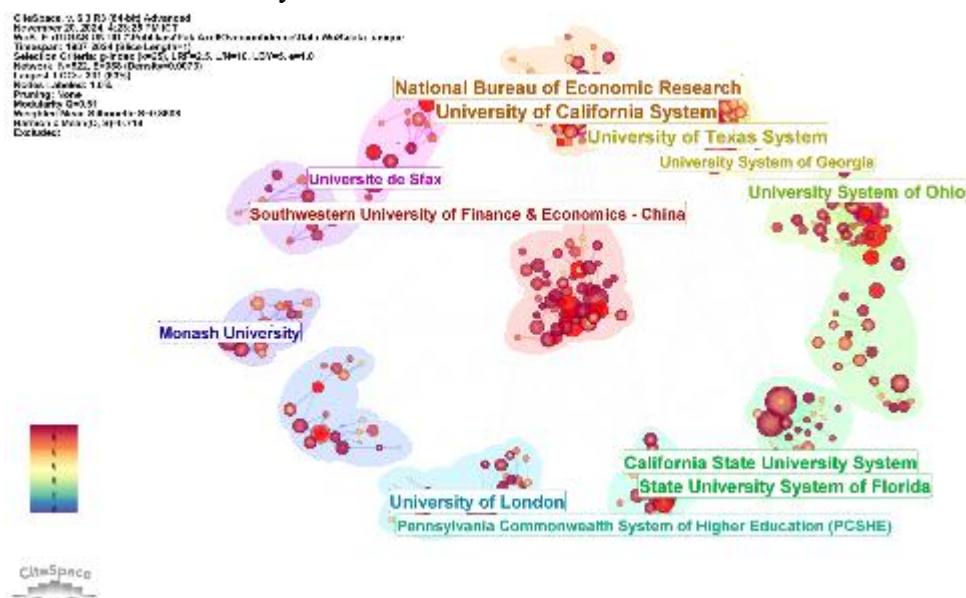


Figure 7. Visualisation of the Institution Collaboration Network

Analysis of institutions is useful to know how the level of collaboration, how their publication rate and the level of centrality in the field of the study, the higher the level,

the larger the node in the visualisation (Chen, 2017; Geng, 2024). A number of leading institutions are emerging as the main drivers of research in the field of overconfidence. As seen in figure 7, among these institutions, the University of California Davis stands out with the highest citation burst strength in 1998 at 8.46, which lasted until 2009. This shows the significant influence of this institution for more than a decade in shaping the initial discussion on overconfidence. Furthermore, other institutions such as Northwestern University and the University of California System also made important contributions during the late 1990s to early 2000s, with citation burst strengths of 7.22 and 5.48, respectively. Princeton University registered a major influence in the early 2000s with the highest citation burst strength in this period of 9.31, which lasted from 2002 to 2007, confirming its role as one of the most influential institutions in developing the early literature on overconfidence.

In addition, Harvard University, Yale University, and the National Bureau of Economic Research demonstrated their prominence in the decade of the 2000s with research contributions that had a significant impact on follow-up studies. In the more recent decade, the University of Oxford (2011-2016) and Tilburg University (2014-2018) stand out, signalling a shift in contributions to institutions outside the United States, along with the globalisation of academic discourse on overconfidence. Overall, analysis of citations by institution indicates that academic and research institutions in the United States dominated the initial research agenda, with important contributions from some European institutions in recent decades. Furthermore, the most influential institutions that have played a strategic role in the development of the topic of overconfidence are as follows:

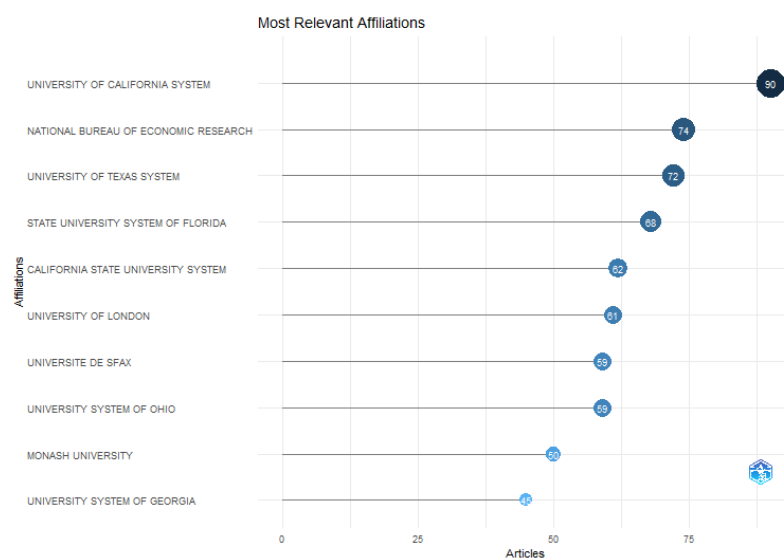


Figure 8. Most Relevant Affiliations/Institutions

Figure 8 shows the affiliations that contribute the most, based on the number of publications on the topic of overconfidence research, the University of California System

