Women's leadership research in higher education institutions (HEIs): a bibliometric study

Kania Widyatami, A. Sobandi

Faculty of Economics and Business Education, Universitas Pendidikan Indonesia, Bandung, Indonesia

Abstract
Gender disparity in leadership positions has been a topic of discussion for a considerable amount of time, including in the context of Higher Education Institutions (HEIs). Given the wide interest, a review article should assist scholars in making sense of the available research, especially as the increase of female leadership becomes an aim of the UN's Sustainable Development Goals (SDGs). This study applied bibliometric analysis to reveal how the field evolved. The data was retrieved from the Scopus database from 1952–2023 and processed using R software's "bibliometrix" package and the Publish and Perish applications. A range of techniques comprising performance analysis and science mapping through co-citation analysis, bibliographic coupling, and co-word analysis were performed to uncover the intellectual, knowledge, and conceptual structures that give insights regarding the trends as well as the past, present, and future of the field. The examination reveals the relevancy of the field in the current landscape and the challenges in female leadership as the foundational works. Further, in line with the SDGs' aim, the analysis reveals the link with sustainable development to be among potential future explorations

Keywords: *women leadership, higher education institutions (HEIs), gender equality, bibliometric analysis*

Introduction

In 2015, the United Nations Sustainable Development Goals (SDGs) were established, with the call for gender equality and woman empowerment as its fifth aim (United Nations, 2015). The goals were integrated, with the recognition that action in one area will affect outcomes in others and thus implied that gender equality is not only a fundamental human right but also an essential component of sustainable development. Ensuring women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life, among others, is one of its targets. Indeed, despite the significance and potential, women remain underrepresented in leadership positions. Even with a notable surge in female involvement in the workforce and considerable evidence of positive impacts from female leadership ranging from economic to social well-being of organizations, female still sees a huge gap compared to their male counterparts in management roles across nearly all industries A. Singh et al. (2023), including Higher Education Institutions (HEIs).

Women's leadership has been linked to positive impacts on financial performance , innovation, and corporate social performance (Awwad et al., 2023; Khushk et al., 2023; Pinheiro et al., 2024). In the context of HEIs, Madsen (2012) posits that female academic leaders widen the scope of research through unique questions their male counterparts do not pose, bringing transformational experiences, and opening up the path for aspirational

female leaders. In general, gender diversity in leadership positions also leads to better decision-making and organizational governance practices (Issa & In'airat, 2024). The advantages lead to initiatives and policy improvements to solve the disparity problem. The possibility of delayed childbirth, anti-discrimination laws, and the adoption of gender-egalitarian values, among others, have turned around the enrolment ratio between women and men in higher education, resulting in a gender reversal revolution known as "the female advantage" (UNESCO, 2021). However, the so-called female advantage doesn't manifest in the expected gains such as taking leadership roles and occupying decision-making positions in universities. Statistics show that females only make up an insignificant proportion of rectors in American and European universities. The annual figures from Times Higher Education also reveal that female-led institutions only make up less than one-fifth of the 200 top universities.

Higher education and research are invaluable tools for societal transformation and empowerment (Rosa & Clavero, 2022). The power of universities to foster gender equality goes beyond the institutional context and includes society at large. Indeed, inequalities are not only shaped socially and culturally but also institutionally (UNESCO, 2021). Given the pertinence, it is no surprise that the lack of female leaders in top academic positions has been a topic of discussion for a considerable amount of time (Maheshwari et al., 2021). However, preliminary investigation reveals that there are only limited reviews on the topic which help scholars to make sense of the highly resilient problem. To close the gap, Fauzi et al. (2024) performed a bibliometric analysis to uncover the past, current, and prospects of female leadership in HEIs. The study applied co-citation and co-word analysis from the Web of Science (WoS) database and adapted VOSviewer software to process the data. Considering the limitations, the authors called for future research employing other bibliometric approaches to enrich the study. In response, this investigation is carried out by employing another technique, database, and tool to explore these research questions:

RQ1. What trends are visible in the publications of women's leadership in HEIs?

RQ2. What are the intellectual, knowledge, and thematic structures that can uncover the past, present, and future of the field?

