Shaping Future Leaders: A Bibliometric Study on Leadership Development

Loso Judijanto[1], Istiarsyah[2]
[1] IPOSS Jakarta, Indonesia and losojudijantobumn@gmail.com
[2] Universitas Muhammadiyah Mahakarya Aceh and istiarsyah@ummah.ac.id

ABSTRACT

Leadership development has attracted growing scholarly attention in response to rapid technological change, sustainability challenges, and evolving workforce dynamics; however, the expanding body of literature remains fragmented across disciplines and perspectives. This study aims to map the global research landscape of leadership development through a bibliometric analysis of publications indexed in the Scopus database, using VOSviewer to examine publication trends, keyword co-occurrence, citation patterns, and collaboration networks among authors, institutions, and countries. The results show that leadership constitutes the central intellectual core of the field, closely linked to organizational management, interpersonal communication, decision making, education, and professional development, while more recent research increasingly emphasizes themes such as artificial intelligence, sustainability, innovation, and visionary leadership. The analysis also reveals a highly collaborative and internationally connected research community, with strong contributions from North America and Europe and growing cross-regional partnerships. Overall, this study provides a systematic overview of the intellectual structure and evolutionary trajectory of leadership development research, offering a useful reference for scholars and practitioners in identifying dominant themes and emerging directions for shaping future leaders.

Keywords: Leadership Development, Leadership, Future Leaders, Bibliometric Analysis, VosViewer

1. INTRODUCTION

Leadership has long been recognized as a critical factor in organizational success and societal development. Effective leadership not only drives performance but also shapes organizational culture, fosters innovation, and inspires teams toward shared goals [1], [2]. Over the decades, the study of leadership has evolved from trait-based approaches, which focused on inherent qualities of leaders, to more complex models encompassing behavioral, situational, and transformational perspectives [3], [4]. The emergence of globalization, technological advancement, and increasingly diverse workforces has amplified the need for adaptive leaders capable of navigating dynamic environments [5], [6]. Consequently, understanding the mechanisms that cultivate leadership skills has become an area of paramount interest among scholars and practitioners alike.

Leadership development, as a systematic process aimed at enhancing individuals' leadership capacities, has attracted considerable attention in educational, corporate, and governmental contexts. Programs designed to foster leadership competencies often integrate mentorship, experiential learning, training workshops, and reflective practices [7]. Research indicates that structured leadership development interventions can significantly impact both personal growth and organizational effectiveness, demonstrating that leadership is not merely an innate trait but a skill set that can be nurtured over time [8]. Despite its growing importance, there remains significant variability in the approaches, efficacy, and outcomes of leadership development initiatives, necessitating a comprehensive understanding of trends and patterns in the field.

The increasing volume of research on leadership development has given rise to diverse perspectives and methodologies. Scholars have examined leadership development through multiple

lenses, including psychological, sociological, and organizational frameworks [5]. Bibliometric studies, in particular, have emerged as valuable tools for mapping the structure of knowledge in a given domain, identifying influential authors, journals, and themes, and detecting emerging trends [9]. By quantifying publication patterns, citations, and collaborative networks, bibliometric analysis offers a systematic and objective method to evaluate the evolution of leadership development research. This analytical approach enables researchers to uncover the intellectual foundations of the field and highlight areas where further inquiry may be warranted.

The growing emphasis on future-oriented leadership reflects the recognition that contemporary challenges—ranging from climate change to technological disruption—require leaders who are not only effective in the present but also capable of anticipating and shaping the future [10]. Leadership development programs are increasingly designed with an eye toward cultivating competencies such as strategic thinking, ethical decision-making, and resilience. Moreover, the integration of digital tools, artificial intelligence, and virtual learning environments has transformed how leadership skills are developed, creating opportunities and challenges for both researchers and practitioners [11]. Understanding these evolving dynamics is essential for designing programs that produce leaders equipped to address complex, multifaceted problems in an interconnected world.