has the most research on this topic, with a total of 90 publications. Ocean National Bureau of Economic Research followed with 74 publications, University of Texas System with 72 publications, State university system of florida with 68 publications, California state university with 62 publications. University of London with 61 publications, university de sfax with 59 publications, university system of ohio with 59 publications, monash university with 50 publications and university system of Georgia with 45 publications.

3. Country Network Analysis

In figure 9, it can be seen that the United States (USA) occupies a dominant position as the main driver of the research agenda in this field. This dominance is demonstrated through the large size of the nodes and their position at the centre of the network, indicating the high volume of research as well as the significant influence of institutions based in the country.

Furthermore, Table 3 shows the findings of the global analysis relating to a country's scientific production. There are 93 countries around the world that contribute to the topic of overconfidence. The USA is the most productive country in publishing research on overconfidence with a total of 2191 publications. Then, followed by China with a total of 1704 publications, United Kingdom with 558 publications, India with 381 publications, Australia with 358 publications, and Germany with 358 publications. Meanwhile, France has 261 publications, Brazil has 208, Italy has 191 publications, and Canada has 183 publications. The data of the top 10 countries shows that the USA has the highest level of scientific production among other countries. This is likely because there are factors that support research in the country such as greater infrastructure, funding, and institutional capacity. China and the United Kingdom are also major contributors to this research topic.

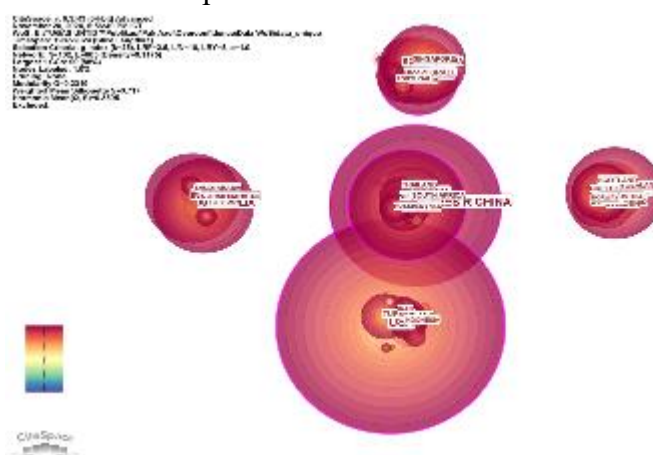


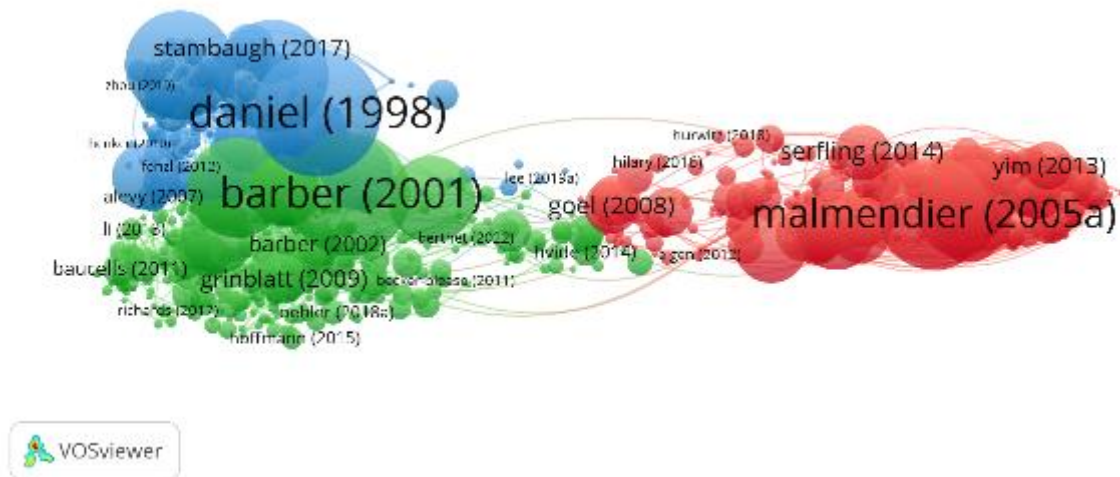
Figure 9. A Visualisation of the Country Collaboration Network

Table 3. Countries' Scientific Production

COUNTRY	FREQUENCY
USA	2191
China	1704
United Kingdom	558
India	381
Australia	358
Germany	358
France	261
Brazil	208
Italy	191
CANADA	183

Bibliographic Coupling

It is a bibliometric analysis method that measures the similarity between documents based on the number of common references in their bibliographies. If two documents cite the same references, they are considered bibliographically "related". This analysis is useful to determine the relationship of periodic development of a theme in a research field (Donthu et al., 2021; Öztürk et al., 2024). In this research, bibliographic by coupling is used because this research focuses on the specific details of the relationship between articles and the relevance of individual content and is suitable for reviewing the state of the art in a particular topic. Of the 4102 documents that met the criteria of a minimum threshold of 5 citations in each document, 2295 met the requirements.