Methods

Bibliometric analysis facilitates large-scale reviews that help scholars to get a comprehensive view of a topic (Donthu et al., 2021). The analyses comprise two categories: (1) performance analysis, which looks into the *contributions* of various elements of research such as authors, institutions, countries, and journals to reveal the trend of a concept; and (2) science mapping, which delves into the *relationships* between research elements to reveal the intellectual interactions and structural connections. The latter consists of co-citation analysis, bibliographic coupling, co-word analysis, citation analysis and co-authorship analysis, which are to be chosen according to the aim of the study. To uncover the past, present, and future of a research field, for instance, the first three analyses are respectively utilized.

Co-citation analysis is used to examine the intellectual structure of the field by looking into articles that are jointly cited as they are assumed to share similar themes (Donthu et al., 2021). The mapping reveals the dynamic of the school of thought and summarizes them in clusters centered around the respective intellectual foundations Cobo et al. (2011), giving

hints about how the field effloresced and consequently, the past. Meanwhile, bibliographic coupling analysis is used to investigate the knowledge structure of the field. The analysis looks into shared references as they are assumed to indicate similar content in the publications and divide them into thematic clusters which represent the presence of the research field (Donthu et al., 2021). Lastly, co-word analysis is used to explore the conceptual structure of the field. Unlike the preceding techniques which inquire into the publications, the analysis studies the content, i.e. the author's keywords. The analysis investigates the co-occurrences of the keywords and lays them into a thematic map that comprises four quadrants based on centrality, which reflects the theme's impact, and density, which reflects the theme's relevancy (Cobo et al., 2011). In this case, Q1 presents themes with strong centrality and high density thus identified as the motor themes; Q2 presents themes with strong centrality and low density thus identified as the basic themes; Q3 presents themes with weak centrality and high density thus identified as the niche themes; and Q4 present themes with weak centrality and low density thus identified as emerging or declining themes. The approach not only enriches the former two analyses but also reveals the research trajectory, thus the future of a field (Donthu et al., 2021).

The Scopus database was chosen for its reputation. A detailed search string from Fauzi, et al. (2024)'s study was adapted to ensure specificity with the keywords of "wom*n leadership" OR "female leadership" OR "wom*n leader*" OR "female leader*" OR "gender leadership" OR "gender leader*" OR "female academic leader*" OR "leadership of wom*n" OR "leadership of female academic*" AND "universit*" OR "higher education*" OR "higher learning" OR "institution of higher learning" OR "higher learning institution*" OR "education institution*" OR "college*" OR "academic*" OR "academia". The keyword search on 17 April 2024 resulted in 951 documents. The search was then refined by limiting it to journal articles in English published until 2023 only and resulted in 563 documents. The data was then processed using the Publish or Perish and R software's "bibliometrix" package. In this case, performance analysis is conducted to uncover the trends followed by co-citation analysis, bibliographic coupling, and co-word analysis to uncover the theme in general.

Result and Discussions

The statistics reveal the first article on female leadership in HEIs context was published in 1952. Since then, the number of papers has increased at a 6.35% annual growth rate. The articles were published in 366 journals, with Gender in Management as the most productive source. In terms of country of origin, scholars from the United States contributed the most, followed by the United Kingdom, and Australia. For 62 years in the period from 1952–2014, there were less than 20 articles published every year. The number of publications started to go up, exceeding 20 articles in the following year, the same year when the SDGs were introduced. Most publications are in 2023 with 79 articles, reflecting the relevancy of the topic in the contemporary landscape.

A total of 1668 authors have contributed to the field, including 134 single authors. Co-authorship statistics reveal 3.32 co-authors per document with 15.99% of international co-authorship. Longman is identified as both the most productive and influential author with a total of 9 publications. In the citation years of 72, the average age of the documents is 7.5 years old. The total citations are 9,926, with an average citation per document of 17.63 and an H-index of 42.