Despite the substantial body of research on leadership development, there is a persistent need to synthesize and evaluate existing knowledge comprehensively. While individual studies provide valuable insights, the fragmented nature of the literature can obscure broader trends and limit the ability to make evidence-based decisions about program design and policy implementation [12]. Bibliometric studies serve as a bridge between isolated research contributions and overarching knowledge structures, enabling scholars to map the conceptual, methodological, and thematic contours of leadership development research. Such analyses not only clarify the current state of knowledge but also inform the strategic direction of future research and practice.

Despite the recognition of leadership development as a vital area of study, the field remains fragmented, with research dispersed across multiple disciplines, methodologies, and contexts. There is limited understanding of the intellectual structure, key contributors, and emerging trends in leadership development research. This fragmentation hinders scholars, educators, and policymakers from fully leveraging existing knowledge to design effective leadership programs and prepare future leaders to meet evolving global challenges. The objective of this study is to conduct a bibliometric analysis of leadership development research to identify publication trends, influential authors and journals, collaboration networks, and emerging themes.

2. METHODS

This study employed a bibliometric research design to systematically analyze the existing literature on leadership development. Bibliometric analysis is a quantitative approach that examines publication patterns, citation networks, and co-authorship structures to reveal trends, influential works, and knowledge gaps within a research field. This method allows researchers to objectively map the evolution of a domain, identify key contributors, and highlight emerging areas of inquiry.

The data for this study were collected from Scopus, which are widely recognized for their comprehensive coverage of peer-reviewed journals and citation data. Keywords such as "leadership development," "leadership training," "future leaders," and related terms were used to identify relevant publications. Inclusion criteria were established to focus on journal articles, review papers, and conference proceedings published in English over the past two decades, ensuring that the

analysis reflects contemporary trends and developments. All retrieved publications were exported, and bibliographic information was systematically organized for analysis. Data analysis involved the use of VOSviewer software, to visualize and quantify research patterns. Co-authorship analysis was conducted to identify collaborative networks among scholars, while citation analysis was used to determine the most influential articles and authors in the field. Keyword co-occurrence and thematic mapping were performed to detect prominent research themes and emerging topics within leadership development studies.

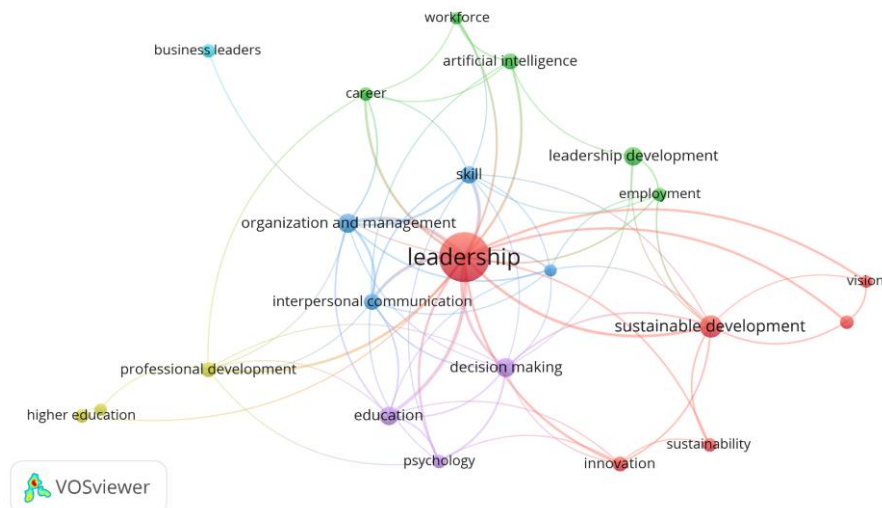## 3. RESULTS AND DISCUSSION

3.1 Network Visualization

Figure 1. Network Visualization
Source: Data Analysis Result, 2025

Figure 1 illustrates leadership as the central and most dominant concept, indicating its role as the core intellectual anchor in leadership development research. The size and central position of the "leadership" node reflect its high frequency and strong connectivity with other themes, suggesting that most scholarly discussions—regardless of disciplinary orientation—ultimately converge on leadership as a foundational construct. This confirms that leadership development is not treated as a standalone topic, but rather as an integrative concept that connects organizational, individual, and societal dimensions of development.

