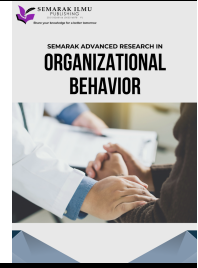




Semarak Advanced Research in Organizational Behaviour

Journal homepage:
<https://semarakilmu.com.my/journals/index.php/sarob/index>
ISSN: 3030-6264



Bibliometric Analysis on Chief Executive Officer (CEO) Characteristics

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ARTICLE INFO

Article history:

Received 20 November 2024

Received in revised form 7 Dec 2024

Accepted 12 December 2024

Available online 20 December 2024

Keywords:

CEO characteristics; CEO attributes; manager characteristics; manager attributes; bibliometric analysis

ABSTRACT

This paper provides a comprehensive analysis of research focused on the characteristics of Chief Executive Officers (CEOs). The purpose of conducting a bibliometric analysis of CEO characteristics is to systematically evaluate. Using bibliometric techniques, this analysis aims to identify trends, patterns and influential publications in the field, as well as reveal the most cited works, leading authors, and significant research gaps. Such an approach helps provide a quantitative overview of how research on CEO characteristics has evolved and highlights the interconnections between different studies and themes. To achieve this objective, this study analyzed 280 publications published between 1992 and 2024, obtained from the Scopus database, using bibliometrics, content analysis, and network approach methods. Data was analyzed using VOSviewer, MS Excel and Harzing's Publish or Perish software. The findings reveal a significant increase in research activity in this domain over the past 34 years, peaking in 2023. This surge is mainly due to enhanced channels for scholarly dissemination and concerted efforts in the academic community, particularly in the United States, China and Malaysia. Ultimately, this bibliometric analysis serves as a tool to deepen understanding of the research landscape on CEO traits, guide future investigations, and foster the development of new theoretical and practical insights.

1. Introduction

The aspiration to become a Chief Executive Officer (CEO) is a common goal among many executives. At the same time, one of the most important tasks for a board of directors is finding and selecting the right person for this pivotal role. Despite its significance, there is still a limited understanding of what sets CEO candidates apart, how CEOs differ from other senior leaders, and the criteria boards use to choose CEOs from a pool of contenders [1].

CEOs come from all walks of life, representing a wide range of backgrounds in terms of economic status, education, family upbringing, gender, race, nationality, age and experience [2]. However, the journey to becoming a CEO is rarely defined by background alone or mere chance. Instead, it is built on consistent performance and the demonstration of key qualities such as assertiveness,

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<https://doi.org/10.37934/sarob.3.1.2146>

dependability, strong decision-making skills, and the ability to navigate complex challenges with courage. These traits form the foundation for success as a CEO, providing a framework for effective and sustainable leadership [3].

The CEO's role is central to the success of any organization, both strategically and operationally. As the highest-ranking executive, the CEO is responsible for crafting and executing strategies that align with the company's long-term goals, while also ensuring that day-to-day operations run smoothly and sustainably [4]. Beyond these responsibilities, the CEO plays a crucial role in earning the trust and confidence of stakeholders and shareholders, often through transparent communication such as sustainability reports and other key updates [5].

A CEO's effectiveness is often judged by how well the organization performs under their leadership, especially in terms of financial results. These outcomes serve as a reflection of the CEO's ability to steer the company toward its goals and maintain its competitive edge. Research consistently shows a strong link between a CEO's leadership and the overall success of the company, emphasizing how vital this role is for driving growth and sustainability [6]. This study conducted by Siregar *et al.*, [7] and Muttaqin [8].

Therefore, studying the characteristics of CEOs and the processes involved in their selection sheds light on the complexities of corporate leadership and governance. Understanding these dynamics can help organizations identify leaders who will not only succeed in the role but also drive long-term value and innovation. Despite the substantial body of research on the relationship between CEO characteristics and organizational outcomes, significant gaps persist in understanding the full complexity of how these traits influence leadership effectiveness, especially in diverse global contexts.

Moreover, existing research has predominantly concentrated on observable factors like financial performance and operational efficiency. However, less attention has been paid to psychological factors, including cognitive abilities and personality traits, which deeply influence decision-making. While studies in business, management, and finance have examined the tangible characteristics of CEOs, less attention has been paid to how cognitive biases, personality traits, and social dynamics shape decision-making and organizational success.

The Upper Echelon Theory (UET) suggests that the decisions made by top executives are influenced by their personal backgrounds, experiences, and perspectives, which in turn can lead to different strategic choices and affect the performance of the organization. This theory resonates with the study's focus on understanding how the traits of top management teams shape the quality of their decisions and the overall satisfaction with the outcomes [9].

2. Literature Review

The evolution of CEO characteristics over time can be understood through the lens of the Upper Echelons Theory (UET), initially proposed by Hambrick *et al.*, [10]. This foundational framework underscores the idea that the personal attributes and past experiences of top executives significantly influence their decision-making, thereby shaping the organization's strategic trajectory and overall performance [11]. Since strategic decisions not only affect the organizations that make them but also have broader implications for society as a whole [12], it's no surprise that strategic decision-making has become a key area of research Nooraie [13,14]. According to UET, the unique characteristics of top executives play a key role in determining how they approach challenges and opportunities, ultimately influencing organizational outcomes [15]. This study conducted by Hambrick [16]. In essence, the theory highlights the profound effect individual leaders can have on their organizations, with their responses shaped by their personal traits [17].

In line with UET, a company's performance is deeply intertwined with the experiences, values, and personalities of its top executives [18]. These characteristics can be grouped into two main categories: observable traits and psychological factors. Observable traits, such as age, educational background, career history, socioeconomic status, financial standing, and professional affiliations, serve as indirect indicators of a CEO's effectiveness and their influence on organizational success [19]. On the other hand, psychological factors, including cognitive abilities and core values, reflect the deeply ingrained and enduring aspects of a CEO's personality. These elements shape how they perceive the world around them and influence their strategic thinking and decision-making processes [20].

This dual categorization offers a well-rounded perspective for understanding how a CEO's inherent traits impact their ability to identify and address organizational challenges. These personal attributes form the foundation for effective leadership, enabling CEOs to steer their companies through complex and unpredictable business environments. The stronger and more well-rounded these traits, the more likely a CEO is to create significant value for their organization.

In essence, UET offers a strong theoretical foundation for understanding how CEOs' characteristics both visible and intangible shape their strategic choices and, in turn, drive organizational performance. By highlighting the role of leadership traits in corporate success, the theory provides valuable insights for both academic research and practical applications, particularly in the selection and development of top executives.

Furthermore, based on the study conducted by Sugiharto *et al.*, [21] a bibliometric analysis of evolving trends in CEO characteristics and financial performance research provides an insightful overview of how research has developed around the connection between CEOs' traits and corporate financial performance. The findings reveal a strong relationship between CEO characteristics and financial performance, although the body of integrated research in this area remains relatively underdeveloped.

The study Sugiharto *et al.*, [22] highlights the importance of specific CEO traits, such as age, tenure, nationality, and expertise, in shaping corporate outcomes. It also identifies regional differences as a significant gap in the existing literature. For example, there is a need to better understand how leadership characteristics vary in different parts of the world, such as Asia compared to Europe or America. Using bibliometric mapping and keyword analysis, the study organizes the research landscape and provides context for how CEO characteristics influence financial performance.

Despite these advancements, there is limited research from Asia on the impact of leadership traits on corporate performance. Most studies in this area primarily focus on CEO attributes such as age, educational attainment, experience, nationality, tenure, and financial background. Existing research has predominantly examined countries such as Malaysia [23] and [24], Indonesia [25] and [26], Vietnam [27] and India [28]. This underscores the need for further exploration of the nuances in CEO characteristics and their impact on performance within the Asian context.

The research clearly shows that CEO characteristics like age, tenure, nationality, expertise, educational background, and financial experience play a key role in shaping a company's financial performance. However, these studies often overlook psychological factors, such as cognitive abilities and personality traits, which can greatly influence decision-making. The main point of these findings is that it is crucial to combine psychology with management theory to better comprehend how CEO traits affect an organization's success. They also highlight the need for more research on how a CEO's personality interacts with different organizational and environmental factors. This approach could offer a deeper understanding of leadership effectiveness and provide useful insights for improving executive performance in various contexts.

The studies discussed offer important insights into how CEO personality traits influence corporate outcomes, particularly in areas like strategic decision-making, risk-taking, and overall firm performance. The study conducted by Harrison *et al.*, [29] developed a unique linguistic tool to measure CEOs' Big Five personality traits openness, conscientiousness, extraversion, agreeableness, and neuroticism. Validated with established psychometric instruments, their research highlights how these traits shape strategic change and firm performance, with the impact varying based on how well the firm has been performing. This work adds depth to the upper echelon theory, offering a strong foundation for future studies into how personality affects decision-making and team dynamics at the top level of organizations.