**Figure 10.** Bibliographic Coupling by Document

Based on the analysis results using VOSviewer in figure 10, it can be seen that there are 3 clusters, each of which is divided into; Cluster 1, coloured red, which consists of 401 items with the largest node owned by articles from Malmendier & Tate (2005) entitled CEO Overconfidence and Corporate Investment. Cluster 2, coloured green, consists of 365 items with the largest node belonging to the article from Barber & Odean (2001) entitled Boys Will be Bosses; Gender, Overconfidence and Common Stock

Investment, and Cluster 3, coloured blue consisting of 234 items has the largest node which is an article by Daniel et al. entitled Investor Psychology and Security Market Under and Over Reactions.

Co-Citation Analysis

Furthermore, the co-citation analysis method was used, which has the ability to analyse frequently co-cited documents to identify the relationship of fundamental concepts in the literature (Donthu et al., 2021). As for the co-citation analysis that we use by references, this is because it is able to provide insight into how certain documents are conceptually linked in the literature through co-citation patterns. When two documents are frequently co-cited by other works, it indicates that they have thematic relevance or complementary intellectual contributions in answering a research question or supporting a particular argument.

Analysis of co-citation by references helps identify conceptual relationships that may not be immediately apparent, such as the presence of common theoretical traditions, methodologies, or research topics, making it possible to map intellectual networks, reveal research clusters, and understand the evolution and dynamics of literature within a field of study (Chen, 2017; Donthu et al., 2021; Öztürk et al., 2024). From the 4102 data that met the criteria, a total of 104609 cited references were used, where with a threshold of 20 citations, 1030 cited references met the threshold.

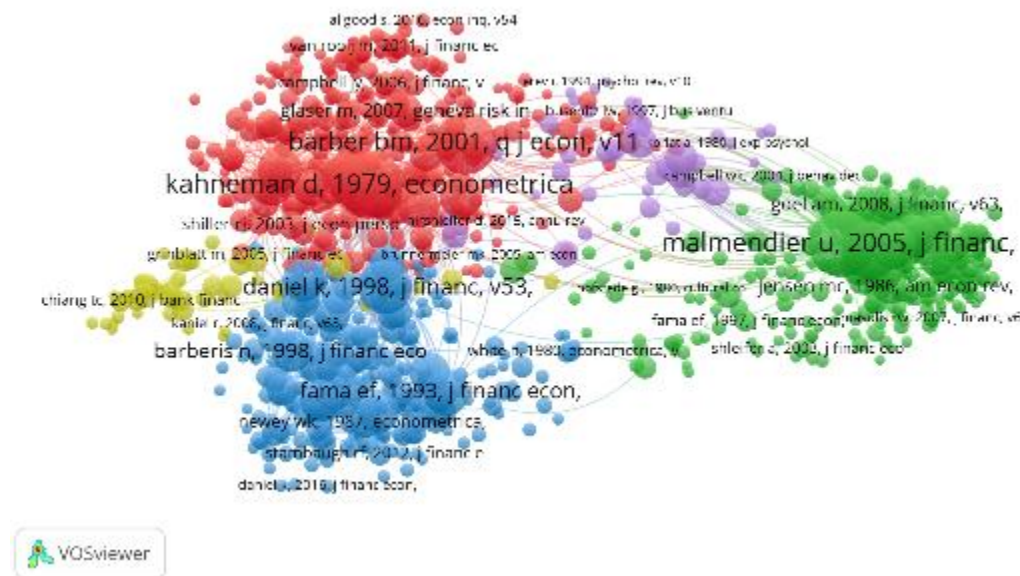


Figure 11. Co-citation Network

Based on the results of the analysis using VOSviewer in figure 11, several clusters of references used in the research can be identified. Cluster 1 is coloured red with a total link strength of 11571, has references with 952 links with a citations level of 757 owned by the article Kahneman & Tversky' (1979) published in the Econometrica journal, then

Cluster 2 in green with a total link strength of 13528, has references with links as many as 870 with a citations level of 736 owned by the article Malmendier & Tate (2005) published in the Journal of Finance, finally Cluster 3 in blue with a total link strength of 10349, has references with 940 links with a citations level of 477 owned by the article Daniel et al. (1998) which was published in the Journal of Finance.

