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The invisible barrier of career: A bibliometric research on the glass ceiling syndrome

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Abstract

The concept of the glass ceiling, defined as the emergence of barriers preventing women from advancing to top-level positions despite playing an active role in business life, has inspired numerous studies in the literature. In this context, the quality of national and international studies on the concept is of great importance. This study employs a bibliometric analysis to systematically evaluate the academic research conducted on the glass ceiling syndrome. A total of 426 publications, published between 1993 and 2024 and retrieved from the Web of Science database using the keywords "Glass Ceiling" and "Career" were analyzed. The bibliometric analysis considered various criteria such as publication trends, country contributions, most cited authors, inter-institutional collaboration, keyword co-occurrence networks and citation networks. With the use of the VOSviewer software, the structural characteristics of the literature were visualized in detail. The analysis revealed that the United States had the highest number of publications followed by the United Kingdom. The most frequently used keywords were identified as "glass ceiling", "gender" and "women". It was also found that the majority of the studies were concentrated in the fields of management and human resources whereas relatively fewer studies were categorized under women's studies. Citation analyses indicated that the joint work of Johanne Rickne and Olle Folke received the highest number of citations. The intensity of country and institutional collaborations demonstrates the growing international academic interest in the subject. Through this research, the existing literature on the glass ceiling syndrome has been systematically evaluated, highlighting the key authors, institutions, countries and commonly used keywords. The findings serve as a guide for creating new research opportunities, particularly in the fields of career management, gender studies and organizational behavior.

Keywords: Female Employees, Glass Ceiling Syndrome, Career Management, Bibliometric Analysis
Jel codes: J16, J71, M51

1. Introduction

In recent years, the issue of gender equality in the workplace has become a significant area of discussion both in the academic world and in business environments. Despite the increasing levels of education among women and their rising participation in the labor force, female representation in top-level management positions has not reached the expected levels. This situation is explained by the concept of the "glass ceiling" which refers to the invisible barriers that prevent women from advancing beyond a certain point in their careers. The term was first introduced in 1986 by Hymowitz and Schellhardt to describe obstacles that stem not from personal inadequacies, but from external factors such as organizational structures, gender-based biases and cultural norms.

Although the glass ceiling was initially conceptualized in relation to women, over time it has come to encompass other disadvantaged groups such as ethnic minorities, older individuals, and employees with disabilities. As this issue has evolved into a systematic, persistent and widespread phenomenon, the term "glass ceiling syndrome" has emerged in the literature (Cotter et al., 2001). The concept has since been the subject of comprehensive studies across various fields such as organizational behavior, human resource management, leadership studies, and gender studies. This diversity highlights the multidimensional nature of the glass ceiling syndrome and indicates the necessity of examining it from the perspectives of different disciplines. The present study aims to systematically examine the academic literature on the glass ceiling syndrome. Understanding how the research on this topic has evolved over time, what themes have come to the forefront and identifying the structural features of academic production in the field is only possible through a systematic data analysis. In this context, bibliometric analysis emerges as a powerful method for quantitatively examining the literature on a specific subject, identifying research trends and revealing gaps in the existing body of knowledge (Donthu et al., 2021). Therefore the main objective of this study is to analyze the academic publications on glass ceiling syndrome through bibliometric methods and to present the current scientific profile of the field based on quantitative data.

In this context, the primary objective of the study is to analyze academic publications on the glass ceiling syndrome using bibliometric methods in order to reveal the current scientific profile of the field through quantitative data and to identify the main trends that can guide future research. The findings are expected to contribute meaningfully to both academic literature and practical applications, particularly in the areas of career management, gender equality, leadership development, and organizational policy-making.