In another significant contribution, the study from Benischke *et al.*, [30] explore how CEO personality traits influence the relationship between equity risk bearing and strategic risk-taking. Drawing on behavioral agency theory, they reveal that CEOs' perceptions of risk are deeply influenced by their individual personalities. Their study demonstrates how traits like low conscientiousness, high extraversion, and high openness can transform the way CEOs approach equity incentives, turning what might typically discourage risk-taking into an encouragement for bold strategic moves. This perspective challenges traditional assumptions in agency theory, highlighting the need to consider the psychological factors that drive executive decision-making under uncertainty.

Based on the above research, despite extensive research on the relationship between CEO characteristics and financial performance, significant gaps persist, especially when understanding how these dynamics vary. Most of the existing literature on CEO characteristics focuses on measurable factors such as financial performance and operational efficiency, there is a significant gap in the exploration of the psychological, social and economic dimensions that influence CEO leadership style and decision making. Traditional studies in accounting, business and finance have mainly examined the significant effects of CEO characteristics, often ignoring how personality, cognitive biases, social dynamics and cultural factors shape leadership effectiveness.

The lack of this approach also limits the depth and breadth of insight into this topic, as fields such as psychology, sociology and economics remain underexplored in relation to CEO characteristics. Despite extensive research on the relationship between CEO characteristics and financial performance, significant gaps persist, especially when understanding how these dynamics vary across different countries. Much of the existing research has focused heavily on Western regions such as the United States and Europe, leaving a limited understanding of how CEO characteristics impact corporate outcomes in emerging markets in Asia. The region has a unique cultural, economic and regulatory landscape that may influence leadership styles in ways not fully explored by current research.

Therefore, the objective of this study is to analyze the relationship between both observable traits and psychological factors in determining CEO effectiveness and organizational success. Additionally, to explore the importance of integrating psychological, sociological, and economic dimensions in understanding CEO leadership, particularly in how these factors shape decision-making, organizational outcomes, and CEO behavior. To bridge the gap between business, accounting, finance, and social sciences by proposing a comprehensive framework that incorporates interdisciplinary insights for understanding the relationship between CEO characteristics and corporate performance.

This study aims to contribute theoretical insights and practical applications to improve CEO leadership effectiveness, foster organizational success, and address research gaps in regional and interdisciplinary studies on CEO characteristics by achieving this objective. This study is deeply valuable in addressing critical gaps in our understanding of CEO characteristics. By exploring a wider

range of factors that shape CEO effectiveness, it brings together insights from psychology, sociology, and economics, alongside traditional fields like business, management, and finance. Through a bibliometric analysis of 280 publications spanning over three decades, it sheds light on how research into CEO traits has evolved, how these traits influence organizational success, and their broader impact on society.

3. Methodology

This study used a thorough bibliometric approach to explore research in leadership and management, specifically focusing on the characteristics and attributes of CEOs and managers. The analysis provided valuable insights into the development of the field, highlighting influential papers and mapping the connections between different research topics. The careful process of data collection and analysis ensured that the results were both comprehensive and relevant, offering a solid foundation for understanding the trends and progress in leadership studies.

However, the study is not without its limitations. As is common with bibliometric analyses, the reliance on citation counts can be problematic due to potential citation biases. Highly cited papers may not always represent the most innovative or impactful research, and older publications tend to accumulate more citations, which can distort the representation of newer contributions. Furthermore, while the study focused on articles in English, it may have missed important research published in other languages, potentially narrowing the global perspective of the findings. The selection of keywords also played a significant role in shaping the scope of the research, meaning that some relevant studies may have been overlooked due to variations in terminology or the specific focus of the search criteria.

3.1 Bibliometric Assessment

Bibliometric analysis is an exciting and precise way to explore the world of scientific research. It allows researchers to uncover the history of how a discipline has developed over time, while also shining a light on new and emerging areas of study [31]. The study conducted by Linnenluecke *et al.*, [32] describe bibliometric assessment as a structured way to make sense of the vast amounts of information found in books, journal articles, and other academic documents. By applying statistical tools, this method reveals patterns, trends, and connections that might otherwise go unnoticed [33].

A key component of bibliometric analysis is citation analysis, a specialized tool that uses citation graphs to map the connections between references in published works. Furthermore, it creates a network or graphical representation of how documents cite one another. Originally developed within the field of library and information sciences, this tool has proven highly effective for assessing the impact of research on various topics. Citation analysis can evaluate not only the influence of specific studies but also the contributions of individual researchers, the significance of published materials, and the identification of landmark papers in a given area of study [34].

3.2 Procedure Analysis

On November 5, 2024, a thorough search for relevant academic articles was conducted using the Scopus database, a highly respected and widely used source of scholarly literature. The goal of this search was to gather studies focusing on leadership and management, with a particular emphasis on the characteristics and attributes of CEOs and managers. To ensure precision, the search specifically targeted articles with titles that included key phrases such as “CEO Characteristics,” “CEO Attributes,”

“Manager Characteristics,” or “Manager Attributes.” These keywords were carefully selected to capture research directly addressing the personal and professional traits of individuals in leadership roles.

To maintain the quality and relevance of the search results, several criteria were applied. The search was restricted to works published in English, ensuring the content would be accessible and easily understood by an international audience. This helped focus the dataset on studies that could contribute broadly to the field. Additionally, a systematic process of screening and filtering was employed to refine the results, eliminating duplicate or irrelevant records and narrowing down the selection to a manageable and meaningful collection of articles.

The detailed process of data retrieval and refinement is visually summarized in Figure 1, [35,36] which provides a clear outline of the methodology. This figure illustrates the logical progression from the initial input of keywords to the final compilation of selected articles, ensuring transparency and rigor in the research process. By following this structured approach, the search yielded a strong and reliable foundation of data, setting the stage for detailed analysis and discussion in the study.

3.3 Data Analysis

For this study, researchers collected a total of 280 documents from the Scopus database. These documents provided a wealth of information, including the names of authors, paper titles, keywords, publication years, cited references, and other publishing details, all formatted as plain text. To gain a better understanding of the data, descriptive analysis was employed to extract meaningful insights. For example, it reveals publication trends over the years, identifies the most active journals in the field, highlights the countries that contribute the most research, and shows the most prolific authors driving the conversation in the field.

When it came to citation analysis, the study used Harzing’s Publish or Perish software to dig deeper into citation metrics. This helped identify the most widely cited and influential papers on the research topic, giving a sense of which studies have had the greatest impact. To uncover relationships and patterns within the data, the team turned to VOSViewer, a powerful tool for network and bibliometric analysis. This software allowed them to visualize connections, map collaborations, and understand how ideas and research topics were linked.

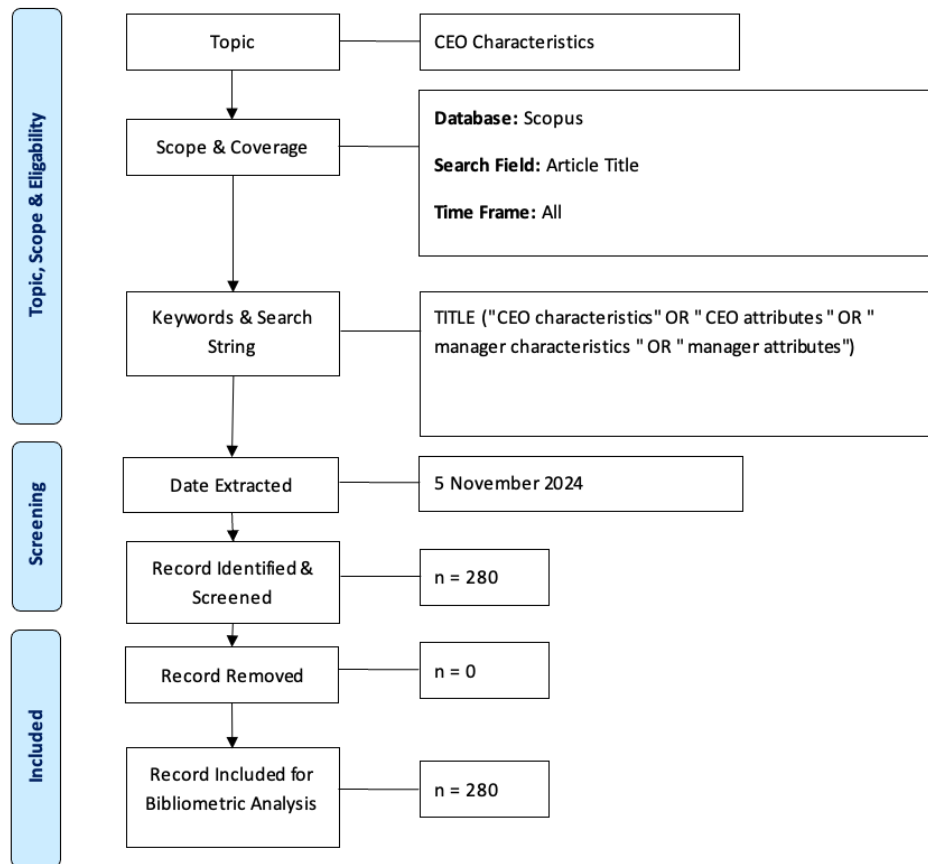


Fig. 1. Flow diagram of the search strategy

4. Results

This bibliometric analysis study provides a detailed look at the research landscape focused on CEO characteristics. Using data from the Scopus database, the analysis uncovers important trends, identifies influential researchers, and highlights emerging themes in this field. It demonstrates how research in this field has changed over time and clearly illustrates the growing scholarly interest in comprehending how CEO attributes affect organisational success.