Co-Occurrence Analysis

Co-occurrence analysis, which is a more general method, where elements not limited to keywords are analysed based on the frequency of co-occurrence in documents. When a keyword is used in a particular field of study, it usually indicates some form of research trend in that discipline (Chen, 2006). The purpose is to display themes from the literature, construct relationships between studies, understand how research hotspots appear and estimate the potential for future studies (Geng, 2024). Co-occurrence analysis in this study uses author keywords because it is considered more relevant to the topic of overconfidence and its coverage is specific to related themes.

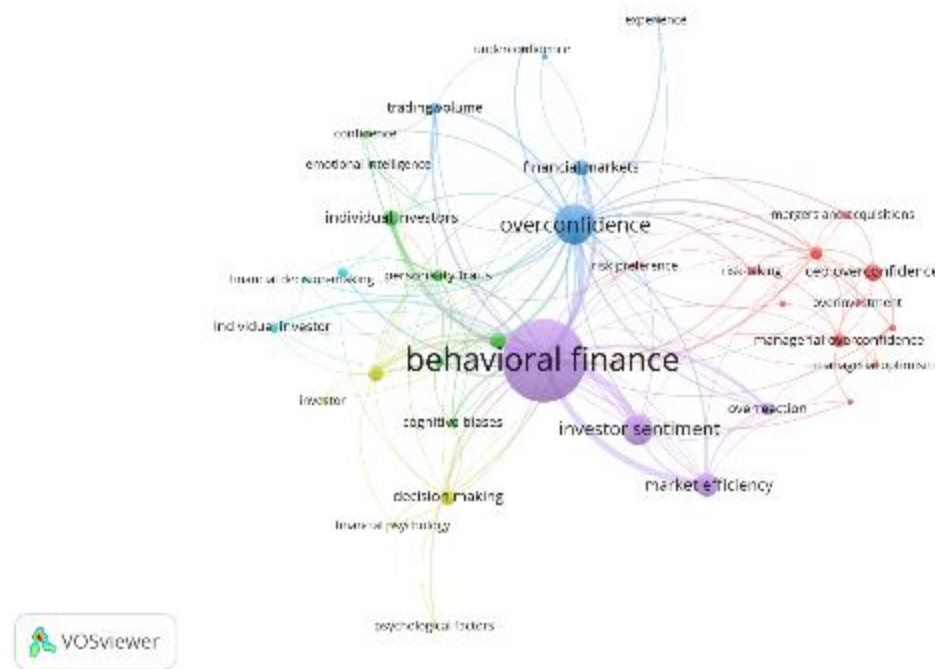


Figure 12. Co-Occurrence by Author Keyword Analysis

Keyword co-occurrence can illustrate how the development of a scientific trend over time is visualised (Xu & Wang, 2024). The results of co-occurrence visualisation using VosViewer software show that the frequency of certain keywords such as "behavioural finance", "overconfidence", and "ceo overconfidence" represent the main focus of each cluster in the field of overconfidence research. The keyword "behavioural

finance" has an occurrence rate of 1219 and has a direct network with 3 other keywords, including "market efficiency", "investor sentiment", "overreaction".

Overconfidence behaviour in the financial decision-making process can be clustered into five main themes, namely personal investment, financial markets, mergers & acquisitions, corporate finance and risk management. The network connecting the node "behavioural finance" with the node "overconfidence" shows that overconfidence is one of the main themes discussed in behavioural finance studies. This illustrates that overconfidence is considered one of the most relevant and frequently studied behavioural biases in the behavioural finance literature, while the network connecting the "investor sentiment" node shows that the collective emotions, perceptions and biases of investors can influence financial decision-making and market movements, which are at the core of behavioural finance studies. These connections may also indicate that the behavioural finance literature often utilises investor sentiment as a variable to explain market anomalies, such as stock price volatility or deviations from fundamental values.

Based on the clusters, keywords were examined and the clusters were categorised into themes. The topic of overconfidence was generally fragmented into several themes. The first theme is "CEO Overconfidence" (cluster 1). This cluster focuses on behavioural biases in the corporate context such as behavioural corporate finance, managerial ability, managerial optimism, overinvestment. This theme reflects that CEO overconfidence can have significant effects on strategic decisions such as overinvestment, management of corporate resources, and risk assessment. The second theme "Individual Investor" (cluster 2). This cluster focuses on aspects of behavioural biases in investment decisions from the investor's perspective, such as confidence, emotional intelligence, investment decisions, personality traits, psychological biases. This theme illustrates that investors' decisions are often not fully rational, but are influenced by emotions, personality, and risk perception. The third theme "Overconfidence" (cluster 3). This cluster highlights the importance of focusing on the influence of individual financial behaviour on financial market activity. It reflects the dynamics of the interaction between psychological biases and investment decisions, which often fuels market volatility and deviations from the fundamental value of assets. In addition, this theme demonstrates the importance of understanding investor behaviour patterns to identify factors that affect market efficiency and stability.