A prominent cluster surrounding organization and management, interpersonal communication, decision making, and skill highlights the managerial and competency-based perspective of leadership development. This cluster emphasizes leadership as a set of learnable skills shaped through organizational processes, communication practices, and cognitive decision-making capabilities. The strong interconnections among these terms indicate that leadership development research has traditionally focused on enhancing managerial effectiveness through training, professional development, and organizational learning mechanisms, particularly within corporate and institutional settings. Another visible cluster links education, higher education, professional development, and psychology, underscoring the pedagogical and behavioral foundations of leadership development. This cluster reflects the growing emphasis on leadership education as a lifelong learning process that begins in academic institutions and continues through professional careers. The inclusion of psychology suggests that leadership development research increasingly incorporates individual-level factors such as motivation, personality, emotional intelligence, and cognitive development, reinforcing the idea that effective leadership formation requires both structural support and personal growth.

The network also reveals an emerging and strategically important cluster connecting artificial intelligence, workforce, career, employment, and leadership development. This cluster signals a shift in research attention toward the future of leadership in digitally transformed workplaces. The presence of artificial intelligence as a connecting node suggests that scholars are increasingly examining how technological change reshapes leadership competencies, career pathways, and workforce dynamics. Leadership development is therefore being reframed to address adaptability, digital literacy, and human–technology interaction in modern organizations. The cluster linking sustainable development, sustainability, innovation, and vision reflects a normative and future-oriented direction in leadership development research. This cluster indicates that leadership is increasingly associated with long-term value creation, ethical responsibility, and societal impact rather than short-term organizational performance alone. The connections between vision and sustainability suggest that future leaders are expected to guide innovation while aligning organizational goals with broader sustainability agendas.
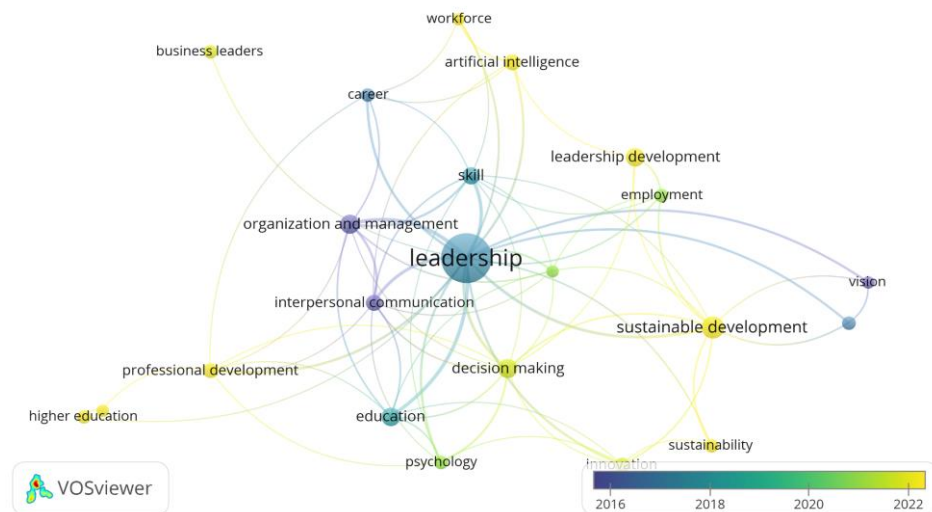
3.2 Overlay Visualization

Figure 2. Overlay Visualization
Source: Data Analysis Result, 2025

Figure 2 illustrates the temporal evolution of leadership development research, where node colors represent the average publication year of each keyword. The central term "leadership" appears in a cooler blue–green tone, indicating its long-standing presence and foundational role in the literature. Closely connected concepts such as organization and management, interpersonal communication, decision making, and education also appear in earlier hues, suggesting that early research primarily emphasized managerial functions, communication skills, and formal education as core mechanisms for developing effective leaders. Keywords shown in greener tones, including career, skill, workforce, and leadership development, represent a transitional phase in the literature. This shift reflects a growing interest in leadership as a dynamic capability that evolves across career stages and organizational contexts. During this period, research increasingly moved beyond static leadership traits toward competency development, employability, and continuous professional growth, aligning leadership development more closely with human resource development and workforce planning perspectives. More recent themes, highlighted in yellow, include artificial intelligence, sustainable development, sustainability, innovation, vision, employment, and professional development. These emerging keywords indicate a contemporary research focus on preparing future leaders for complex, technology-driven, and sustainability-oriented environments. The prominence of artificial intelligence and sustainability suggests that leadership development

research is increasingly concerned with ethical decision-making, digital transformation, and long-term societal impact.