4.1 Publishing Activity

Table 1

Document type

Document Type	Total Publications (TP)	Percentage (%)
Article	255	91.10
Review	6	2.14
Book Chapter	6	2.14
Conference Paper	11	3.93
Short Survey	2	0.71
Total	280	100.00

Table 1 provides the types of documents among the 280 publications analyzed, highlighting their total numbers and percentage contributions. The majority of publications, with 255 publications, or 91.10% of the total, underscoring their role as the primary way researchers share their findings in

academic and scientific communities. Conference papers account for 11 publications, representing 3.93% of the total.

Book chapters and reviews each contribute 6 publications, making up 2.14% of the total. The inclusion of book chapters indicates contributions to collaborative volumes or edited collections, which typically focus on specific themes. Reviews, while fewer in number, provide valuable syntheses and analyses of existing research, helping to frame the current state of knowledge. Finally, short surveys account for just 2 publications, or 0.71% of the total, making them the smallest category.

Table 2

Source type

Source Type	Total Publications (TP)	Percentage (%)
Journals	262	93.57
Book	5	1.79
Conference Proceed	10	3.57
Book Series	3	1.07
Total	280	100.00

Table 2 presents the distribution of publication sources among 280 scholarly works, categorized by type and their percentage contributions. Journals emerge as the most significant source, comprising 262 publications, or 93.57% of the total. This highlights the central role journals play in sharing peer-reviewed research and upholding academic standards. Conference proceedings account for 10 publications, representing 3.57% of the total. These sources are especially valuable in fields where rapid dissemination of new findings is essential for keeping pace with emerging trends and fostering professional dialogue.

Books, with 5 publications (1.79%), and book series, with 3 publications (1.07%), have a smaller presence. These formats serve a more specialized role, often providing in-depth exploration of themes or topics in a format that allows for detailed discussion, though they are less frequent and immediate compared to journal articles or conference papers.

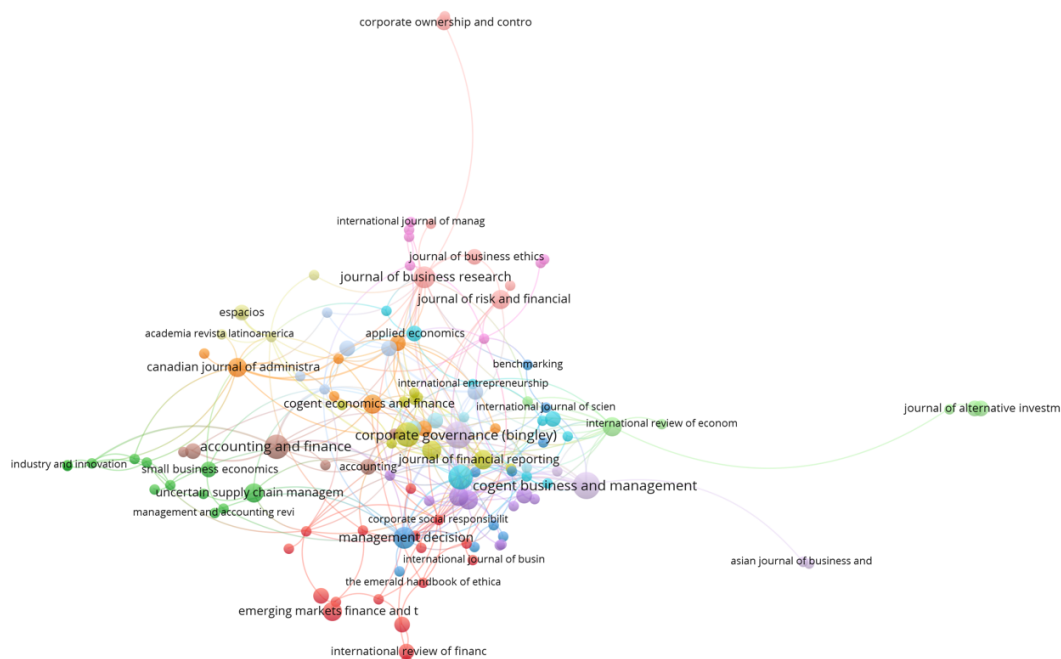


Fig. 2. Most active source title

Figure 2 provides a visualization of how academic journals connect and interact through citation and co-citation patterns, offering a glimpse into the collaborative and thematic landscape of research in business, management, and finance. Each node in the network represents a journal, and the lines between them indicate the strength of their relationships whether through shared citations, common research themes, or overlapping audiences. The size of a node reflects a journal's prominence or influence in the network, while the colors highlight clusters of journals that share closely related subject matter or research focuses.

At the centre of the network, journals like "Corporate Governance (Bingley)," "Accounting and Finance," and "Cogent Business and Management" stand out as central hubs. These journals are highly influential and serve as critical connectors, linking multiple clusters and facilitating the flow of knowledge across different areas of study. Their central position shows their widespread use and reliance by researchers as foundational sources. Nearby, journals such as "Journal of Business Research" and "Journal of Risk and Financial Management" reflect similar themes, particularly in corporate governance, financial management, and business ethics, creating a rich, interconnected core that anchors the network.

On the edges of the network, journals like "Journal of Alternative Investments" and "Corporate Ownership and Control" appear more isolated, indicating their focus on niche topics such as alternative finance or corporate control structures. While these journals cater to specialized audiences, their unique contributions are essential for addressing specific questions that might not align with mainstream business and management research.

The dense connections in the central region of the network demonstrate that journals in this area frequently cite and are cited by one another, highlighting their role in advancing core theories and methodologies within the field. In contrast, the sparser connections in the outer regions of the network point to opportunities for fostering collaboration between specialized and more mainstream journals. Bridging these gaps would enable researchers to encourage more interdisciplinary dialogue and integration, which would broaden the impact of niche studies.

Overall, Figure 2 captures the dynamic relationships between academic journals in business and related fields, showcasing a delicate balance between the centrality of influential journals and the diversity of specialized outlets. It underscores how central journals shape the academic discourse while also highlighting the valuable contributions of niche and regionally focused journals. This interconnected web of knowledge emphasizes the collaborative nature of research and the ongoing opportunities to enhance knowledge exchange across disciplines and boundaries.

Table 3

Languages

Language	Total Publications (TP)*	Percentage (%)
English	274	97.86
French	1	0.36
Spanish	1	0.36
Chinese	1	0.36
Portuguese	1	0.36
Korean	2	0.71
Total	280	100.00

Table 3 provides an overview of the languages used in the 280 scholarly works analyzed, showing their total numbers and percentage contributions. As expected, English is the dominant language, with 274 publications, making up 97.86% of the total. This reflects the global role of English as the primary language of academia, particularly in disciplines where international collaboration and visibility are key to success. Other languages play a much smaller role, with Korean accounting for 2

publications (0.71%), and French, Spanish, Chinese, and Portuguese each contributing just 1 publication (0.36%). The limited presence of non-English publications highlights the preference for English as a medium for reaching a global audience and maximizing research impact.

3.2 Publication by Year and Subject Area

Table 4

Subject area

Subject Area	Total Publications (TP)	Percentage (%)
Psychology	5	1.79
Medicine	5	1.79
Social Sciences	54	19.29
Arts and Humanities	3	1.07
Nursing	4	1.43
Health Professions	1	0.36
Biochemistry, Genetics and Molecular Biology	1	0.36
Business, Management and Accounting	203	72.5
Agricultural and Biological Sciences	2	0.71
Engineering	16	5.71
Economics, Econometrics and Finance	112	40
Multidisciplinary	2	0.71
Mathematics	2	0.71
Pharmacology, Toxicology and Pharmaceutics	2	0.71
Energy	9	3.21
Decision Sciences	25	8.93
Computer Science	15	5.36
Environment Science	13	4.64
Chemical Engineering	1	0.36
Materials Science	1	0.36

Table 4 provides an overview of the subject areas covered by the 280 publications, showing the total number and percentage of contributions across different fields. Business, Management, and Accounting stands out as the most prominent subject area, with 203 publications, making up 72.5% of the total. This reflects the strong focus of the research on business and management topics, which aligns with the central theme of the study. Economics, Econometrics, and Finance follows with 112 publications (40%), while Social Sciences accounts for 54 publications (19.29%), highlighting a clear interdisciplinary overlap between business, social, and financial domains. Together, these three fields represent the majority of the research, underscoring their critical role in the body of work.

