Multidisciplinary Reviews

BIBLIOMETRIC RESEARCH
Published Online: October 17, 2025
https://doi.org/10.31893/multirev.2026230

Artificial intelligence for good governance in universities: Science mapping of present and future trends

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Abstract This study aims to explore and map the knowledge structure and research trends on the application of Artificial Intelligence (AI) for good governance in universities using a bibliometric analysis approach. A total of 373 scientific articles published between 2010 and 2025 were retrieved from the Web of Science database and analyzed through bibliographic coupling and co-word analysis techniques. This research focuses on key topics such as digital governance, corporate finance and social responsibility, corporate governance, and the application of machine learning for financial distress and bankruptcy prediction. The analysis highlights how AI is increasingly seen as a tool to enhance transparency, accountability, financial management, and institutional resilience within higher education institutions. Moreover, AI applications in data analytics, decision-making, and performance monitoring are shown to provide universities with actionable insights that can improve governance processes and optimize resource allocation. Additionally, the integration of AI into strategic planning and decision-making supports informed leadership and effective policy formulation, fostering better institutional performance. However, the study also identifies critical challenges, including ethical concerns, data privacy issues, and the digital divide, which could hinder the effective implementation of AI technologies in university governance. These concerns emphasize the need for a well-regulated framework to ensure that AI is deployed responsibly, ensuring inclusivity and equity in its use. The findings provide valuable insights for policymakers, university leaders, and researchers in formulating strategic, data-driven governance solutions that can address current challenges while advancing institutional goals in the digital era. This research contributes to the growing body of knowledge on the intersection of AI, governance, and higher education, offering a foundation for future investigations.

Keywords: university, accountable, policymakers, bibliometrics, bibliographic coupling, co-word analysis

1. Introduction

Artificial intelligence (AI) has emerged as a transformative force across various sectors, including education and governance. In the context of higher education institutions, the integration of AI not only revolutionizes academic processes but also reshapes governance structures to become more transparent, accountable, and efficient (Simion, 2024). The concept of good governance, characterized by transparency, accountability, participation, and responsiveness, is increasingly linked with digital transformation initiatives in universities. As AI technologies such as machine learning, natural language processing, and predictive analytics mature, their application in governance practices becomes critical for enhancing institutional effectiveness and stakeholder satisfaction (Ahmar et al., 2024; Cooray & Özmen, 2024; Duppati et al., 2023; Hunjra et al., 2024; Laptev & Feyzrakhmanova, 2021; Yanuarni et al., 2024).

The growing complexity of university governance, driven by globalization, financial pressures, and demands for greater accountability, necessitates innovative solutions. AI-based systems offer potential in supporting data-driven decision-making, improving resource management, and enhancing policy implementation processes (Baan, 2023; Cao, 2023; Falco et al., 2021; Hamzah, 2025; Munna et al., 2023; Siti Astuti et al., 2022; Wirawan et al., 2025; J. C. Zhao, 2024). Moreover, AI can facilitate the automation of routine administrative tasks, enabling university leaders to focus on strategic governance issues (Arif et al., 2025; Badolo et al., 2025; Kanaujia et al., 2025; Saba & Pretorius, 2024; Tuan & Vu, 2024; Yang et al., 2024). Despite these promising developments, the adoption of AI in governance practices across universities remains fragmented, with few empirical studies examining its effectiveness and long-term impact.

Bibliometric analysis serves as a powerful tool to map the evolution of research trends in this field, providing insights into the intellectual structure and future directions of AI applications in university governance (Gellai, 2023; Woelert et al., 2021). Through the analysis of publication patterns, influential authors, key research clusters, and emerging topics, scholars can better understand how the discourse on AI and good governance in higher education is developing (Donthu et al., 2021; Elmobark, 2025; Idkhan & Idris, 2023; Nkala et al., 2024; Ucheje & Balafama, 2025; Yahya et al., 2024). This form of science

 Received: July 27, 2025 | Accepted: September 10, 2025

mapping is crucial for identifying research gaps and formulating strategic research agendas that align with the needs of modern educational institutions.