2. Literature Review

The concept of the "Glass Ceiling" was first introduced in 1986 by Carol Hymowitz and Timothy D. Schellhardt in an article published in *The Wall Street Journal*, titled *"The Glass Ceiling: Why Women Can't Seem to Break the Invisible Barrier That Blocks Them from the Top Jobs"* although it did not provide a formal academic definition, the article articulated the concept by describing the invisible and systemic barriers that prevent women from advancing to top-level positions in organizations: ***Even women who are promoted to middle management positions often encounter an invisible barrier that prevents them from rising to higher levels. This situation does not stem from a lack of competence or ambition. Rather, it reflects an intangible yet highly restrictive obstacle referred to as the "glass ceiling". The term symbolizes a barrier that, regardless of women's qualifications or achievements, prevents them from reaching the top tiers of corporate structures an invisible, yet nearly unbreakable obstruction embedded within organizational systems*** (Hymowitz and Schellhardt, 1986). The book *"Breaking the Glass Ceiling: Can Women Reach the Top of America's Largest Corporations?"*, published in 1987 is considered the first academic work to introduce the glass ceiling concept into the scholarly literature. In this foundational text, the term "glass ceiling" is defined as follows: ***The glass ceiling is an invisible yet very real barrier, rooted in attitudinal or organizational biases, that prevents qualified individuals—particularly women—from advancing to top-level leadership positions within organizations*** (Morrison, et al., 1987). Over time, academic studies have shown that the glass ceiling is not solely a barrier for women but rather a systematic organizational problem that also affects ethnic minorities, individuals from different age groups, and people with disabilities (Cotter et al., 2001).

Glass ceiling syndrome has become a significant research topic within the fields of organizational behavior, human resource management, gender studies, and leadership literature. Bibliometric analysis offers an effective method for understanding the scientific evolution of this concept over time, identifying the most influential studies and authors, and revealing the primary research trends in the literature (Donthu et al., 2021). This method is particularly useful for mapping the development of scientific knowledge, identifying leading scholars, prevalent themes, and emerging research patterns (Aria and Cuccurullo, 2017). Bibliometric analyses involve a variety of techniques, including citation-based and performance-based approaches, by classifying publications according to countries, institutions, research groups, or authors (Gaviria-Marin et al., 2019). Among the commonly used techniques in bibliometric methodology are citation analysis, co-citation analysis, bibliographic coupling, co-occurrence analysis, and bibliometric mapping (Chai and Xiao, 2012). As such, bibliometric studies serve as a strategic tool for mapping research domains, identifying academic gaps and guiding future research directions (van Eck and Waltman, 2010).

In order to objectively and systematically identify the structural characteristics, developmental trends, and prominent research focuses within the academic literature on the glass ceiling syndrome, this study adopts the bibliometric analysis method.

3.Methodology

This study conducts a bibliometric analysis focusing on the intersection of *glass ceiling syndrome* and the *career* concept. Bibliometrics is defined as a statistical method that enables the quantitative analysis of academic publications on a specific topic. Through this approach, researchers can evaluate the scientific quality of studies, identify core research domains and anticipate emerging trends within the literature. Various bibliometric tools have been developed for such analyses. In this study, VOSviewer (version 1.6.18) was chosen due to its robust functionality and visual mapping capabilities. Recognized for its ability to detect relationships, identify conceptual structures, and reveal recent developments in academic fields, VOSviewer offers significant advantages to researchers aiming to explore scholarly networks and thematic clusters. The software's capacity for multidimensional visualization also facilitates in-depth exploration of data sets. As a data source, the study utilizes the Web of Science (WoS) database, which is widely acknowledged for its inclusion of high-quality, peer-reviewed publications and its compatibility with bibliometric analysis tools. WoS enables the export of search results in file formats suitable for VOSviewer. For this study, metadata were exported in .txt format, including details such as publication year, language, journal title, author information, institutional affiliations, document types, keywords, abstracts, and citation counts. The WoS database was selected due to its comprehensiveness, inclusion of key academic journals, and adherence to publication ethics, ensuring reliability and scientific rigor in the dataset used. The extracted records were imported into VOSviewer for the construction of bibliometric maps and subsequent visual analysis. The exported dataset included detailed metadata such as publication year, language, journal title, article title, author names, institutional affiliations, keywords, document type, abstracts, and citation counts. Furthermore, the data provided access to a wide and interdisciplinary collection of scholarly works. On December 10, 2024, a search was conducted on the Web of Science database using the keywords *"glass ceiling"* and *"career"*, filtered to cover all fields. The search yielded 426 results. These documents span a range of publication types and years, with the earliest dating back to 1993 and the most recent published in 2024.

The distribution of document types is as follows:

- 352 journal articles,
- 8 editorial materials,
- 13 book chapters,
- 2 book reviews,
- 47 conference papers,
- 10 early access articles,
- 19 review articles, and
- 2 full-length books.