Other fields, such as Decision Sciences (25 publications, 8.93%) and Engineering (16 publications, 5.71%), also contribute, reflecting the application of analytical and technical perspectives. Computer Science (15 publications, 5.36%) and Environmental Science (13 publications, 4.64%) show moderate representation, signaling their increasing relevance in modern research. Smaller contributions come from areas like Energy (9 publications, 3.21%), Psychology and Medicine (5 publications each, 1.79%), and Arts and Humanities (3 publications, 1.07%). Fields such as Agricultural and Biological Sciences, Mathematics, Pharmacology, and Multidisciplinary Studies each account for 2 publications (0.71%). Meanwhile, Health Professions, Biochemistry, Chemical Engineering, and Materials Science contribute minimally, with just 1 publication each (0.36%).

This data highlights a strong emphasis on business and management-related disciplines, supported by significant representation from economics, social sciences, and decision sciences. In contrast, fields like natural sciences, health sciences, and technical disciplines play a smaller role, reflecting a focus on research that examines organizational, financial, and systemic frameworks.

While interdisciplinary and technical areas provide valuable complementary perspectives, the primary focus remains on management-oriented studies.

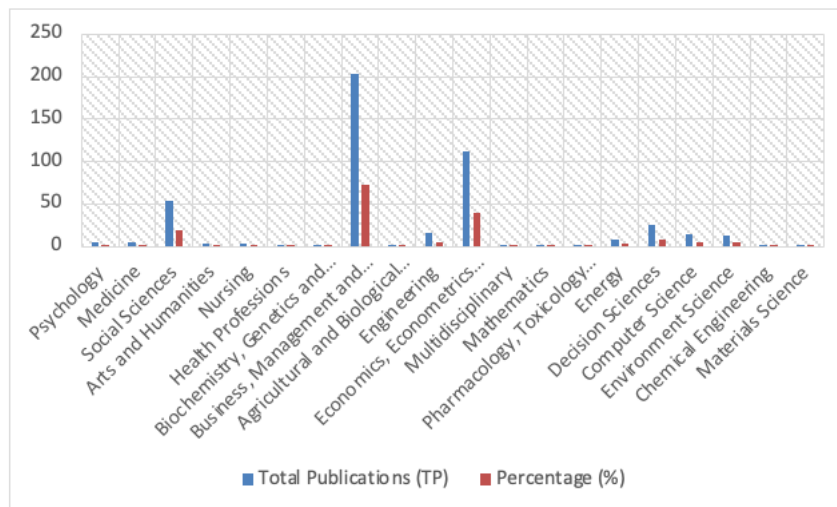


Fig 3. Distribution of academic publications by subject area

Figure 3 provides a chart showing how academic publications are distributed across various subject areas, highlighting both the total number of publications (TP) and their percentage contributions. The data reveal noticeable differences in publication volume between fields, shedding light on areas where research activity is highly concentrated and those with more modest contributions. For example, Business, Management, and Accounting stands out as the field with the most publications, reflecting its vital role in tackling complex problems and supporting decision-making in a rapidly evolving world. Similarly, Economics, Econometrics, and Finance also sees a high volume of research, highlighting its practical importance in addressing financial systems, markets, and broader economic challenges.

Fields with moderate representation, like Social Sciences and Decision Sciences, demonstrate steady academic interest, likely due to their relevance in addressing pressing global issues such as social inequalities, governance, and sustainable development. In contrast, areas such as Mathematics, Energy, and Materials Science report lower publication volumes. This may be due to their narrower focus or the need for additional investment in resources and funding to enhance research output in these specialized fields. Meanwhile, multi-disciplinary research shows notable activity, reflecting an encouraging trend of collaboration across traditional academic boundaries. This type of research plays a key role in addressing the increasingly complex issues facing society today, from climate change to technological advancement.

The percentage of each field's contribution provides a deeper understanding of its relative importance in the broader research landscape. Although fields with high publication output dominate, fields with fewer contributions still provide valuable insights and play an important role in advancing specialized knowledge. This distribution reflects the dynamic priorities of research institutions and funding bodies, which continue to evolve in response to changing societal and industrial demands.

Table 5
 Year of publication

Year	TP	NCP	TC	C/P	C/CP	h	g
2024	38	13	35	0.92	2.69	3	4
2023	42	27	157	3.74	5.81	7	10
2022	29	24	235	8.10	9.79	9	13
2021	22	17	279	12.68	16.41	9	16
2020	27	25	686	25.41	27.44	16	26
2019	16	14	354	22.12	25.29	11	16
2018	12	12	376	31.33	31.33	9	12
2017	16	13	469	29.31	36.08	9	16
2016	12	10	117	9.75	11.70	6	10
2015	9	9	285	31.67	31.67	7	9
2014	8	8	562	70.25	70.25	5	8
2013	4	3	605	151.25	201.67	3	4
2012	7	6	627	89.57	104.50	5	7
2011	8	8	783	97.88	97.88	7	8
2010	9	7	442	49.11	110.50	4	9
2009	2	2	150	75	75	2	2
2007	3	3	42	14	14	2	3
2006	3	3	180	60	60	3	3
2005	2	2	118	59	39.33	2	2
2003	1	1	23	23	23	1	1
2002	1	1	994	994	994	1	1
1998	2	2	219	109.5	109.50	2	2
1997	2	2	69	34.5	34.5	1	2
1996	1	1	165	165	165	1	1
1995	1	1	585	585	585	1	1
1994	1	1	217	217	217	1	1
1993	1	1	6	6	6	1	1
1992	1	1	87	87	87	1	1
Total	280						

Notes: TP=total number of publications; NCP=number of cited publications; TC=total citations; C/P=average citations per publication; C/CP=average citations per cited publication; h=h-index; and g=g-index.

Table 5 offers a detailed look at academic publications over the years, showcasing key metrics such as total publications (TP), number of cited publications (NCP), total citations (TC), and averages like citations per publication (C/P) and citations per cited publication (C/CP), along with h-index and g-index scores. This dataset helps to understand how academic output and its impact have evolved over time, highlighting important trends in research productivity and influence.

In recent years, particularly between 2020 and 2024, there has been a noticeable surge in the number of publications, peaking at 42 in 2023. However, while the volume of publications is high, the citation metrics for these years are still catching up. For instance, in 2024, the C/P value is 0.92 and the C/CP is 2.69, reflecting the natural delay in citations accumulating for newer work. In contrast, older publications, such as those from 2012 and 2011, display much higher citation averages, with a C/P of 89.57 and 97.88 respectively, showing their sustained influence over time. This pattern demonstrates how impactful earlier research can remain relevant and widely cited even years after publication.

Before 2010, publication volumes were significantly lower, with most years producing just one to three papers annually. Despite the lower output, some of these early works achieved remarkable impact. For example, a single paper from 2002 garnered an impressive 994 citations, giving it exceptionally high citation averages. Similarly, a paper from 1995 accumulated 585 citations,

highlighting how certain studies from earlier periods continue to hold significant academic value. These examples show that even a small number of highly influential papers can leave a lasting legacy in the research community.

The h-index and g-index further emphasize the growing momentum of academic output in recent years. For publications after 2020, the h-index reaches as high as 16, and the g-index peaks at 26 in 2020, reflecting the growing recognition and impact of research produced during this time. By comparison, earlier years naturally show lower indices due to fewer publications and a more limited citation base.

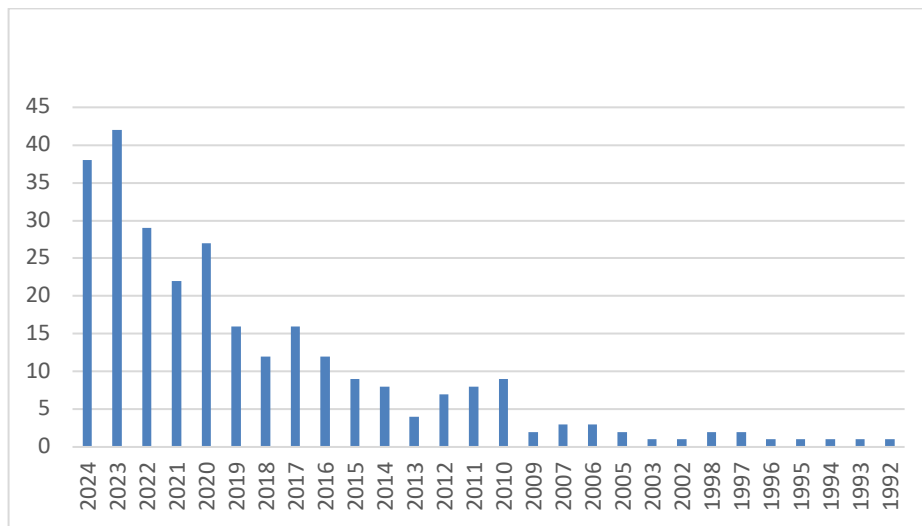


Fig. 4. Total publications by year

Figure 4 illustrates how academic publications have evolved over time, spanning from 1992 to 2024, with a clear focus on the remarkable growth in recent years. The vertical axis reflects the number of publications, while the horizontal axis marks the years. A notable takeaway from the data is the sharp rise in publications starting in 2020, culminating in the highest numbers recorded in 2023. This surge reflects an era of accelerated scholarly activity, driven by advancements in technology. These factors have not only expanded the scale of research but have also sped up its production, underscoring how the world has rallied to solve pressing issues through academic inquiry.