Co-word Analysis

This method identifies relationships between keywords or terms that frequently co-occur in documents. By linking these terms, co-word analysis helps to understand the development of key themes within a research field, the conceptual structure and sub-themes that exist as well as the trends and evolution of research over time (Donthu et al., 2021).

Figure 13 shows the dynamic evolution of conceptualisations and thematic relationships in this area. Initially, overconfidence research centred on fundamental concepts of behavioural finance, such as investor psychology and decision-making biases, reflecting early attempts to bridge traditional finance theory with cognitive biases identified in psychology. Key themes such as rationality, market efficiency, and risk-taking dominated this early stage, emphasising how overconfidence deviates from the rational agent model.

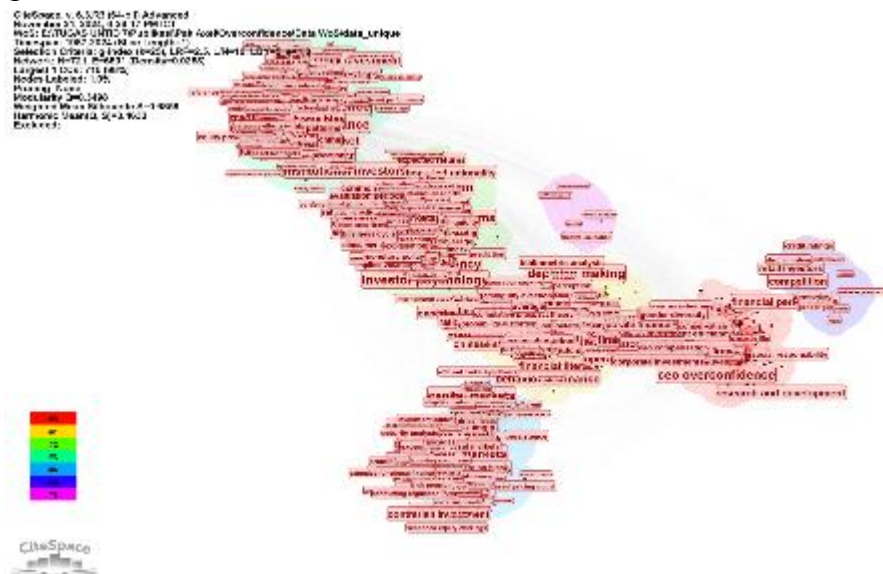


Figure 13. Co-Word Analysis

Over time, the literature evolved into more nuanced applications of overconfidence, as evidenced by the emergence of terms such as CEO overconfidence, corporate investment, and financial performance, indicating a shift towards the organisational and managerial implications of overconfidence. This indicates an expansion of focus from individual investors to corporate decision-makers, emphasising the role of overconfident managers in strategic decisions, such as mergers and acquisitions, capital structure choices, and innovation strategies.

In recent years, the same keyword cluster has shown further diversification, incorporating contemporary finance topics such as climate finance, institutional investors, and sustainable investment, in line with the growing emphasis on integrating psychological biases with global challenges. The passage of time and evolution of the cluster highlight that while the basic ideas of overconfidence remain important, the field has significantly broadened its scope to include interdisciplinary applications, more complex organisational dynamics, and emerging global issues. This shift indicates the conceptualisation of overconfidence has moved from a behavioural anomaly at the individual level to a systemic factor that affects the broader financial ecosystem.

1. Thematic Evolution

Analysing thematic development over time was done by dividing and comparing scholarly structures by period. This approach is used to trace the evolution of various emerging themes (Humble & Mozelius, 2022). Figure 14 shows the thematic evolution analysis that illustrates the strength of correlation and the development of research themes on overconfidence over time. The theme development occurred over three periods, namely 1987-2000, 2001-2020, and 2021-2024. Themes related to overconfidence have evolved from an initial focus on behavioural finance in the early period, which then evolved to become broader as seen in the 2001-2020 period. The behavioural finance theme has continued to develop to date and evolved over the following years. In 2001, overconfidence research began to develop as seen from the publication of literature, this topic became an important foothold for developing further studies. The development of themes in the 2001-2020 period is dominated by "corporate governance", "behavioural finance", "individualism", "overconfidence", and "compensation", which continue to develop and become more prominent over time. The themes of "individualism", and "overconfidence" merged into the theme of "corporate governance" in the 2021-2024 period. This period also saw the emergence of new themes such as "ceo narcissism". This overall thematic evolution illustrates the thematic focus of overconfidence research that has diversified and evolved over the past few decades reflecting the increasing complexity in understanding the role of *overconfidence* in various financial and managerial contexts.