In terms of disciplinary categorization, the majority of the publications fall under:

- Management (99 documents),
- Business (55),
- Women's Studies (47),
- Education & Educational Research (43),
- Economics (31), and
- Sociology (29).

The data were analyzed through various dimensions, including authors, citations, journals, countries, institutions, and keywords. Visualizations and thematic maps were created using data extracted from the WoS .txt files, processed in VOSviewer, and enhanced through Microsoft Excel for reporting and interpretation purposes.

This study aims to present a comprehensive overview of the scholarly landscape concerning the concept of the glass ceiling within the context of career management, based on quantitative data and numerical indicators obtained through bibliometric analysis. The goal is to offer researchers a holistic perspective on the development and current trends of this concept in the academic literature.

4.Result and Findings

4.1. Bibliometric Analysis of Publication Output

As of December 2024, all scholarly publications related to the *glass ceiling syndrome* in the context of career management were retrieved from the Web of Science database. The search was conducted using only the keywords *"glass ceiling"* and *"career"*. The annual distribution of the retrieved publications is presented in figure 1. The findings reveal a notable increase in academic interest on the subject, particularly starting from the year 2007.
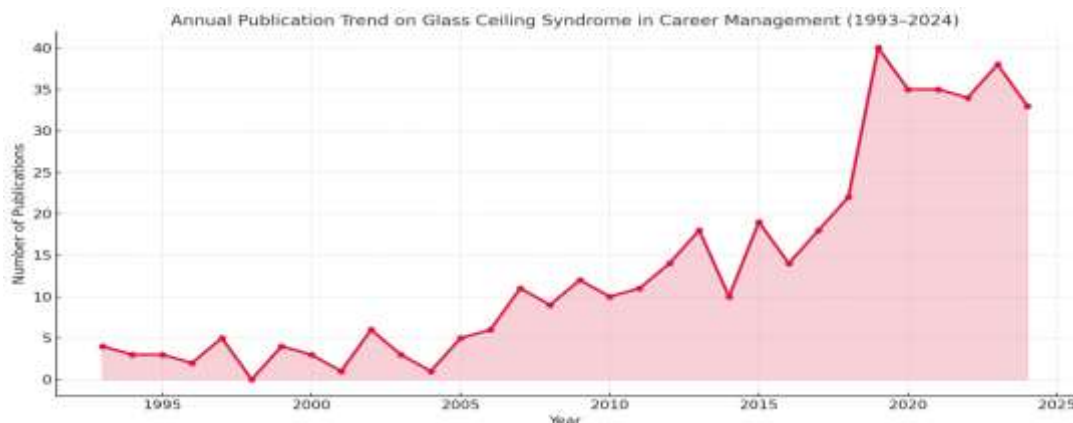

Figure 1. Number of publications by year

According to data obtained from the Web of Science (WoS) database, the earliest academic study on the concept of glass ceiling syndrome in the context of career management was published in 1993. Between 1993 and 2024, a total of 426 academic publications addressing this topic have been indexed. This growing body of literature reflects the increasing scholarly attention devoted to gender-based career barriers over the past three decades.
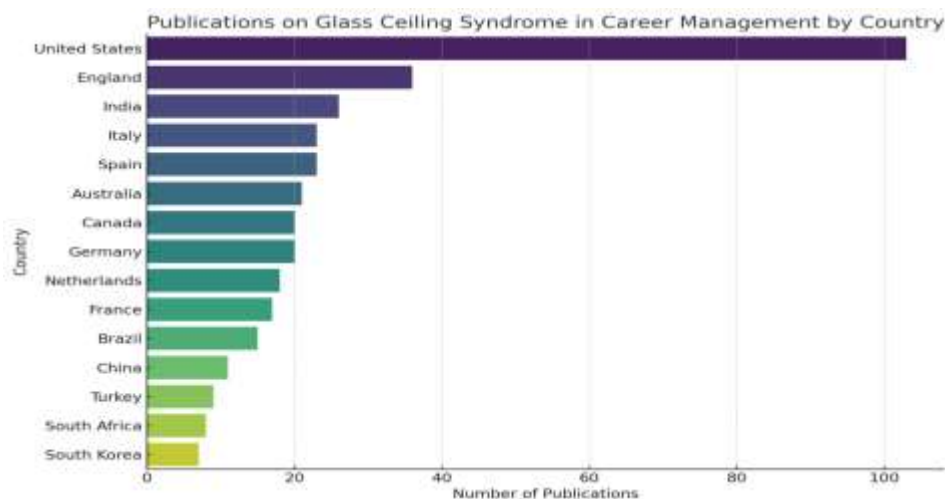

Figure 2. Publication numbers of countries

According to the data retrieved from the Web of Science (WoS) database, the countries with the highest number of publications on glass ceiling syndrome in the context of career management are the United States, the United Kingdom, India, and Italy, as illustrated in figure 2. Türkiye is also included in the table, contributing with 9 publications on the subject.