Before this rapid rise, between 2005 and 2019, there was steady but moderate growth in research output. This period coincides with the global expansion of higher education and investment in research, alongside growing recognition of academia’s role in societal and economic progress. The adoption of digital tools and increased international collaboration during these years helped lay the groundwork for the more recent surge.

Looking further back, from 1992 to the early 2000s, publication numbers were relatively low. This may reflect a smaller global research community at the time, fewer publishing opportunities, and less emphasis on fields that have since gained prominence. It’s also natural that older works are less visible today, as newer research builds upon and often surpasses earlier contributions.

Table 6

Most influential institutions with minimum of four publications (AFFILIATION)

Affiliation	Country	TP	% (n=280)
University Utara Malaysia	Malaysia	10	3.57
College of Business, University Utara Malaysia	Malaysia	7	2.5
University of Sfax	Tunisia	6	2.14

FSEG Sfax - Faculté des Sciences Économiques et de Gestion de Sfax	Tunisia	6	2.14
Yarmouk University	Jordan	5	1.79
Universitas Sebelah Maret	Indonesia	5	1.79
University of Kansas School of Business	United States	4	1.43

Notes: TP=total number of publications; NCP=number of cited publications; TC=total citations; C/P=average citations per publication; C/CP=average citations per cited publication; h=h-index; and g=g-index.

Table 6 provides a closer look at the institutions and their respective countries that have contributed to a total of 280 academic publications. It highlights the diversity and global nature of academic research, showcasing how institutions across different regions play pivotal roles in advancing knowledge. At the forefront is University Utara Malaysia, which stands out as the leading contributor with 10 publications, accounting for 3.57% of the total output. This reflects the university's strong focus on academic research and its prominent position within Malaysia's academic landscape.

Another notable contributor is the College of Business, University Utara Malaysia, with 7 publications (2.5%). Together, these findings underline Malaysia's growing influence in global research, particularly in business and management disciplines. In Tunisia, the University of Sfax and its affiliated institution, FSEG Sfax - Faculté des Sciences Économiques et de Gestion de Sfax, have each contributed 6 publications (2.14% each). This highlights Tunisia's dedication to advancing research in fields like economics and management, and its commitment to fostering a strong academic presence on the global stage.

Similarly, Yarmouk University in Jordan and Universitas Sebelas Maret in Indonesia each contributed 5 publications (1.79%). These outputs underscore the important role these institutions play, not only within their regions but also in the broader international research community. Their contributions showcase a commitment to academic progress that transcends borders. In the United States, the University of Kansas School of Business has contributed 4 publications (1.43%). While smaller in number compared to other contributors, its role highlights the institution's commitment to producing high-quality research, particularly in business and management studies, which resonate globally.

3.3 Publishing by Country

Table 7
 Top 20 Countries contributed to the publications

Country	TP	% (n=280)
United States	54	19.29
China	37	13.21
Malaysia	27	9.64
Indonesia	19	6.79
United Kingdom	17	6.07
India	15	5.36
Saudi Arabia	13	4.64
South Korea	13	4.64
Spain	12	4.29
Tunisia	12	4.29
Taiwan	11	3.93
Australia	10	3.57
France	10	3.57
Canada	8	2.86
Belgium	7	2.5
Pakistan	7	2.5

Country	TP	% (n=280)
Germany	6	2.14
Italy	6	2.14
Jordan	6	2.14
Viet Nam	6	2.14

Notes: TP=total number of publications; NCP=number of cited publications; TC=total citations; C/P=average citations per publication; C/CP=average citations per cited publication; h=h-index; and g=g-index.

Table 7 highlights the contributions of the top 20 countries to a collection of 280 academic publications, showing both the total number of publications (TP) and their percentage of the overall output. The United States stands out as the leading contributor, with 54 publications making up 19.29% of the total, followed by China with 37 publications (13.21%). Malaysia takes third place with 27 publications (9.64%), showcasing its growing influence in the academic research landscape. Other key contributors include Indonesia, which produced 19 publications (6.79%), and the United Kingdom, contributing 17 publications (6.07%).

Countries like India, with 15 publications (5.36%), and Saudi Arabia and South Korea, each contributing 13 publications (4.64%), also play significant roles. Spain and Tunisia, each with 12 publications (4.29%), further highlight the global nature of research contributions. Taiwan, with 11 publications (3.93%), along with Australia and France, each contributing 10 publications (3.57%), represent middle-tier contributors in terms of volume. The list also includes smaller yet notable contributions from countries such as Canada (8 publications, 2.86%), Belgium and Pakistan (7 publications each, 2.5%), and Germany, Italy, Jordan, and Vietnam, with 6 publications each (2.14%).

This data reveals the global diversity of research contributions, with countries from North America, Asia, Europe, and the Middle East playing prominent roles. The dominance of the United States and China reflects their substantial investment in research and their leadership in global scholarship. However, the contributions from smaller countries, such as Tunisia and Jordan, demonstrate that impactful research is not limited to major economies, showcasing the inclusive and international nature of academic collaboration.

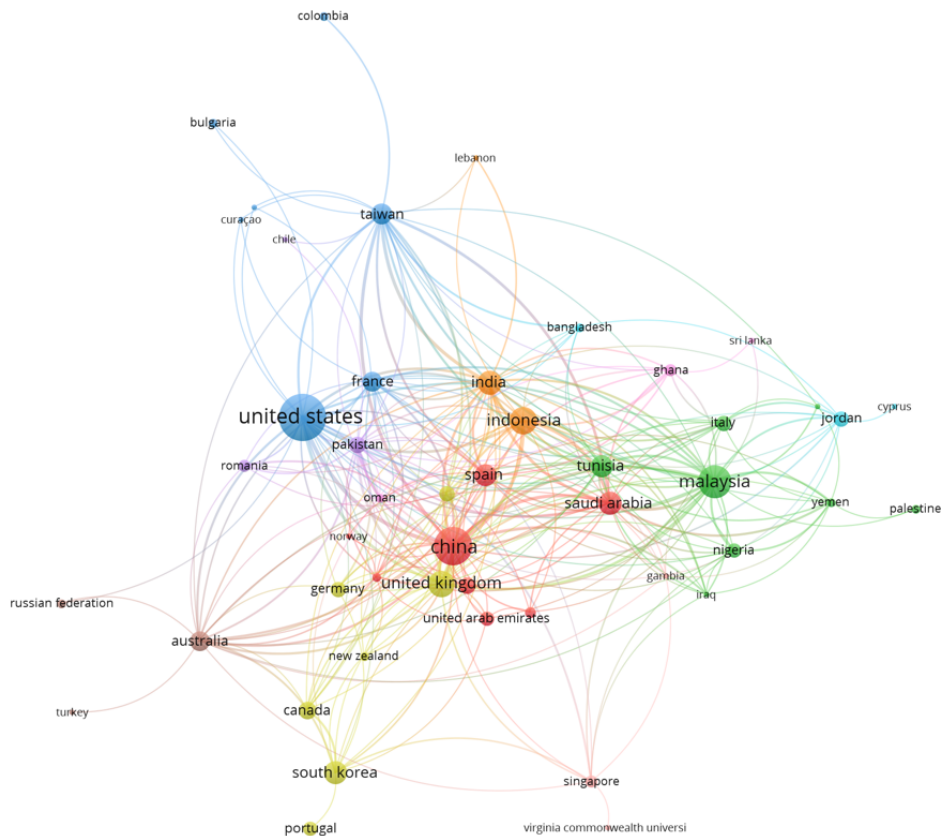


Fig. 5. Countries of research contributions based on publications

Figure 5 offers a glimpse into the global academic collaboration landscape, showcasing how countries connect and partner through research. Each node in the network represents a country, while the lines between them show the strength and frequency of their collaborations. Larger nodes, such as those for the United States, China, India, and the United Kingdom, stand out as central hubs in the network. These countries are deeply embedded in the global academic fabric, with extensive connections to many others. The United States, in particular, plays a dominant role, driven by its robust research funding, expansive resources, and well-established international partnerships.

The graph also reveals regional clusters, indicated by distinct colors. For example, European nations like France, Spain, and Germany show strong connections within their cluster, likely influenced by shared research programs and collaborations under the European Union framework. In another region, countries such as Malaysia, Saudi Arabia, and Jordan form a cluster that reflects partnerships within the Middle East and Southeast Asia. These clusters highlight how geographic proximity and cultural ties shape collaboration patterns, making regional partnerships a vital component of global research.