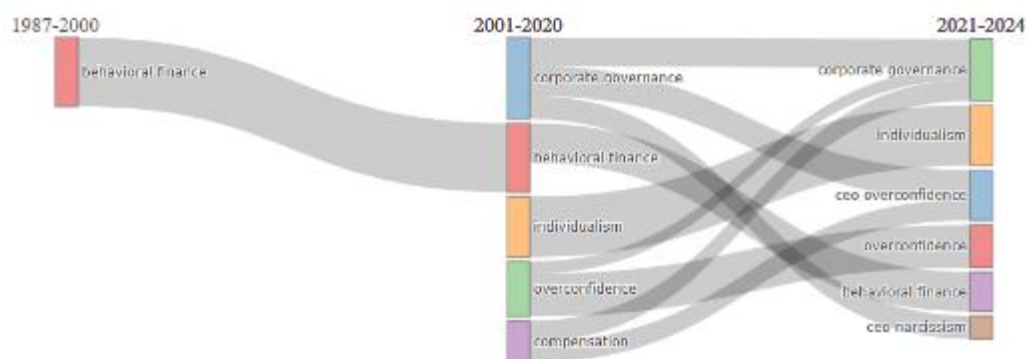


Figure 14. Thematic Evolution Analysis

Co-Authorship Analysis

Co-authorship analysis is a useful method of analysing collaboration networks between authors, institutions or countries based on their involvement in joint articles. This analysis is used to understand collaboration patterns, social relationships in research, and the role of key actors in the scientific community (Donthu et al., 2021; Öztürk et al., 2024).

The co-authorship networks generated from bibliometric analyses of research on overconfidence spanning 1987-2024 provide deep insights into the structure of scientific collaboration in this field. The visualisation results identify several major clusters that

represent networks of collaboration among experts, with authors such as Subrahmanyam, Avaniidhar, Ahmad, Maqsood, and Weber, Martin occupying a central position as key actors. The main cluster led by Subrahmanyam, Avaniidhar, shows a broad group of collaborations, including contributions from Wei, K.C. John and Goodell, John W., indicating a research focus on specific themes that may relate to psychological mechanisms and their implications for financial decisions. The red cluster, centred on Ahmad, Maqsood, reflects a more focused network with tighter connectivity, possibly related to the development of theoretical models or specific applications in a particular context.

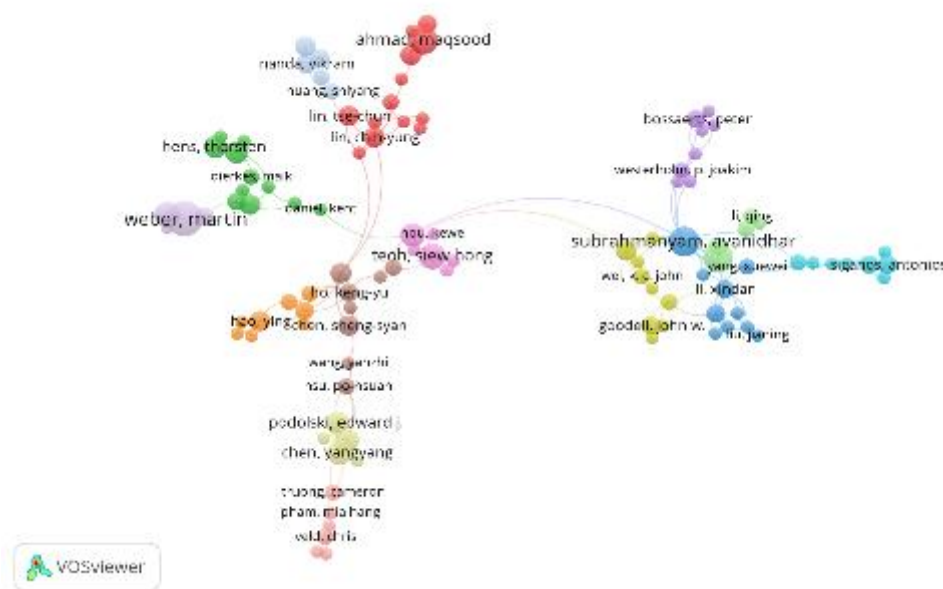


Figure 15. Co-Authorship Analysis

Furthermore, some of the cross-cluster relationships show multidisciplinary collaborations linking the main themes with more specific subthemes, although these interactions between clusters are relatively weaker than collaborations within clusters. This suggests that although the field of *overconfidence* research has grown substantially, fragmentation in cross-thematic collaboration remains a challenge. Authors with a large number of nodes and a strategic position in the network, as seen in *Subrahmanyam* and *Weber*, are key drivers in building a coherent and progressive research ecosystem.