3.3 Citation Analysis

Table 1. The Most Impactful Literatures

Citations	Authors and year	Title
516	[13]	The role of leadership in a digitalized world: A review
306	[14]	Talking AI into Being: The Narratives and Imaginaries of National AI Strategies and Their Performative Politics
254	[15]	Artificial intelligence in nursing: Priorities and opportunities from an international invitational think-tank of the Nursing and Artificial Intelligence Leadership Collaborative
154	[16]	Workplace violence experienced by nursing students: A UK survey
121	[17]	Benner's model and Duchscher's theory: Providing the framework for understanding new graduate nurses' transition to practice
81	[18]	Trends in the practices of academic developers: trajectories of higher education?
70	[19]	What drives future business leaders? How work values and gender shape young adults' entrepreneurial and leadership aspirations
65	[20]	Developing compassion through a relationship centred appreciative leadership programme
48	[21]	Shaping the Future of Research: A perspective from junior scientists
47	[22]	The New Civic Leadership: Place and the co-creation of public innovation

Source: Scopus, 2025

3.4 Density Visualization

Figure 3. Density Visualization
Source: Data Analysis Result, 2025

Figure 3 highlights leadership as the most intensive and central theme in leadership development research, indicated by the bright yellow region at the core of the map. This

concentration reflects the high frequency and strong interconnectedness of leadership-related studies across multiple domains. Surrounding high-density areas such as organization and management, interpersonal communication, decision making, skill, and education indicate that the dominant body of literature has traditionally focused on developing leadership through managerial practices, communication competence, and cognitive capabilities supported by formal learning environments. Moderate-density regions, shown in green and blue tones, reveal complementary and emerging areas that extend the core leadership discourse. Topics such as leadership development, career, workforce, professional development, and psychology suggest a growing emphasis on leadership as a continuous developmental process across individual career trajectories. Meanwhile, the presence of artificial intelligence, sustainable development, sustainability, innovation, and vision (though less dense) signals expanding scholarly interest in future-oriented leadership challenges. These areas represent promising directions for further research, particularly in preparing leaders to navigate digital transformation, ethical complexity, and sustainability-driven organizational agendas.
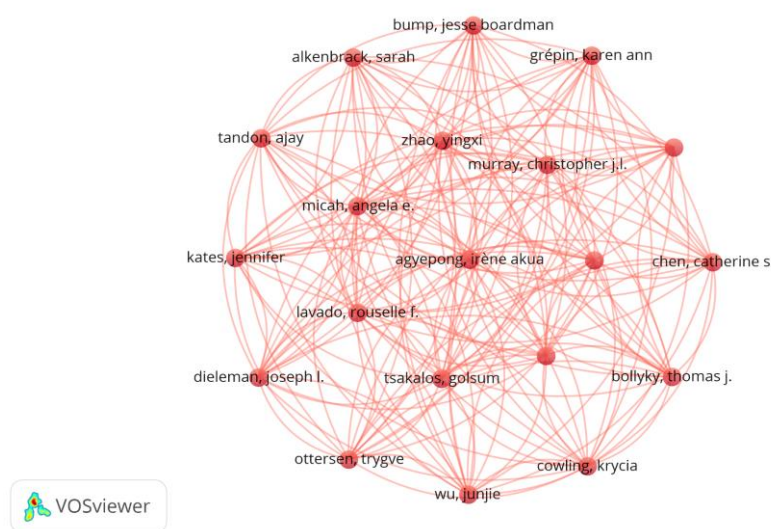
3.5 Co-Authorship Network