On the other hand, some countries, such as Colombia, Bulgaria, and Curacao, appear more isolated within the network. These smaller or less-connected nodes suggest limited participation in international research, often due to challenges like resource constraints or less-developed academic infrastructures. Despite these challenges, their presence in the network signals potential opportunities for growth and inclusion through targeted support and collaboration.

Bridge countries, such as Australia and Canada, play an essential role in linking different parts of the network. Australia, for example, connects Western academic institutions with the Asia-Pacific region, while Canada acts as a bridge between North America and other global regions. Similarly,

countries like China and India serve as intermediaries, linking Asian research networks with Western academic hubs. These nations are vital in fostering cross-regional partnerships and promoting the flow of knowledge across the globe.

The network reflects the growing globalization of academic research, where knowledge production and collaboration are no longer confined by borders. At the same time, it highlights disparities, as some nations dominate the network while others remain on the periphery. Peripheral countries could benefit from increased research funding, capacity-building programs, and opportunities for international partnerships to become more actively engaged in global research efforts. Addressing these imbalances would create a more inclusive and equitable academic ecosystem.

3.4 Citation Analysis

Table 8

Citations metrics

Metrics	Data
Papers	280
Number of Citations	8867
Years	32
Citations per Year	277.09
Citations per Paper	31.67
Cites Author	4069.13
Papers_Author	127.95
Authors_Paper	2.68
h_index	43
g_index	90

Table 8 offers a snapshot of the academic influence and collaborative spirit behind 280 scholarly papers published over 32 years. Together, these works have garnered an impressive 8,867 citations, averaging 277.09 citations per year and 31.67 citations per paper. These figures reflect the significant impact and recognition this body of research has achieved within the academic community.

The data also sheds light on the authorship dynamics and how citations are distributed. The average number of citations per author, or "Cites_Author," stands at 4,069.13, highlighting that the authors involved in these papers are well-cited and influential in their respective fields. Additionally, with an average of 127.95 publications per author "Papers_Author", the dataset reveals that these contributors have been consistently active in advancing knowledge. The "Authors_Paper" metric, at 2.68, indicates that most of these works are co-authored, showcasing the collaborative nature of this academic community. This collaboration not only enriches the research but also underscores the value of collective efforts in tackling complex questions.

Key citation metrics, such as the h-index of 43, show that 43 of these papers have been cited at least 43 times, demonstrating both productivity and enduring influence. Meanwhile, the g-index of 90 highlights the remarkable contribution of highly cited papers, reflecting the dataset's depth of impact. These indices together signal that the research corpus holds substantial weight in its field, with both widely recognized individual papers and a strong collective influence.

High citation averages and metrics related to authorship demonstrate an engaged and well-regarded scholarly community. These 280 papers, which span over three decades, have made a lasting impact in their field, demonstrating the importance of collaboration and the ongoing value of rigorous academic research.

Table 9
 Top 10 highly cited articles

No.	Authors	Title	Year	Cites	Cites per Year
1	Barker, V.L, Mueller, G.C.	CEO characteristics and firm R&D spending	2002	994	45.18
2	Thong, J.Y.L, Yap C.S	CEO characteristics, organizational characteristics and information technology adoption in small businesses	1995	585	20.17
3	Lewis, B.W., Walls, J.L., Dowell, G.W.S	Difference in degrees: CEO characteristics and firm environmental disclosure	2014	417	41.70
4	Kaplan, S.N., Klebanov, M. M., Sorensen, M.	Which CEO Characteristics and Abilities Matter?	2012	409	34.08
5	Manner, M.H.	The Impact of CEO Characteristics on Corporate Social Performance	2010	362	25.86
6	Hsu, W.-T., Chen, H.-L., Cheng, C.-Y.	Internationalization and firm performance of SMEs: The moderating effects of CEO attributes	2013	333	30.27
7	Lin, C., Lin, P., Song, F.M., Li, C.	Managerial incentives, CEO characteristics and corporate innovation in China's private sector	2011	316	24.31
8	Buyl, T., Boone, C., Hendriks, W., Mattyssens, P.	Top Management Team Functional Diversity and Firm Performance: The Moderating Role of CEO Characteristics	2011	257	19.77
9	Huang, S.K.	The impact of CEO characteristics on corporate sustainable development	2013	232	21.09
10	Datta, D.K., Guthrie, J.P.	Executive succession: Organizational antecedents of ceo characteristics	1994	217	7.23

Table 9 highlights the top 10 most highly cited articles in the dataset, providing a glimpse into the impactful research that has shaped our understanding of how CEO characteristics influence organizational and corporate outcomes. These articles collectively focus on the critical role of leadership in strategic decisions, firm performance, and broader business dynamics, underscoring the profound influence of CEOs on the success and direction of their organizations.

Leading the list is the highly cited work by Barker, V.L., and Mueller, G.C., titled “CEO Characteristics and Firm R&D Spending” (2002), which has accrued 994 citations, averaging 45.18 citations per year. This study explores the connection between CEO traits and a firm’s investment in research and development, emphasizing how leadership decisions drive innovation and strategic resource allocation. Close behind is the article by Thong, J.Y.L., and Yap, C.S. (1995), titled “CEO Characteristics, Organizational Characteristics, and Information Technology Adoption in Small Businesses,” which has earned 585 citations (20.17 per year). This work highlights the pivotal role of CEOs in technology adoption, particularly in the context of small and medium-sized enterprises (SMEs), showcasing the intersection of leadership and technological progress.

Other influential contributions include the work of Lewis, B.W., Walls, J.L., and Dowell, G.W.S. (2014), titled “Difference in Degrees: CEO Characteristics and Firm Environmental Disclosure,” with 417 citations (41.70 per year). This study highlights the responsibility of CEOs in promoting environmental accountability, shedding light on the growing emphasis on corporate transparency and sustainability. Similarly, Kaplan, S.N., Klebanov, M.M., and Sorensen, M. (2012) in their article, “Which CEO Characteristics and Abilities Matter?” have garnered 409 citations (34.08 per year), contributing a nuanced understanding of how different CEO traits shape organizational success.

Other articles bring diverse perspectives to the discussion. For instance, Manner, M.H. (2010) examines the impact of CEO attributes on corporate social performance, while Hsu, W.-T., Chen, H.-L., and Cheng, C.-Y. (2013) investigate how CEO traits influence SME internationalization. The work of Lin, C., Lin, P., Song, F.M., and Li, C. (2011) explores managerial incentives in China’s private sector,

reflecting the global relevance of CEO research across industries and regions. The study by Buyl, T., Boone, C., Hendriks, W., and Matthyssens, P. (2011) focuses on the dynamics between top management team diversity and CEO characteristics, emphasizing the interplay of leadership and organizational performance. Finally, Huang, S.K. (2013) delves into CEO-driven sustainable development, and Datta, D.K., and Guthrie, J.P. (1994) explore the intricacies of executive succession, reinforcing the enduring importance of leadership in shaping corporate strategies across decades.

3.5 Keywords Analysis

Table 10

Top keywords

Author Keywords	Total Publications (TP)	Percentage (%)
CEO Characteristics	87	31.07
Upper Echelons Theory	25	8.93
Firm Performance	24	8.57
CEO	22	7.86
CEO Attributes	18	6.43
Leadership	18	6.43
Corporate Governance	16	5.71
CEO Tenure	15	5.36
CEO Age	11	3.93
Corporate Social Responsibility	11	3.93
Earnings Management	11	3.93
Managers	11	3.93
China	10	3.57
Gender	10	3.57
Manager Characteristics	10	3.57
Upper Echelon Theory	10	3.57
Chief Executive Officer	9	3.21
Innovation	9	3.21
Performance	9	3.21
SMEs	9	3.21

Table 10 provides a closer look at the most frequently used keywords in the analyzed academic publications, offering insights into the themes and research trends that shape the dataset. As expected, “CEO Characteristics” is the most prominent keyword, appearing in 87 publications and making up 31.07% of the total. This reflects the significant attention given to understanding how CEOs influence organizational outcomes, aligning with the widespread academic interest in leadership and executive decision-making.

The next most common keyword, “Upper Echelons Theory,” appears in 25 publications (8.93%), emphasizing the importance of this theoretical framework in exploring how the traits and experiences of top executives impact firm strategies and performance. Similarly, “Firm Performance” is featured in 24 publications (8.57%), underscoring the enduring interest in examining how managerial and organizational factors drive success. Other frequently used terms, such as “CEO” (22 publications, 7.86%) and “CEO Attributes” (18 publications, 6.43%), further reinforce the central role of executive leadership in academic discourse.