Furthermore, as universities aspire to achieve Sustainable Development Goals (SDGs), particularly Goal 16 on Peace, Justice, and Strong Institutions, the role of AI in promoting good governance becomes increasingly significant (UNESCO, 2022). Universities, as centers of knowledge and innovation, must lead by example in implementing governance models that are ethical, inclusive, and technologically advanced. Therefore, examining the current state of research on AI-driven governance practices is essential for fostering responsible innovation and policy formulation within academic institutions.

The study aims to perform a comprehensive bibliometric analysis to chart the current landscape and future research directions related to AI for good governance in universities. By leveraging data from reputable scientific databases and employing bibliometric tools such as VOSviewer and Bibliometrix, this research seeks to identify key contributors, collaboration networks, dominant themes, and potential future research directions. The findings of this study are expected to provide valuable insights for policymakers, university administrators, and researchers in shaping effective governance strategies through the responsible use of AI technologies.

2. Materials and Methods

The bibliometric approach is a systematic and quantitative research method used to analyze large volumes of scientific publications and bibliographic databases. This method employs various science mapping techniques to explore patterns, trends, and relationships within academic literature, enabling researchers to visualize the intellectual structure and development of a particular research field (Donthu et al., 2021). Through the application of bibliometric indicators—such as citation analysis, coauthorship networks, cocitation analysis, bibliographic coupling, and coword analysis—this approach provides valuable insights into the productivity of authors, influential journals, collaboration networks, and the evolution of key research themes. By identifying influential works and emerging topics, bibliometric analysis not only aids in understanding the historical progression of scientific knowledge but also highlights potential directions for future research. This makes it an essential tool for scholars, policymakers, and research institutions seeking to assess research performance and formulate strategic decisions on the basis of evidence-driven insights.

We utilized the search string outlined in Table 1 to systematically identify relevant publications aligned with the research focus. This search strategy was carefully constructed via a combination of keywords and Boolean operators to ensure comprehensive coverage of the literature related to artificial intelligence and good governance in the context of universities. By incorporating relevant terms and their variations, the search string enabled the retrieval of high-quality and thematically pertinent publications from selected bibliographic databases. This approach ensured that the dataset collected for analysis was both representative and aligned with the study's objectives, providing a solid foundation for subsequent bibliometric and content analyses.

Table 1 Search string in the WoS database.

No	Keywords	Justification
1	"artificial intelligence" OR "machine learning" OR "deep learning" OR "AI" OR "Intelligent Systems" OR "Computer Vision" OR "Neural Networks"	Identify literature related to artificial intelligence.
2	"good governance" OR "governance principle*" OR "university governance" OR "higher education governance" OR "institutional governance" OR "Organizational Governance" OR "Academic Governance" OR "Public Sector Governance" OR "Accountable Governance" OR "Corporate Governance"	Identify literature related to good governance

3. Results

The literature search was conducted via the Web of Science (WoS) database on April 5, 2025. This search date was strategically selected to ensure that the most recent and relevant publications were captured, reflecting the current state of research developments in the field. By using WoS as the primary source, the study benefited from access to a wide range of high-impact journals and peer-reviewed articles, thereby enhancing the credibility and comprehensiveness of the bibliometric analysis. For clearer understanding, it is presented in Figure 1.

3.1. Bibliographic coupling

Among the 373 analyzed documents, 42 met the minimum threshold of 33 citations. These documents were subsequently grouped into four main clusters on the basis of topic relevance and interdocument citations. According to the total link strength (TLS), the three most influential documents within this network are Donthu et al. (2021) with a TLS of 243, followed by Jain et al. (2023) with a TLS of 175 (See Table 2). These three documents play a central role in shaping the

intellectual landscape of the studied topic, positioning themselves as key and pivotal references in the development of related literature.