Co-citation analysis was conducted to find out the intellectual structure of the field in which calculation was limited to the citations of the top 50 publications. The resulting map consisting of nine clusters is presented in Figure 1. The size of the node implied Karau et al. (2002) and Carli et al. (2007) as the most-cited author with the publications of *Role Congruity Theory of Prejudice toward Female Leaders* and *Through the Labyrinth: The Truth about How Women Become Leaders*; implying the works as foundations in the field. The results are in line with Fauzi's examination (2024) which shows the works to be among representative publications, further establishing their significance.

The former work extends the discourse about the "glass ceiling", an invisible, artificial barrier rooted in bias and discrimination which hinders women from accessing top-tier leadership roles, and explores the prejudices towards female leaders. The theory posits that the perceived incongruity between the female gender roles and leadership caused women to be less favored both in terms of the potential to occupy leadership roles and the enactment of leadership behavior as it is perceived to be unpreferable in women. These resulted in less positive attitudes towards women leaders and more obstacles to climb to the top. Meanwhile, the latter work proposes to update the infamous "glass ceiling" metaphor into the "labyrinth" for relevancy. The use of metaphor is considered to carry significance as it helps elucidate concepts and influence perspectives. Thus, inaccurate ones of a problem lead to ineffective solutions. The "glass ceiling" the authors proposed is no longer appropriate as it, among others, implies single, absolute barriers and assumes that women have equal access compared to men. The labyrinth better captures women's challenges to the top as it acknowledges both the twists and turns and the attainability; thus, it is argued to give more suitable measures.

The investigation further uncovered nine distinct clusters in the research landscape dominated by Cluster 3 and Cluster 8. Karau et al. (2002) have the most betweenness centrality (77.43) in Cluster 3 with the aforementioned paper and Morley (2013) in Cluster 8 (114.10) with the publications of The Rules of the Game: Women and the Leaders *Turn in Higher Education*. Morley's work (2013) engages with Diana Leonard's perspective and explores the wide adaptation of leadership into the academic organization and the place of gender in it. It discusses proposed explanations of the prevalent absence of women in leadership positions, including Karau et al. (2002) argument to uncover the hidden norms that underlie the meritocratic façade of academia. In it, Diana suggested women's nescience of 'the rules of the game' that includes the hidden curriculum of academia such as networking, perseverance, and political proficiency, to be the cause of the paucity. The results show the authors as the most co-cited by others, suggesting their roles as intellectual foundations in their respective groups and women's challenges to occupy leadership positions as central themes.

The closeness metric in general reveals Merriam (2009) and Madsen (2008) have the highest closeness centrality of 0.2. The former explored qualitative research, while the latter examined the experiences of women university presidents through a qualitative study. The metric reveals the authors are most likely to interact, thus further indicating how the intellectual structure has evolved.
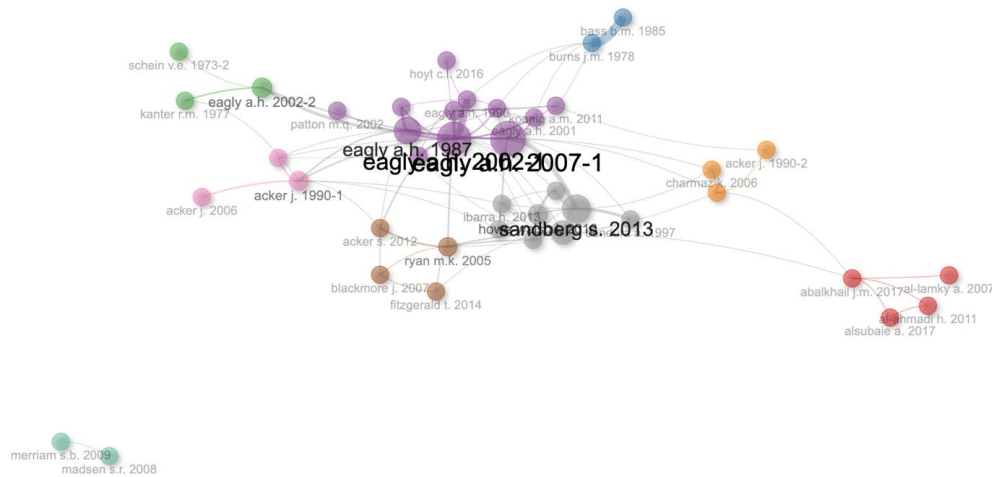
Figure 1. Co-citation network by documents