Themes like “Leadership” (18 publications, 6.43%) and “Corporate Governance” (16 publications, 5.71%) point to broader explorations of how executives shape decision-making and accountability within organizations. More specific keywords, such as “CEO Tenure” (15 publications, 5.36%) and “CEO Age” (11 publications, 3.93%), delve into the nuances of individual executive traits and their implications for strategic planning and firm outcomes.

The dataset also highlights emerging and evolving areas of research. For example, “Corporate Social Responsibility” (11 publications, 3.93%) and “Earnings Management” (11 publications, 3.93%) reflect the growing interest in ethical leadership and the broader responsibilities of CEOs beyond traditional financial metrics. Keywords like “Gender” (10 publications, 3.57%) and “China” (10 publications, 3.57%) signal increasing attention to diversity and the influence of regional contexts on leadership dynamics.

Other notable keywords, including “Manager Characteristics,” “Innovation,” and “Performance,” each appearing in 9–10 publications, show the interconnectedness of various research themes. The mention of “SMEs” (9 publications, 3.21%) highlights the specific challenges and opportunities faced by small and medium-sized enterprises, where leadership traits often play a critical role in navigating unique organizational contexts.

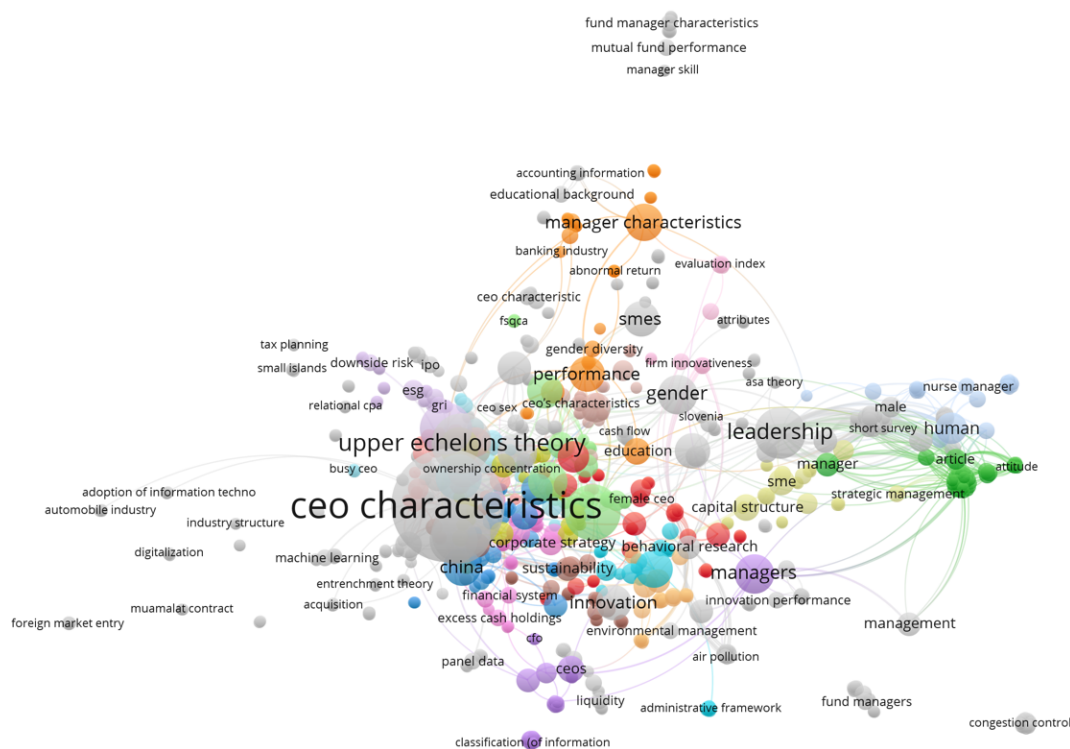


Fig. 6. Keywords from academic publications

Figure 6 offers a compelling visualization of how academic research themes interconnect through the lens of keyword relationships. At the heart of the network is "CEO characteristics," a dominant and central theme that bridges various subfields. Its prominence reflects the critical importance of understanding how CEOs’ attributes, traits, and behaviors influence their organizations' strategies and outcomes. Surrounding this core are related themes like "Upper Echelons Theory," "Leadership," and "Performance," forming dense clusters that underscore the strong links between executive decision-making and organizational success.

The network also reveals several smaller clusters that explore distinct but interconnected areas of research. For instance, one cluster focuses on "Manager Characteristics" and "Gender," emphasizing the importance of diversity and inclusivity in leadership roles. This area explores topics such as gender diversity, the influence of female CEOs, and the broader implications of managerial traits. Another cluster, featuring keywords like "SMEs" and "Innovation," highlights research into how

leadership drives innovation and performance in small and medium-sized enterprises. This reflects a critical focus on entrepreneurship and the unique challenges faced by smaller organizations.

A particularly prominent cluster revolves around "Sustainability" and "Corporate Social Responsibility (CSR)," showcasing the increasing emphasis on ethical leadership and environmental accountability. This area underscores the role of CEOs and managers in fostering social responsibility and sustainability within their organizations, reflecting a shift in leadership priorities toward balancing profitability with societal impact. Additionally, keywords like "China" and "Strategic Management" point to regional and strategic nuances, emphasizing the need to examine CEO characteristics within specific cultural and economic contexts.

3.6 Publication by Author

Table 11
 Most productive authors (TP / n) x 100

Author's Name	Affiliation	Country	TP	%
Oware, K.M.	University Utara Malaysia	Malaysia	4	1.43
Ali, R.	College of Business, University Utara Malaysia	Malaysia	3	1.07
Datta, D.K.	University of Sfax	Tunisia	3	1.07
Mahakud, J.	FSEG Sfax - Faculté des Sciences Économiques et de Gestion de Sfax	Tunisia	3	1.07
Neifar, S.	Yarmouk University	Jordan	3	1.07
Ahn, J.M.	Universitas Sebelas Maret	Indonesia	2	0.71
Altarawneh, M.	University of Kansas School of Business	United States	2	0.71
Barker, V.L.	Mangalore University	India	2	0.71
Bauweraerts, J.	Université de Mons	Belgium	2	0.71
Borgi, H.	University of Florida	United States	2	0.71
Chen, G.	University of Wisconsin-Milwaukee	United States	2	0.71
Fliaster, A.	Bayes Business School, City University of London	England	2	0.71
Ghardallou, W.	City, University of London	England	2	0.71

Notes: TP=total number of publications; NCP=number of cited publications; TC=total citations; C/P=average citations per publication; C/CP=average citations per cited publication; h=h-index; and g=g-index.

Table 11 shines a light on the most productive authors contributing to a collection of academic publications, showcasing their individual efforts and the broader impact of their work on both regional and global academic landscapes. The data not only highlights the productivity of these authors but also reflects the diversity and international nature of research collaborations.

At the top of the list is Oware, K.M. from University Utara Malaysia, leading with 4 publications, which make up 1.43% of the total output. This significant contribution underscores their pivotal role in driving research within Malaysia’s academic system. Close behind are authors such as Ali, R., also from University Utara Malaysia’s College of Business, and Datta, D.K. from the University of Sfax in Tunisia. These authors, along with Mahakud, J. from FSEG Sfax – Faculté des Sciences Économiques et de Gestion de Sfax, have each contributed 3 publications, representing 1.07% of the total research output. Their efforts highlight active engagement in advancing knowledge within their institutions and regions.

Other notable contributors include Neifar, S. from Yarmouk University in Jordan, whose 3 publications further showcase the university’s role in the global academic. Similarly, Ahn, J.M. from Universitas Sebelas Maret in Indonesia has contributed 2 publications (0.71%), reflecting Indonesia’s growing presence on the international research stage. These contributions from Southeast Asia and the Middle East underscore the expanding geographical reach of impactful academic work. Authors from the United States also feature prominently. Researchers like Altarawneh, M. from the University of Kansas School of Business, Borgi, H. from the University of Florida, and Chen, G. from the University of Wisconsin-Milwaukee have each contributed 2 publications (0.71%), demonstrating the United States’ continued leadership in fostering high quality academic research. Additionally, contributions from Barker, V.L. of Mangalore University in India, Bauweraerts, J. of Université de Mons in Belgium, and researchers like Flaster, A. and Ghardallou, W. from the City, University of London in England, reflect the truly international and collaborative nature of modern research.