Table 1. Most Cited Author and Journal Distribution

Authors	Year	Journal Name	Citations
Olle Folke, Johanne Rickne	2016	Comparative Political Studies	73
Mindy S. Baumgartner, David D. Schneider	2010	Journal of Career	52
Jeffrey R. Cohen et al.	2020	Journal of Business Ethics	51
Juliette Boone et al.	2013	Cornell Hospitality Quarterly	49
Paul Smith et al.	2012	Career Development International	41
Remya Lathablavan, Senthil A. B.	2017	Asia-Pacific Journal of Business Administration	33
Nnamdi O. Madichie	2009	Journal of African Business	27
Bombuwela, P.M., De Alwis A. Chamaru	2013	Journal of Competitiveness	26
Donnalyn Pompper	2011	Journal of Organizational Change Management	24
Souha R. Ezzedeen et al.	2015	Journal of Career Development	23

According to the Web of Science (WoS) database, the most cited article on *glass ceiling syndrome* in the context of career management is the study co-authored by Johanne Rickne and Olle Folke, which has received 73 citations to date.

4.2. Citation of authors

Within the scope of the bibliometric analysis conducted in this study, citation analysis was applied to identify the most influential publications and authors in the relevant literature. Citation analysis is one of the fundamental techniques used to evaluate the scientific impact and visibility of a researcher or publication within a given academic domain (Donthu et al., 2021). The number of citations a publication receives not only reflects its academic significance but also indicates how it has been received by the scholarly community. Citation analysis serves as an effective method for identifying seminal works and high-impact authors that shape the knowledge structure of a field (Zupic and Čater, 2015). According to the findings, the most cited publication was a co-authored article by Johanne Rickne and Olle Folke, which received 73 citations. However, despite their high citation count, these authors did not rank first in terms of total link strength, a metric that reflects the degree of interconnectedness within the citation network. Through this method, the most cited studies and influential scholars within the *glass ceiling syndrome* literature were systematically identified, enabling a clearer understanding of the intellectual structure that underpins this research field.
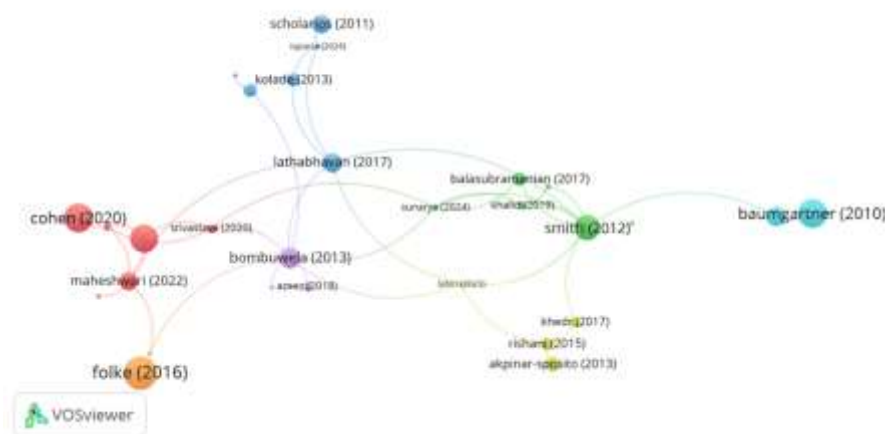