DISCUSSION

In the previous section, it has been discussed about the current state of how the analysis and evolution of the concept of overconfidence in the framework of behavioural finance in the period 1987-2024. The results of the analysis based on the Web of Science (WoS) database are then comprehensively analysed to answer the research questions as summarised in the following explanation.

1. Trends Analysis

RQ1: What were the major publication trends in overconfidence research within finance during this period? Are there identifiable periods of growth, decline, or shifts in focus?

Overconfidence research in finance has evolved significantly over the years, starting with foundational studies in behavioural finance in late 1987 to early 2000s, which focused on cognitive biases, financial psychology, and market efficiency. From 2000-2015, the field expanded to explore specific phenomena such as CEO overconfidence, its influence on corporate decisions e.g. acquisition mergers, risk taking, overinvestment, and its broader implications on market dynamics. The current years 2015-2024 show that research is increasingly diverse, emphasising investor sentiment, individual decision-making and new areas such as emotional intelligence and trading volume, reflecting an interdisciplinary approach. Periods of research growth often coincide with financial crises, which spark interest in understanding market failures through behavioural approaches. This shift in research focus reflects the evolution from theoretical studies towards practical applications, especially in the context of firm dynamics and financial markets.

Based on the results of trend analysis in the theme structure of the scientific area of overconfidence, it can be seen that there is a tendency to increase publications significantly reaching 17.7% per year during the period 1987 to 2024. Then overall, the average age of research documents in overconfidence is 5.8 years old which has a gap with the range of topics that appear from 1987-2024 with an age reaching almost 40 years. The large difference between the average value and the age of the field of study indicates that there has been an explosion of publications in the last 10 years, with the highest stage in 2023 with 461 publications. This reflects the dynamic evolution of thematic focus and response to significant global changes.

Furthermore, the first theme to be highlighted was "Behavioural Finance", with the first study that correlated with the topic being an article entitled "Applying Behavioural Finance to Capital-Budgeting - Project Terminations" by Statman & Caldwell in 1987. This study was able to identify two dimensions of commitment, namely as a drive to achieve goals and as an entrapment against costs that trigger irrational decisions (Statman & Caldwell, 1987). As per the visualisation, the theme of "behavioural finance" has the largest nodes indicating that it has a high degree of centrality to the field of the study.

Then the second theme that was highlighted was "Individual Investor". This theme focuses on aspects of behavioural biases in investment decisions from an investor's perspective, such as confidence, emotional intelligence, investment decisions, personality traits, psychological biases. This theme illustrates that investors' decisions are often not fully rational, but are influenced by emotions, personality, and risk perception (Aren & Hamamci, 2020). Furthermore, the third theme "Overconfidence". This theme highlights

the importance of focusing on the influence of individual financial behaviour on financial market activity. This theme reflects the dynamics of the interaction between psychological biases and investment decisions, which often fuels market volatility and deviations from the fundamental value of assets (Aljifri, 2023). In addition, this theme demonstrates the importance of understanding investor behaviour patterns to identify factors that affect market efficiency and stability. Overall, these patterns suggest that overconfidence research in finance continues to evolve dynamically, moving from a focus on micro issues to macro and technological themes, as it adapts to the innovations and changes of the modern era.

2. Network Analysis

RQ2: Who are the most influential authors, institutions, and countries driving the research agenda on overconfidence in finance?

In terms of authors, Weber M, Kumar A, and Jiraporn P stand out as the most influential dominant contributors on the topic of overconfidence, producing 19, 16, and 15 relevant articles, respectively. Their contributions are not only significant in terms of number, but also play a central role in building the foundation and developing the core of the literature on overconfidence. Through a behavioural finance-based approach, their works offer deep insights into the psychological dynamics and economic implications of overconfidence in various financial contexts.

In terms of institutions, the University of California is the institution with the most contributions through the high frequency of research on overconfidence conducted with a total of 90 publications. This indicates their high commitment in studying behavioural finance, especially in the behavioural bias of overconfidence. In addition, the university has a strong academic reputation, access to extensive research resources, and a strong reputation as a leader in behavioural finance (Schelenz, 2021). Furthermore, it is followed by Northwestern University, and Princeton University which show significant influence especially in the early period of overconfidence development. In addition, European institutions such as the University of Oxford and Tilburg University began to make major contributions in the last decade.