Figure 4. Author Visualization
Source: Data Analysis Result, 2025

Figure 4 reveals a highly interconnected scholarly community within leadership development research, characterized by dense collaboration patterns among key authors. Central figures such as Murray, Christopher J., Zhao, Yingxi, Agyepong, Irene Akua, and Tsakalos, Golsum occupy prominent positions, indicating their influential roles in shaping the field through frequent collaboration and cross-institutional partnerships. The dense web of links suggests that leadership development research is strongly collaborative, with knowledge production driven by interconnected research teams rather than isolated scholars. This pattern reflects the interdisciplinary nature of the field, where insights from management, psychology, education, and public policy converge, reinforcing the collective advancement of leadership development scholarship.
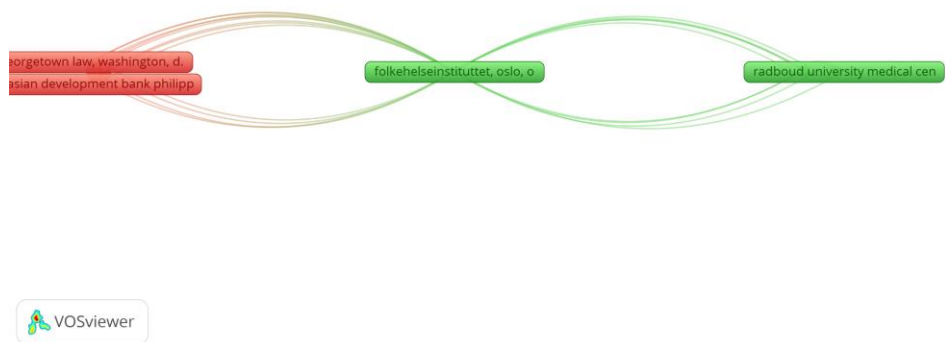
Figure 5. Affiliation Visualization
Source: Data Analysis Result, 2025

Figure 5 shows a selective but strategic pattern of inter-organizational cooperation in leadership development research. Institutions such as Georgetown Law (Washington, D.C.) and the Asian Development Bank (Philippines) appear closely linked, indicating collaboration that bridges academic, policy, and development-oriented perspectives. These institutions are connected through Folkehelseinstituttet (Oslo, Norway), which functions as a central intermediary, facilitating knowledge exchange between policy-focused organizations and research-intensive institutions. On the other end of the network, Radboud University Medical Center is linked to Folkehelseinstituttet, highlighting collaboration that integrates leadership development with health, public policy, and institutional governance contexts.
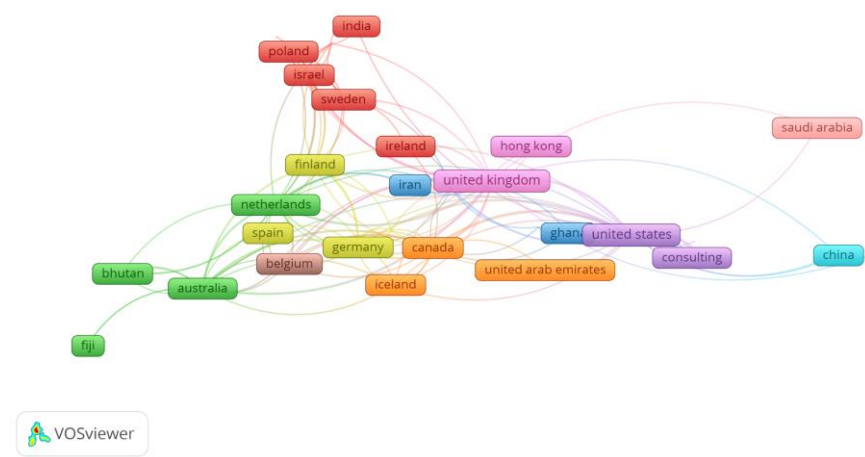

Figure 6. Country Visualization
Source: Data Analysis Result, 2025

Figure 6 reveals a globally interconnected structure of leadership development research, characterized by multiple regional clusters and cross-continental linkages. Countries such as the United Kingdom, United States, and Canada occupy central positions, indicating their roles as major hubs that facilitate international research collaboration. European countries (including Germany,

Netherlands, Finland, Sweden, Ireland, and Belgium) form a dense collaborative cluster, reflecting strong intra-European research networks and shared academic traditions in leadership and organizational studies. Meanwhile, emerging collaborations involving.