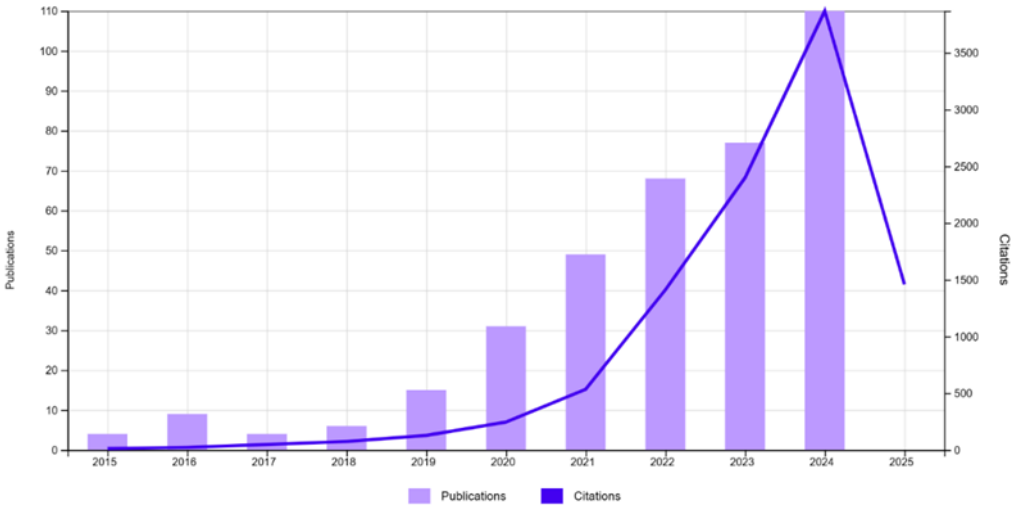

Figure 1 Number of publications and citations. *Source:* Web of Science Database.

Table 2 Top 10 documents in bibliographic coupling analysis.

No	Author	Scope	Jurnal	Citation	TLS
1.	Donthu et al. (2021)	Implementation of good governance through data-driven, transparent, and accountable decision-making	Journal Of Business Research	540	250
2.	J. Li et al., (2021)	The application of Artificial Intelligence in preventing greenwashing practices in public companies.	Finance Research Letters	410	49
3.	Geng et al., (2015)	Prediction of financial distress in public companies using data mining methods	European Journal Of Operational Research	293	159
4.	Liang et al. (2016)	Corporate governance using a machine learning approach.	European Journal Of Operational Research	274	94
5.	Manita et al. (2020)	The digital transformation of external audit and its impact on corporate governance	Technological Forecasting And Social Change	260	76
6.	Coglianese & Lehr (2017)	Regulating by Robot: Administrative Decision Making in the Machine-Learning Era	Georgetown Law Journal	231	93
7.	Cuypers et al. (2021)	Effective, transparent, and adaptive governance in line with good governance principles.	Academy Of Management Annals	222	145
8.	Jones et al. (2015)	Evaluation of classification methods for credit rating prediction to support financial governance	Journal Of Banking & Finance	207	71
9.	Brown et al. (2020)	Detection of Financial Misreporting Using Machine Learning Techniques.	Journal Of Accounting Research	190	103
10.	Mselmi et al. (2017)	Artificial Neural Networks (ANN) in Financial Distress	International Review Of Financial Analysis	188	152

Source: Web of Science Database.

Figure 2 illustrates the network visualization of bibliographic coupling, highlighting the relationships between documents on the basis of shared references. The four resulting clusters appear to exhibit relatively independent characteristics, indicating distinct research focuses and methodological approaches within each group. The following discussion centers on current research trends and future development directions regarding the application of artificial intelligence (AI) in achieving good governance in universities. The labeling of each cluster was carried out through an inductive interpretation process by revisiting representative articles within each cluster. These articles were then thoroughly analyzed and synthesized on the basis of common themes and prevailing research streams, resulting in a relevant classification that provides a comprehensive understanding of the intellectual landscape on this topic.