Figure 3. Citation analysis based on authors

4.3. Co-authorship analysis

In this study, a co-authorship analysis was also conducted to examine academic collaborations on the topic of glass ceiling syndrome. Co-authorship analysis is an important bibliometric method that reveals the scientific collaboration networks and intellectual interactions among researchers within a specific field (Koseoğlu, 2016). Within the scope of this analysis, relationships between authors who have co-authored at least one publication were examined; strong links, clusters, and collaboration potentials were visualized using the VOSviewer software. As a result of the analysis, it was observed that the most cited authors, Johanna Rickne and Olle Folke, were not among the most connected authors in terms of total link strength. Similarly, the most productive authors were also not included among the most interconnected ones namely, Remya Lethabhavan, Sentril Arasu, Soura R. Ezzedeen and Usha Lenka.
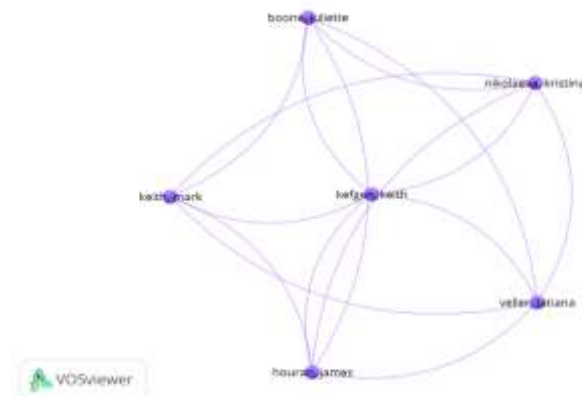

Figure 4. Co-authorship analysis

4.4. Citation Analysis of Publishing Countries

In this study, the countries to which publications on glass ceiling syndrome belong and their respective academic impact levels were examined through country-based citation analysis. This method evaluates the total number of citations received by studies originating from specific countries, thereby aiming to measure the scientific contribution of each country to the literature. Unlike simple publication counts, this approach provides a more qualitative assessment by also considering the impact of those publications (Bornmann and Leydesdorff, 2011). According to the analysis, the countries with the highest number of citations were the United States (227 citations), India (77 citations), and Sweden (73 citations). These three countries also ranked highest in terms of total link strength. In terms of the number of publications, the ranking was led by India (11 publications) and the United States (9 publications). Turkey was represented with 2 publications and 3 citations. Using the VOSviewer software, citation linkages between countries were visualized, allowing for a clearer understanding of which nations play a central role in the global academic landscape related to this topic.
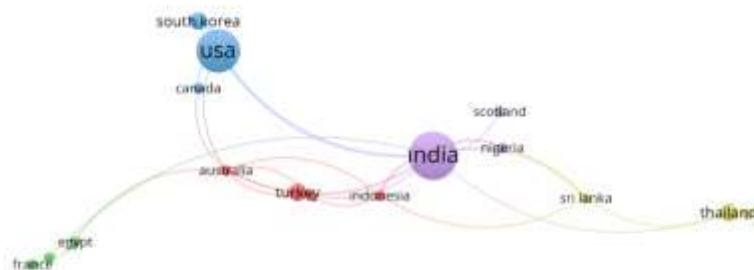

Figure 5. Citation analysis by country

4.5. Citation analysis of institutions

In order to assess the influence of institutions contributing to the academic output on the topic of glass ceiling syndrome, an institution-based citation analysis was conducted. This type of analysis examines the total number of citations received by publications affiliated with specific universities or research centers, aiming to reveal both the academic visibility and impact level of these institutions within the scientific literature (Moed, 2005). This method allows for the evaluation of not only institutional productivity but also the academic resonance of their publications. Through the VOSviewer software, citation linkages between institutions were visualized to identify which institutions lead the field and which ones maintain stronger knowledge interactions with others. The findings indicate that certain universities have achieved both high publication output and significant citation impact, positioning them as central actors in the literature on glass ceiling syndrome. For instance, institutions such as the National Institute of Technology University, Indian Institute of Technology Roorkee, York University, and Boston University are each represented by two publications. However, the most cited institutional affiliations belong to the Research Institute of Industrial Economics (73 citations), Uppsala University (68 citations), and Boston University (56 citations).