Discussion
Practical Implications

The findings of this bibliometric study offer several important practical implications for organizations, educational institutions, and policymakers engaged in leadership development. First, the dominance of themes such as leadership competencies, interpersonal communication, decision making, and organizational management suggests that effective leadership development programs should continue to emphasize foundational managerial and behavioral skills. However, the emergence of newer themes (particularly artificial intelligence, sustainability, innovation, and vision) indicates that traditional leadership training models must be expanded to incorporate digital literacy, ethical technology use, and sustainability-oriented thinking. Organizations seeking to prepare future leaders should therefore integrate technology-enabled leadership development initiatives, scenario-based learning, and sustainability-driven leadership frameworks into their talent development strategies.

Second, the strong linkage between leadership development, education, professional development, and career progression highlights the importance of viewing leadership development as a lifelong and continuous process rather than a one-time intervention. Higher education institutions and professional training providers can leverage these insights by designing leadership curricula that bridge academic learning with real-world organizational challenges. Furthermore, the global collaboration patterns observed in the country and institutional networks suggest that international partnerships and cross-sector collaboration can enrich leadership development initiatives by incorporating diverse perspectives, cultural contexts, and governance models. Policymakers may use these findings to support leadership capacity-building programs that align workforce development with long-term national and global sustainability goals.

Theoretical Contribution

From a theoretical perspective, this study contributes to the leadership development literature by providing a systematic and integrative mapping of the field's intellectual structure and evolution. By synthesizing a large body of publications, the bibliometric analysis reveals how leadership development research has evolved from traditional managerial and psychological foundations toward more complex, future-oriented paradigms. The co-occurrence and overlay analyses demonstrate a clear theoretical shift from trait- and skill-based leadership models toward dynamic, contextual, and sustainability-driven leadership frameworks that emphasize adaptability, innovation, and digital transformation. Moreover, the identification of emerging themes such as artificial intelligence and sustainable development extends existing leadership theories by highlighting the growing relevance of technological and ethical considerations in leadership development. This study therefore supports the expansion of leadership theory beyond individual-centric models toward systemic and ecosystem-based perspectives, where leadership is embedded within organizational, technological, and societal contexts. By revealing key authors, institutions, and countries that shape the field, this research also contributes to the understanding of how knowledge production and collaboration influence theoretical development in leadership studies.

Limitations and Future Research Directions

Despite its contributions, this study has several limitations that should be acknowledged. First, the analysis is based solely on publications indexed in the Scopus database, which may exclude relevant studies published in non-indexed journals, regional databases, or practitioner-oriented outlets. As a result, some local or context-specific leadership development research (particularly from developing regions) may be underrepresented. Future studies could address this limitation by

incorporating additional databases such as Web of Science, Dimensions, or Google Scholar to provide a more comprehensive coverage. Second, bibliometric analysis focuses on publication patterns, keywords, and citation relationships, which limits the ability to capture the substantive depth and contextual nuances of individual studies. While the visualization techniques reveal structural trends, they do not assess the quality, empirical rigor, or theoretical robustness of the included research. Future research could therefore complement bibliometric findings with systematic literature reviews or meta-analyses to deepen conceptual and empirical insights. Finally, longitudinal qualitative investigations may further explore how emerging themes (such as AI-enabled leadership and sustainability-driven leadership) are operationalized in practice, offering richer insights into the future trajectory of leadership development research.

CONCLUSION

This bibliometric study provides a comprehensive overview of the intellectual landscape and evolutionary trajectory of leadership development research. By mapping publication trends, thematic structures, and collaboration networks, the study demonstrates that leadership development has progressed from traditional emphases on managerial skills, communication, and education toward more integrative and future-oriented frameworks that incorporate digital transformation, sustainability, innovation, and ethical leadership. The findings highlight leadership as a multidimensional and dynamic process shaped by organizational, technological, and societal contexts, rather than a static set of individual traits. By offering systematic insights into key research themes, influential contributors, and emerging directions, this study contributes to a clearer understanding of how leadership development scholarship continues to evolve and provides a valuable foundation for researchers, educators, and practitioners seeking to design evidence-based approaches for shaping future leaders.

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