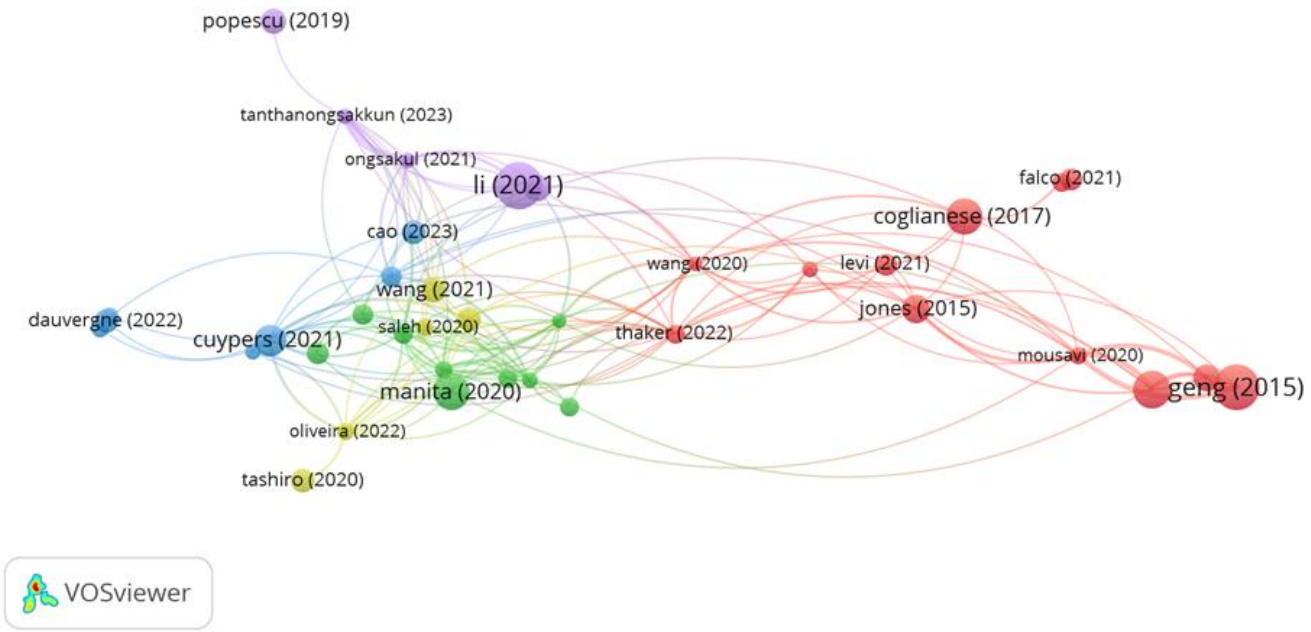

Figure 2 Bibliographic coupling of artificial intelligence for good governance at universities. *Source:* Web of Science Database.

• Cluster 1 (red): AI-Driven Predictive Governance and Financial Crisis Management

With 12 publications, this cluster explores how artificial intelligence and predictive models are increasingly utilized to enhance governance effectiveness and financial crisis management. Coglianese and Lehr (2017) highlighted the growing role of algorithmic decision-making in public administration, emphasizing the need for legal and ethical safeguards despite its efficiency benefits. In the financial sector, Geng et al. (2015) demonstrated that neural networks outperform traditional methods in predicting financial distress, providing more accurate early warning systems. Supporting this, Jones et al. (2015) reported that, compared with conventional approaches, advanced machine learning models such as random forests and boosting algorithms significantly improve credit rating predictions. Liang et al. (2016) further revealed that machine learning assists in corporate governance by reducing earnings manipulation and increasing financial transparency, illustrating the critical role of AI in modern governance and financial risk mitigation.

• Cluster 2 (green): Corporate Governance Dynamics: Moderating Factors, ESG Integration, and Digitalization Impacts

With 9 publications, this cluster discusses the evolving dynamics of corporate governance influenced by moderating factors, ESG integration, and digitalization. Abdou et al. (2021) reported that board characteristics, such as independence and diversity, play a critical role in mitigating earnings management practices, particularly in emerging markets. Al-Hiyari et al. (2023) highlighted that strong ESG performance enhances investment efficiency but is influenced by board cultural diversity, which can either strengthen or weaken this relationship depending on the organizational context. Hasan et al. (2025) emphasized the importance of corporate governance reforms in promoting responsible financial strategies, noting that governance structures directly affect firm value and risk management. Moreover, Manita et al. (2020) explored how digital transformation is reshaping audit functions, enhancing the effectiveness of governance mechanisms through improved data analytics and real-time monitoring, ultimately leading to stronger oversight and accountability within organizations.