Bibliographic coupling is employed to explore the knowledge structure of the field by the measure of the author's keywords. The study examined 250 documents with minimum cluster frequency per 5, three labels per cluster, and the impact measure of global citation. Figure 2 displays the coupling map comprised of 10 clusters. The examination reveals that "woman leaders"-"college student leadership"-"college women student leaders" have the most significance, indicating the keywords jointly appear in publications and make up the most influential cluster in the field. This suggests the scope of women's leadership in HEIs goes beyond faculty members.
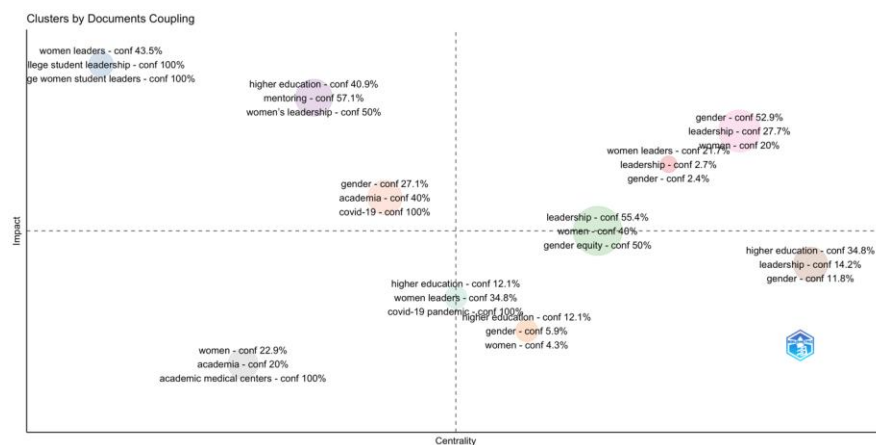

Figure 2. Clustering by Coupling by Author's Keywords

Co-word analysis through the exploration of the co-occurrence of the author's keywords was conducted to unveil the conceptual structure of the field. The analysis was limited to 250 keywords with a minimum cluster frequency of 5 per thousand documents and three labels per cluster. Figure 3 displays the result of the analysis. The figure shows "women's leadership," "glass ceiling," and "gender diversity" to be among the motor themes in the field. As can be recalled from the intellectual structure analysis, the extended discussion about the "glass ceiling" was among the intellectual bases in the field. Indeed, the concept

has been the subject of a considerable amount of publications ever since it gained attention in the 1990s S. Singh et al. (2023), even when a new metaphor, Carli et al. (2007), was proposed. Meanwhile, "leadership", "gender," and "women" were part of the basic themes and "leadership styles", "government support" and "women academics" are among the niche themes. Lastly, "sustainable development" and "knowledge management" are among the emerging or declining themes in general.
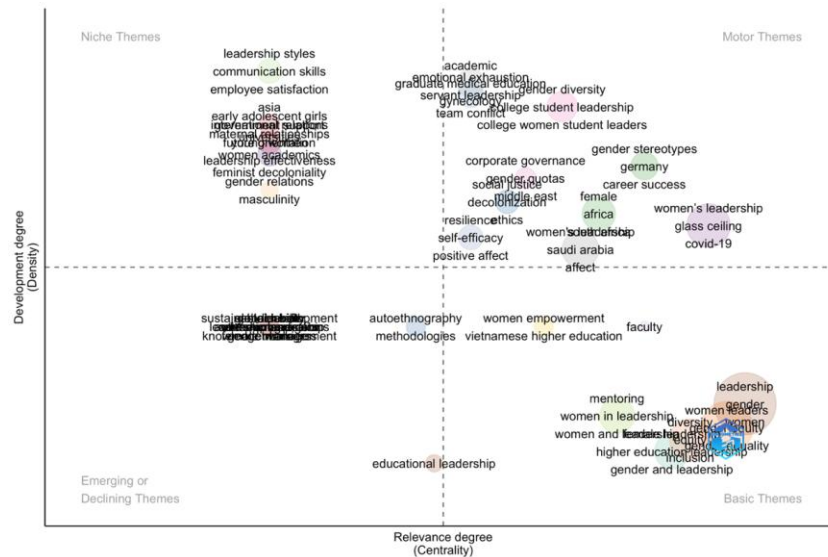

Figure 3. Thematic Map by Author's Keywords

The networks of the keywords are illustrated in Figure 4. As indicated, the field consists of five clusters labeled according to the predominant themes. Respectively, the clusters are labeled "women's leadership", "women leaders", "higher education", "leadership", and "diversity".