On the countryside, the USA is the most productive country in overconfidence-related research, with a total of 2,191 publications and characterised by large node sizes and a central position in the network. This productivity is supported by a strong research ecosystem, encompassing top universities such as Harvard, Stanford, and MIT, which are often centres of academic innovation (Hall, 2020). Many studies from the USA focus on the impact of overconfidence on investment decisions, capital markets, and firm performance, highlighting how overconfidence affects the behaviour of investors, managers, and markets in general (Bouteska & Regaieg, 2020). This is followed by

China, the UK and Australia, which also show substantial international collaboration. Overall, the research is dominated by developed countries.

3. RQ3: What are the key thematic clusters and research networks within the overconfidence literature, and how have these networks evolved?

In the research on overconfidence during the period 1987-2024, there are several main themes that hold the key in the development of the research network on the field of study. The evolution of overconfidence based on the visualisation of infographics in the period 1987-2000 and the presence of nodes in the co-occurrence mapping results indicate that the main theme regarding the concept of overconfidence starts with the basic concept of "behavioural finance" which is marked by the largest node size in the network mapping. In line with the opinion of [Geng \(2024\)](#) larger nodes indicate a higher level of theme centrality in the field of the study and are characterised as precursors. In the next period, 2001-2020, there was a development and emergence of new themes in the field of study, this was marked by the presence of themes such as corporate governance, behavioural finance, individualism, overconfidence and compensation. Meanwhile, in the 2021-2024 period, there was further development, which was characterised by the emergence of a new theme, namely CEO narcissism.

This scientific development is also supported by the existence of literature sources that are cited in various studies, which form a variety of new research themes that emerge, so that these new themes still have a bibliographic relationship and relationship between one another. This relationship can be seen from the results of bibliographic coupling analysis which is able to identify three clusters of cited articles. The first cluster with the largest node is owned by articles from [Malmendier & Tate \(2005\)](#) entitled CEO Overconfidence and Corporate Investment. This study found that overconfident managers often overestimate the return on their investment in a project, considering that external funding is too expensive and has a significant impact on the company's cash flow. Then in the second cluster, the green colour with the largest node is owned by the article from [Barber & Odean \(2001\)](#) entitled Boys Will be Bosses; Gender, Overconfidence and Common Stock Investment, where this study highlights the emotional and cognitive differences between men and women, with men tending to be more aggressive in making decisions. As for cluster 3, the blue colour with the largest node is the article by [Daniel et al. \(1998\)](#) entitled Investor Psychology and Security Market Under and Overreactions found that investor overconfidence implies negative long-run autocorrelation, excessive volatility, and, when managerial actions are correlated with stock mispricing, public event-based return predictability.

In line with the analysis, this study found that the study of overconfidence has grown exponentially over the past 37 years with more authors, institutions and countries collaborating with each other. This strengthens the level of co-operation within the field

of study and leads to a broader understanding of overconfidence trends, subjects and research.

4. Emerging Themes Analysis

RQ4: What are the emerging trends and potential future directions for research on overconfidence in finance?

Over the years, the topics of behavioural finance, market efficiency and overreaction have taken centre stage in research in the 2000s, most likely related to the evolution of modern finance theory which began to question the validity of the efficient market assumption (Jagirdar & Gupta, 2024). Broadly speaking, overconfidence-related themes have grown rapidly in recent years, with a significant increase in publications in 2021. Topics such as personal investment, financial markets, mergers and acquisitions, and corporate finance are the main focus of research. In 2022-2024, research is dominated by key topics such as financial decision-making, underconfidence, and individual investors. This development is fuelled by the increasing need to understand how cognitive biases influence investment decisions, especially in the context of global economic uncertainty (Shah et al., 2021). The role of cognitive biases, such as personality traits and emotional intelligence in influencing overconfidence, indicates there is potential for further exploration. Emerging topics such as the implications of CEO overconfidence on investment decisions and trading volume show the interconnectedness of behavioural finance in the corporate context.

CONCLUSIONS

The aim of the study is to systematically map and analyse the evolution of overconfidence research within behavioural finance from 1987 to 2024, identifying key trends, influential works, and emerging research networks using bibliometric analysis of Web of Science data. The results of this study show that behavioural overconfidence in the context of finance is fragmented into five main clusters namely personal investment, financial markets, mergers & acquisitions, corporate finance and risk management which can be used as a reference for the direction of overconfidence research in the context of finance in the future. The identification of clusters in this study can practically be used by stakeholders to develop policies to mitigate overconfidence behaviour so as to produce quality financial decisions.

The main limitation relates to the clustering of overconfidence behaviour in the financial context only refers to historical evidence, future research can use field surveys to produce a more comprehensive cluster of overconfidence behaviour in the financial context.

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