• Cluster 3 (blue): Ethical Governance and Sustainability in the Age of AI and Global Challenges

With 5 publications, this cluster focuses on the role of digital governance and predictive strategies in strengthening corporate oversight. Dong et al. (2021) demonstrated how the adoption of advanced digital technologies enables organizations to improve transparency and accountability by facilitating real-time data monitoring and decision-making. Oliveira et al. (2022) emphasized the importance of predictive analytics in identifying potential governance risks and financial irregularities, allowing organizations to take preventive measures before issues escalate. Similarly, Wang et al. (2021) reported that digital governance tools, including big data analytics and AI-driven platforms, support more informed and strategic board-level decisions, ultimately enhancing corporate performance and reducing governance failure.

• Cluster 4 (yellow): Digital Governance and Predictive Strategies for Increasing Corporate Oversight

With 5 publications, this cluster explores how corporate culture, integrity, and governance practices contribute to achieving sustainable organizational performance. K. Li et al. (2021) highlighted that fostering a culture of innovation and integrity within organizations positively influences financial outcomes and long-term value creation. Ongsakul et al. (2021) emphasized the role of corporate integrity in enhancing stakeholder trust, particularly through transparent governance

practices that mitigate managerial opportunism. Popescu and Popescu (2019) discussed how integrating corporate social responsibility and intellectual capital strengthens both financial and nonfinancial performance, promoting sustainable business growth. Tanthanongsakkun et al. (2023) further revealed that ethical leadership and well-structured governance frameworks play crucial roles in reducing environmental risk and ensuring responsible management practices, reinforcing the importance of aligning corporate values with sustainability objectives.

- Cluster 5 (Purple): Corporate Culture, Integrity, and Governance for Sustainable Performance

With 5 publications, this cluster examines the critical relationships among corporate culture, integrity, and governance in driving sustainable organizational performance. K. Li et al. (2021) emphasized that a strong organizational culture based on ethical practices and integrity is key to achieving long-term sustainability, fostering an environment conducive to innovation and growth. Ongsakul et al. (2021) highlighted that transparency in governance and ethical behavior are fundamental to building stakeholder trust and reducing the risk of managerial misconduct, which in turn enhances sustainable performance. Popescu and Popescu (2019) argued that the integration of corporate social responsibility (CSR) and intellectual capital not only strengthens financial performance but also improves a company's nonfinancial outcomes, supporting long-term sustainability. Tanthanongsakkun et al. (2023) further contributed by showing that ethical leadership and governance structures are instrumental in mitigating environmental risk and aligning business operations with sustainability goals, ensuring responsible corporate behavior and sustainable performance.

Table 3 below provides a comprehensive overview of the results from the bibliographic coupling analysis. This table outlines key information, including the assigned cluster numbers and their corresponding visual colors, as depicted in the network visualization. Additionally, it presents the thematic labels attributed to each cluster and the total number of publications contained within each group and highlights several representative studies that exemplify the dominant research focus of their respective clusters. This summary serves as a valuable reference for understanding the structure of research developments and thematic concentrations within the field under investigation.

Table 3 Bibliographic coupling analysis of KM in SMEs.

Cluster No and color	Cluster label	Number of publications	Representative publication
1 (red)	AI-Driven Predictive Governance and Financial Crisis Management	12	(Coglianese & Lehr, 2017; Geng et al., 2015; Jones et al., 2015; Liang et al., 2016)
2 (green)	Corporate Governance Dynamics: Moderating Factors, ESG Integration, and Digitalization Impacts	9	(Abdou et al., 2021; Al-Hiyari et al., 2023; Hasan et al., 2025; Manita et al., 2020)
3 (blue)	Ethical Governance and Sustainability in the Age of AI and Global Challenges	7	(Böhm et al., 2022; Cuypers et al., 2021; Dauvergne, 2022; Erel et al., 2021)
4 (yellow)	Digital Governance and Predictive Strategies for Enhancing Corporate Oversight	5	(Dong et al., 2021; Oliveira et al., 2022; Wang et al., 2021)
5 (Purple)	Corporate Culture, Integrity, and Governance for Sustainable Performance	5	(K. Li et al., 2021; Ongsakul et al., 2021; Popescu & Popescu, 2019; Tanthanongsakkun et al., 2023)

Source: Web of Science Database.