Figure 4. Thematic Network by Author's Keywords

Further, a chronological-thematic analysis to get a more comprehensive view of the

evolution of the field. The study divided the time slice into two: before and after SDGs. Thus adapted the cutting year of 2015. The evolution is summarized in Figure 5. The alluvial graph elucidates the dynamic among the subthemes in the field. Specifically, how they emerge, disappear, merge with other themes, or reappear over time Khare and Jain (2022), which will be explained in detail through the analysis of chronological thematic maps of each period presented in Figure 6.
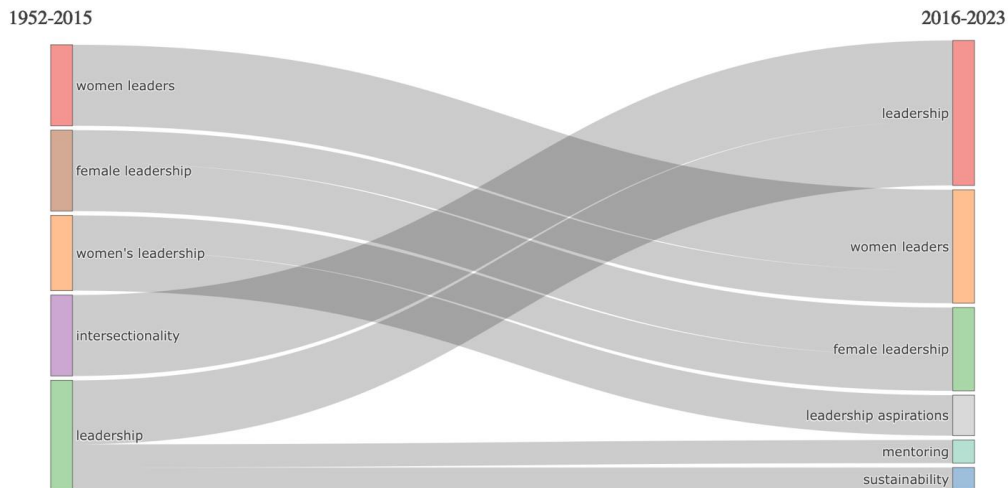

Figure 5. Thematic Evolution by Author's Keywords
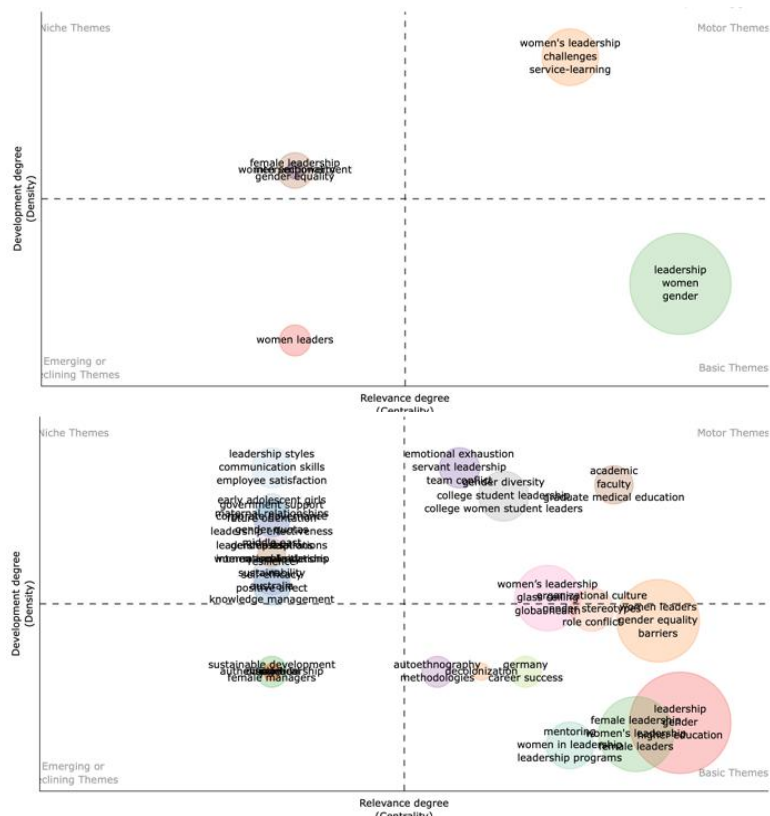