Figure 6. Citation analysis of institutions

4.6. Bibliometric Analysis of Keywords

To identify prominent themes and conceptual trends in the literature on *glass ceiling syndrome*, a bibliometric keyword analysis was conducted. Keyword analysis is a crucial bibliometric method that enables researchers to understand the content structure of a particular body of literature, define the research agenda, and detect conceptual clusters (Aria and Cuccurullo, 2017). The analysis involved the construction of co-occurrence networks based on keywords that appeared at least twice and showed interrelations with one another. These networks helped to reveal the thematic concentration areas within the research field. According to the findings, the terms "glass ceiling", "gender", and "women" were the most frequently used keywords and exhibited the highest total link strength. These results clearly indicate that the concept of the glass ceiling is primarily addressed in the context of gender issues and female employees. In publications related to *Glass Ceiling & Career*, the keyword "glass ceiling" was used 41 times, followed by "gender" (6 times) and "women" (5 times). In terms of total link strength, these three keywords again ranked at the top, underscoring their centrality in the scholarly discourse.
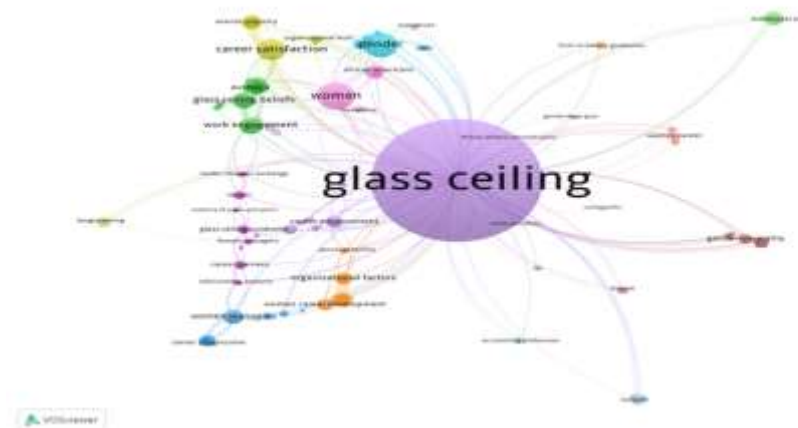

Figure 7. Most Frequently Used Keywords Analysis

4.7. Bibliographic Matching Analysis of Texts

Bibliographic coupling analysis was conducted to identify the relationships between studies that cite similar sources within the literature on *glass ceiling syndrome*. Bibliographic coupling refers to the connection established when two documents cite the same third source, and it is commonly used to detect content-related similarities and research clusters within a given field (Kessler, 1963). The bibliographic coupling data obtained in this study reveal which articles are built upon similar theoretical frameworks and methodological approaches, thereby allowing for the tracking of intellectual trends across the literature. The bibliographic coupling network generated using VOSviewer demonstrated the presence of distinct clusters and showed that certain publications maintain strong relational ties with others in the field. This analysis made it possible to identify groups of studies that share a common intellectual orientation, enhancing the visibility of the major scientific directions in the field. Bibliographic coupling occurs when two independent documents cite the same third reference. According to the findings, the most coupled publications include:

- Folke and Rickne (2016) with 73 citations

- Cohen (2020) and Baumgartner (2010), each with 49 citations

Meanwhile, the publications with the highest total link strength were authored by:

- Maheshwari (2022)
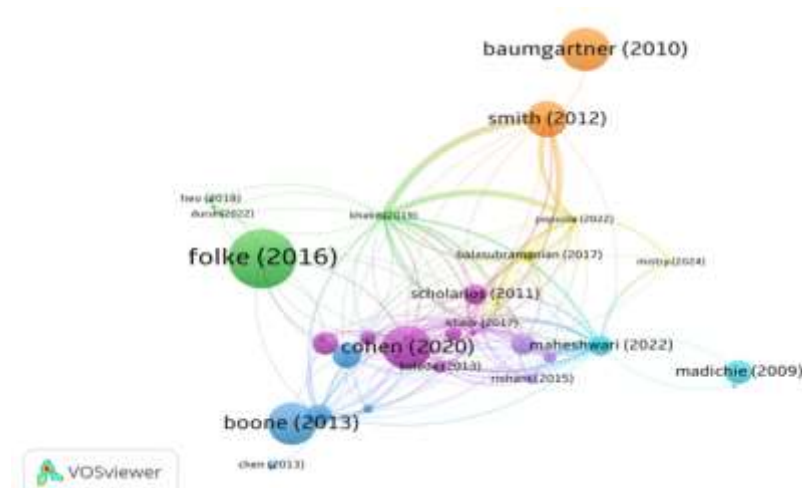
- Khalid (2019)