3.2. Co-word analysis

Using the same dataset, a co-word analysis was conducted to explore the conceptual structure and thematic relationships within the body of literature. From a total of 1,943 extracted keywords, only 54 keywords met the minimum occurrence threshold of 10, indicating their significance and frequent appearance in the analyzed publications. Based on the data, the top 15 keywords are presented in Table 4. These frequently occurring keywords were then grouped into three distinct thematic clusters, each representing a different area of focus within the research domain. The formation of these clusters not only highlights the dominant topics that have attracted scholarly attention but also provides valuable insights into emerging research trends and potential areas for future investigation. This analysis plays a crucial role in mapping the intellectual landscape of the field and identifying the core concepts that drive academic discussions on artificial intelligence for good governance in universities.

Figure 3 illustrates the network structure derived from the co-word analysis, clearly visualizing three distinct clusters that represent separate thematic areas within the research landscape. Each cluster reflects a specific concentration of concepts and frequently associated keywords, indicating the presence of focused research streams. Following an inductive interpretive approach, the author carefully examined the most representative keywords and related studies within each cluster to assign appropriate and meaningful labels. These labels serve to encapsulate the core ideas and thematic orientation of each group, providing readers with a clearer understanding of the prevailing topics and research directions explored in the context of artificial intelligence for good governance at universities.

Table 4 Top 15 keywords in the co-occurrence of keywords analysis.

Rank	Keyword	Occurrences	Total link strength
1	corporate governance	186	651
2	machine learning	63	268
3	performance	61	257
4	ownership	50	236
5	governance	54	208
6	impact	46	201
7	management	35	167
8	firm performance	37	165
9	artificial intelligence	56	136
10	firm	24	123
11	determinants	27	115
12	disclosure	22	114
13	directors	19	107
14	financial performance	24	107
15	innovation	21	101

Source: Web of Science Database.

- Cluster 1 (red): Digital Governance: Increasing Accountability and Sustainability

Digital governance, supported by the rapid advancement of artificial intelligence (AI) and digital transformation, plays a vital role in strengthening accountability and promoting sustainability across various sectors. Through the integration of AI technologies such as predictive analytics and automated decision-making, governance processes have become more transparent, efficient, and responsive to public needs (Dwivedi et al., 2020). These technologies facilitate real-time data monitoring and open access to information, enabling stakeholders to hold institutions accountable while ensuring that responsible resource management is aligned with sustainability goals (Gupta et al., 2020). However, the adoption of digital governance must also address ethical concerns, data privacy, and equitable access to technology to avoid exacerbating social inequalities (Zuboff, 2019).

- Cluster 2 (green): Corporate Finance and Social Responsibility: Enhancing Firm Value

Corporate finance and social responsibility have become increasingly interconnected, particularly in the context of higher education institutions striving to enhance their financial sustainability and societal contributions. Guided by agency theory, which addresses conflicts of interest between management and stakeholders, universities are adopting corporate social responsibility (CSR) initiatives to strengthen their institutional reputation and long-term financial performance (Jensen & Meckling, 1976). Strategic CSR investments in education accessibility, environmental sustainability, and community engagement not only fulfill social obligations but also contribute to improving the perceived value of universities, thereby attracting more funding opportunities, partnerships, and student enrollments (Carroll & Shabana, 2010). This alignment between financial strategies and social responsibility efforts ultimately enhances institutional value and supports sustainable growth within the competitive landscape of higher education (Freeman et al., 2010).

- Cluster 3 (blue): Corporate Governance: Managing Ownership and Disclosure for Performance Improvement

Corporate governance plays a critical role in managing ownership structures and disclosure practices to improve institutional performance, including in the higher education sector. Effective governance mechanisms ensure that decision-making processes are transparent, accountable, and aligned with the interests of various stakeholders (Shleifer & Vishny, 1997). In universities, implementing strong governance structures helps mitigate issues related to earnings management and financial misreporting, fostering greater trust among donors, regulators, and the academic community (Healy & Wahlen, 1999). Clear disclosure of financial activities and strategic decisions also enhances institutional credibility and supports sustainable performance improvement. Moreover, well-regulated ownership and stakeholder involvement contribute to better resource allocation and long-term institutional resilience (Jensen & Meckling, 1976).