Figure 6. Chronological Thematic Map

As indicated by the figure, several themes emerged from the first period. However, the themes only concentrated on females and leadership. Indeed, the chronological thematic map reveals only limited themes in the period before SDGs, with "women leadership", "challenges" and "service learning" as the motor themes. "Gender equality" was shown to be a niche theme before SDGs. The themes got richer in the second period, with more explorations such as on "sustainability". "Gender equality" moved into one of the basic themes in the second period, although still high in relevancy.

The map reveals the evolvement of the field as well as suggestions for future research. In this context, scholars are suggested to explore the underdeveloped themes and refrain from the widely studied ones, which reside in Q2 and Q4. Thus, in this field, "sustainable development" and "gender equality", among others, could be potential themes to be explored. "Sustainable development" could not be more befitting for current reality. Despite the instrumental roles and contributions, women leaders are nonuniquely unexempted from challenges in the sustainability field (Shinbrot et al., 2019). It merits future research in the HEIs context as they are considered to be key, transformational agents in shaping responsible future generations through education, research, and management practices (Serafini et al., 2022). Indeed, the link between the two is still being considered for developing by Barrios et al. (2020),Click or tap here to enter text. and preliminary exploration shows no work available in the context of HEI. Such research may thus give specificity on how women leaders and sustainability interact in HEIs as research has highlighted the increase of environmental support following better representation of women (Kronsell, 2013). Meanwhile, "gender equality" has remained in the lower quadrants over time, indicating the theme stays underdeveloped. Thus, the examination may further advance the theme, especially considering its fundamental, persistent nature.

Conclusion

Given the weight and prospect, gender segregation in top positions in Higher Education Institutions (HEIs) has been a topic of scholarly discussion for a considerable amount of time. Indeed, it's proved to be a resilient issue, reflected in the first publication in 1952. To get a holistic idea of how the field evolves, a range of bibliometric analyses were conducted. Performance analysis was carried out to answer the first research question related to the trends. Statistics from publications until 2023 reveal the increase of publications in the field with an annual growth rate of 6.35%. The first 62 years from 1952–2014 saw a modest growth, with less than 20 publications per year. The number started to go up, exceeding 20 articles in 2015, in congruence with the introduction of the SDGs. 2023 sees most publications, indicating the topic's relevance in the current landscape.

Co-citation analysis, bibliographic coupling, and co-word analysis were then organized to answer the second research question regarding the intellectual, knowledge, and conceptual structures that reveal the past, present, and future of the field. Co-citation analysis implies Karau et al. (2002) and Carli et al. (2007)'s publications which focus on the challenges women leaders face, to be the foundational works in the field. Bibliographic coupling shows that "woman leaders"-"college student leadership"-"college women student leaders" are the most influential cluster in the field. Lastly, co-word analysis suggests "sustainable development",among others, are potential themes to be explored in future research.

The present examination is not exempted from limitations. For once, the study only covered one database and put restrictions in terms of the language and time in the search which may leave some articles unexplored. Future research can thus look into different sources and periods. It is also worth noting that scholars have criticized the lack of depth in bibliometric analysis, suggesting the possibility of integrating other techniques such as content analysis. Furthermore, future endeavors may examine a more specific context such as cultural values by focusing on certain regions. Regardless of the limitations, the current investigation will aid scholars in making sense of the field.

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