- Popoola (2022)

Figure 8. Bibliographic Matching Links of Works

4.8. Bibliographic Matching Analysis of Authors

The author-level bibliographic coupling analysis conducted in this study aimed to examine the intellectual connections between researchers who cite similar sources in the literature on glass ceiling syndrome. Bibliographic coupling occurs when different authors cite the same references in their work, and such overlaps indicate a shared foundational literature (Kessler, 1963). These relationships between authors play a significant role in revealing conceptual clusters, thematic proximities, and scholarly orientations within the literature (Zupic and Čater, 2015). The analysis revealed that multiple authors heavily referenced similar sources, resulting in strong bibliographic linkages among specific author groups. The findings enabled the identification of scholars and research clusters that are grounded in similar theoretical and methodological approaches to the study of glass ceiling syndrome. According to the analysis, the authors with the highest bibliographic coupling were:

- Olle Folke and Johanna Rickne, with 73 citations and a total link strength of 122

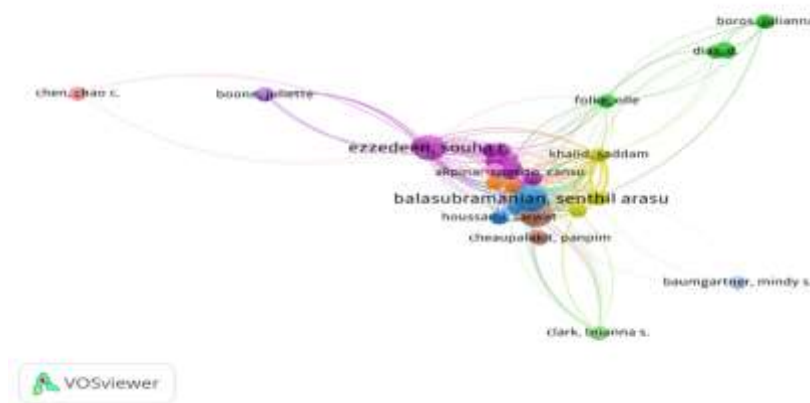- Jeffrey R. Cohen, with 52 citations and a total link strength of 394

Figure 9. Authors' Bibliographic Matching Links

4.9. Co-Citation Analysis of Authors

Author co-citation analysis was employed to uncover the academic relationships and conceptual clusters among scholars who are frequently cited together in the literature on *glass ceiling syndrome*. Co-citation analysis is a bibliometric technique that assumes an intellectual connection exists between two authors when their works are cited together in the same source multiple times (Small, 1973). This method is particularly valuable for identifying the intellectual structure, key theorists, and knowledge domains within a specific scientific field (White and McCain, 1998). The results of the analysis revealed that certain authors are frequently co-cited in academic works related to glass ceiling syndrome. The clusters formed around these authors helped identify the dominant theoretical orientations and leading researchers in the field. The findings contribute to a better understanding of how the topic of glass ceiling syndrome is positioned within the management, gender studies, and career development literatures, and which scholars have played a pivotal role in shaping this discourse.

The most frequently co-cited authors were:

- Eagly (34 co-citations)

- Powell (19 co-citations)
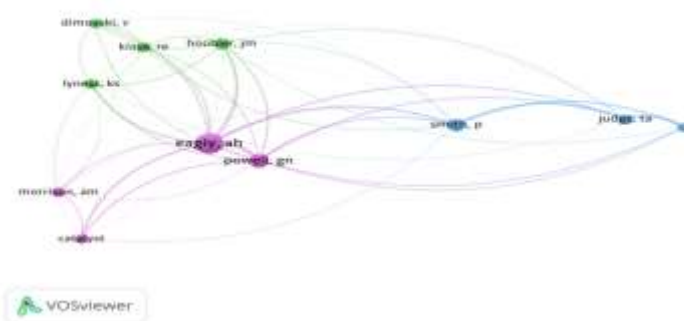
- Smith (16 co-citations)

Figure 10. Links Between Co-Cited Authors

4. Conclusions

As women have begun to assume more visible and influential roles in professional life, this shift has triggered numerous social and institutional transformations. However, in today's business world, women still encounter structural and cultural barriers in their efforts to reach top executive positions. This phenomenon is referred to in the literature as the "glass ceiling syndrome," which describes the presence of invisible yet powerful obstacles that limit women's upward mobility in their careers. This study presents a comprehensive examination of how the glass ceiling syndrome has been addressed in the academic field, employing bibliometric analysis as the primary methodological approach.