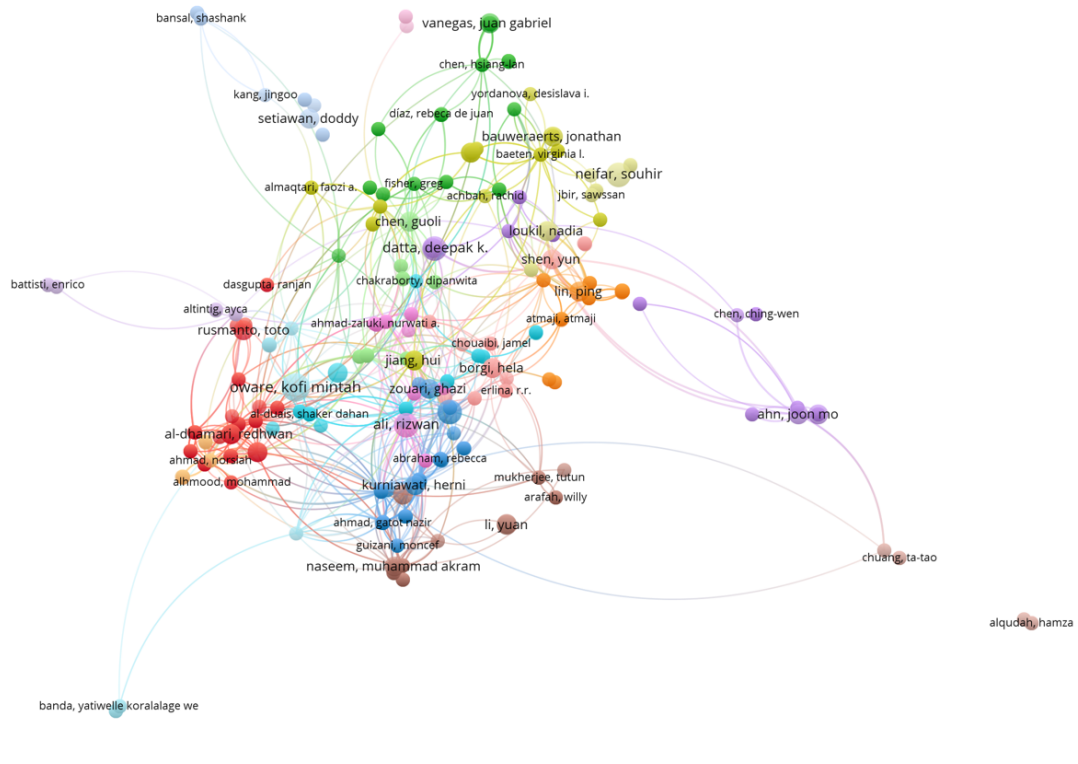


Fig. 7. Overview of co-authorship

Figure 7 illustrates the network visualization offers a fascinating glimpse into the intricate web of collaborations among researchers, showcasing how academics come together to create and share knowledge. Each node represents an individual author, and the lines connecting them reflect their

collaborative efforts in producing academic publications. The size of each node reveals how central or prominent an author is within this network—larger nodes signify individuals with extensive co-authorships or significant influence within their academic communities. The clusters, distinguished by different colors, highlight groups of researchers who frequently collaborate or work within related fields, painting a vivid picture of how scholarly communities are formed and sustained.

Prominent authors like Oware, Kofi Mintah, and Ali, R. occupy central positions within dense clusters, indicating their active roles in driving research collaborations. Their positions reflect not only their productivity but also their ability to bring researchers together, particularly within the Malaysian academic landscape. These clusters illustrate the strength of regional and institutional networks, where collaboration is key to producing impactful research.

Similarly, clusters around authors like Datta, Deepak K. and Neifar, Souhir reflect strong collaborative ties in Tunisia and Jordan. These clusters underscore the importance of shared disciplines or geographic proximity in shaping research networks. For example, Tunisian researchers seem to have formed a tight-knit community focused on economics and management, while Jordanian researchers contribute to distinct but equally significant academic endeavors.

The visualization also highlights the presence of bridge authors, such as Chen, Guoli, who connect otherwise separate clusters. These individuals play an essential role in fostering interdisciplinary and international collaboration, acting as conduits for the exchange of ideas and knowledge across regions and disciplines. On the other hand, smaller or more isolated nodes, like Chung, Ta-Tao and Alqudah, Hamza, represent researchers with fewer co-authorships.

While these individuals may work in more niche or specialized areas, their contributions remain valuable to the overall academic network. The presence of smaller, loosely connected clusters or isolated nodes points to emerging academic communities or areas of research that are still developing stronger collaborative ties. These pockets of activity remind us of the diversity within the academic ecosystem, where established networks coexist with smaller, more focused efforts that have the potential to grow.

4. Discussion

The bibliometric analysis of CEO characteristics highlights critical insights into how leadership attributes influence organizational success, providing valuable guidance for real-world applications. One of the most notable findings is the significant role that observable traits, such as age, tenure, educational background, and experience, play in shaping a CEO's effectiveness. For organizations operating in diverse markets, these findings underscore the importance of designing leadership development programs tailored to cultivate these traits. For instance, incorporating training modules on strategic decision-making, assertiveness, and adaptability into leadership programs can help CEOs develop the skills necessary to navigate complex and dynamic market environments. Psychological traits, such as cognitive abilities and core values, also emerge as pivotal. Organizations can benefit from integrating psychological assessments into these programs, enabling leaders to gain a deeper understanding of their biases and behavioral tendencies and how these influence their decision-making processes.

Furthermore, the study identifies a gap in understanding how CEO characteristics vary across cultural and regional contexts. This gap is particularly relevant for multinational organizations aiming to operate effectively in diverse markets. Tailored strategies for CEO selection and development, taking into account regional nuances, are essential. For example, in Asian markets where cultural sensitivity and relational dynamics often play a significant role, CEOs must exhibit strong interpersonal and adaptive leadership skills. Organizations can prioritize such traits in hiring

processes, supported by regional training programs that focus on cultural immersion and local market dynamics.

The document also discusses the importance of aligning CEO incentives with long-term organizational goals, particularly in areas like sustainability and corporate social responsibility (CSR). Traditional performance metrics, such as financial outcomes, while critical, are insufficient to capture the multidimensional role of CEOs. Incorporating metrics that evaluate a CEO's contribution to innovation, sustainability, and stakeholder engagement can provide a more comprehensive assessment of their performance. This alignment can be reinforced through incentive structures tied to achieving ESG targets, ensuring that leaders prioritize long-term societal and environmental goals alongside profitability.

Moreover, the analysis underscores the relationship between CEOs' psychological traits, such as openness and conscientiousness, and organizational outcomes like innovation and strategic adaptability. Organizations can capitalize on these traits by fostering an innovation-driven culture, with CEOs at the helm of research and development (R&D) initiatives. These findings suggest the potential for leadership strategies that encourage calculated risk-taking and creativity, essential for maintaining competitiveness in rapidly evolving industries.

Another crucial aspect of the document is the emphasis on ethical and sustainable leadership. CEOs have a critical role in championing sustainability initiatives and embedding CSR into organizational strategies. Leadership programs should, therefore, include training on ethical decision-making and the integration of sustainability into corporate goals. This approach aligns with the growing importance of socially responsible leadership in diverse global markets.

Finally, the document highlights the limited representation of non-Western contexts in existing research on CEO characteristics. This observation points to the necessity for organizations to expand their understanding of leadership dynamics in emerging markets. By fostering research and development in these regions, companies can identify the unique challenges and opportunities faced by leaders in diverse cultural and economic landscapes. This knowledge can then inform the creation of tailored leadership frameworks that are globally inclusive yet locally relevant.

5. Conclusions

This bibliometric analysis reveals important insights into how research on CEO characteristics has evolved over the last three decades. By examining 280 publications, the study highlights the significant role that CEOs' traits and decision-making play in shaping organizational performance, corporate governance, and strategic innovation. It also sheds light on shifting research priorities, with themes like leadership effectiveness, sustainability, and diversity reflecting the complex challenges that CEOs and organizations face in today's rapidly changing world.

While much of the research remains rooted in traditional business and management perspectives, this study also uncovers emerging interdisciplinary trends that draw from psychology, sociology, and economics. These perspectives bring fresh understanding to the psychological and social aspects of CEO decision-making, going beyond financial metrics to explore the deeper, more human elements of leadership. However, the findings also reveal a concentration of studies in Western contexts, leaving significant gaps in understanding how leadership differs in regions like Asia, Africa, and Latin America, where unique cultural and economic factors shape CEO effectiveness.

The study also highlights key contributions in areas such as sustainability, corporate social responsibility, and technology adoption, showing how CEO characteristics can drive innovation and impact organizations beyond the bottom line. The collaborative nature of this research is evident in the connections between authors and themes, demonstrating the value of shared knowledge in

advancing this field. Despite these advances, there are clear areas for improvement. Research remains heavily focused on English-language publications, which may exclude valuable insights from other regions and cultures. There is also a need to expand the focus beyond established markets to explore leadership in emerging economies, where different challenges and opportunities exist.

In summary, this study contributes to both theoretical and practical knowledge about CEO characteristics while highlighting the need for a more inclusive and holistic approach to studying leadership. By fostering collaboration across disciplines and exploring diverse cultural and economic contexts, future research can deepen our understanding of what makes an effective CEO in today's interconnected and complex world. Leadership, at its core, is as much about human values and social dynamics as it is about strategy and results and understanding this balance will be key to shaping the leaders of tomorrow.

Acknowledgement

This research was not funded by any grant.

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