Using the keywords "glass ceiling" and "career," a total of 426 academic publications published between 1993 and 2024 were analyzed from the Web of Science database. The data obtained were visualized and evaluated through various dimensions using VOSviewer software, including citation analyses, co-authorship networks, country and institution-based collaborations, keyword co-occurrence, and bibliographic coupling. The findings indicate that academic interest in the concept of the glass ceiling has significantly increased over the past decade, with the highest volume of studies originating from the United States and the United Kingdom. This reflects a stronger focus on gender equality, career development, and organizational structures as research priorities in these countries. In contrast, the limited number of studies from developing countries such as Turkey suggests that structural issues related to the glass ceiling have not yet received sufficient scholarly attention. The notable rise in publications on this topic since 2007 is closely linked to a global increase in awareness of gender equality, the implementation of international policy objectives, and institutional reforms. For example, the United Nations Millennium Development Goals (MDGs) emphasized enhancing women's participation in the workforce and increasing their representation in decision-making mechanisms (UN, 2006). Additionally, the adoption of diversity and inclusion policies in both public and private sector organizations across many countries sparked broader discussions around the invisible barriers women face in accessing leadership positions (Bilimoria and Piderit, 2007). The 2007–2008 global financial crisis also contributed to this discourse by prompting criticism of male-dominated leadership structures in the financial sector and highlighting female leadership as a viable alternative during times of crisis (Catalyst, 2010). As a result, the glass ceiling syndrome has come to be analyzed not only as an individual career barrier but also as an issue that demands institutional redesign, which is directly reflected in the rising number of academic publications. The most frequently used keywords in the literatüre "glass ceiling," "gender," and "women" clearly indicate that the issue is approached primarily from a gender equality perspective. This underscores that the barriers women face in leadership are not due to personal shortcomings, but rather stem from systemic and structural gender inequalities. The keyword clustering around gender-focused terms also reflects the dominant paradigm in the literature and signals a need to further explore the glass ceiling within broader feminist theoretical frameworks. At the author level, the most cited publication was identified as the study by Johanne Rickne and Olle Folke. However, a high citation count did not necessarily correlate with the most collaborative authors, revealing the existence of subgroups with different scholarly orientations within the literature. Country-level collaboration and productivity analyses show that the United States and India stand out in terms of both publication volume and citation impact. These countries appear to hold a central position in the global research network due to their extensive citation and collaboration links. In contrast, Turkey exhibits a relatively limited academic presence, both in terms of output and international collaboration, suggesting that scientific awareness of the glass ceiling phenomenon is still emerging and that further academic engagement is needed in this area. At the institutional level, academic production on the glass ceiling syndrome was found to be concentrated around specific universities and research centers. Institutions such as Boston University, Uppsala University, and York University stood out as key contributors with highly cited publications. This indicates that intellectual production in the field is driven by distinct academic clusters, and these institutions play a central role in knowledge generation. However, the limited institutional contributions from developing countries highlight ongoing imbalances in global research networks. The keyword analyses further show that the concept of the glass ceiling is not limited to women's underrepresentation in leadership roles. It also has strong interdisciplinary ties with fields such as career management, human resources, organizational behavior, and leadership. In this regard, the topic can be viewed as a research domain that has the potential to bridge multiple disciplines within the social sciences.

This study provides a systematic overview of the current academic production on the glass ceiling syndrome, highlighting both existing gaps in the literature and potential avenues for future research. It was observed that the majority of the literature is concentrated in the fields of management and human resources, whereas topics such as women's studies and organizational justice remain relatively underexplored. Enhancing Turkey's contribution to this field at the international level will require not only an increase in the number of studies but also the development of high-quality research collaborations. In this context, future research is encouraged to adopt not only quantitative methodologies, but also qualitative approaches focusing on individual experiences, organizational practices, and cultural contexts. Moreover, it is recommended that the concept of the glass ceiling be examined not only in relation to women but also with respect to other disadvantaged groups, such as older individuals, ethnic minorities, and employees with disabilities. Doing so will promote a more inclusive and comprehensive understanding of the phenomenon.

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