- Cluster 4 (Yellow): Machine Learning Models for Financial Distress and Bankruptcy Prediction

Machine learning models have become increasingly valuable tools for predicting financial distress and potential bankruptcy, including in the context of higher education institutions facing financial sustainability challenges. By leveraging advanced algorithms such as neural networks, support vector machines, and decision trees, these models can analyze complex financial data and key financial ratios to identify early warning signs of fiscal instability (Altman et al., 2017). The use of machine learning enhances prediction accuracy by capturing nonlinear relationships and hidden patterns within financial indicators that traditional statistical methods might overlook (Sun et al., 2014). In universities, applying these predictive models enables

proactive financial management, helping administrators implement timely corrective measures and safeguarding institutional viability amidst rising operational costs and fluctuating funding sources.

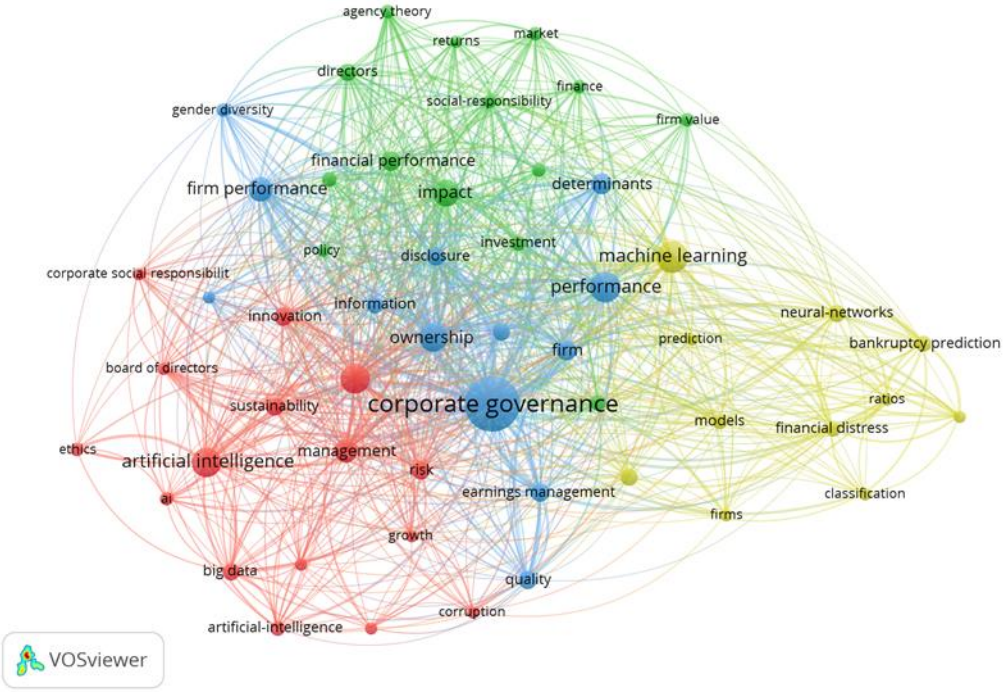

Figure 3 Co-word analysis of artificial intelligence for good governance. *Source:* Web of Science Database.

Table 5 provides a detailed summary of the co-word analysis results, capturing essential information to better understand the thematic structure of the research field. The table includes the cluster numbers along with their corresponding colors, as depicted in the network visualization, which helps to distinguish each thematic group visually. Additionally, it presents the labels assigned to each cluster via thematic analysis, the total number of keywords associated with each cluster, and a selection of representative keywords that characterize the primary focus of each group. This summary offers valuable insights into the dominant research themes and conceptual linkages, guiding readers in identifying key topics and emerging areas of interest in the study of artificial intelligence for good governance in universities.

Table 5 Summary of co-word analysis of artificial intelligence for good governance.

Cluster No and color	Cluster label	Number of keywords	Representative Keywords
1 (red)	Digital Governance: Enhancing Accountability and Sustainability	16	Artificial Intelligence (AI), Governance, Accountability, Digital Transformation, Sustainability
2 (green)	Corporate Finance and Social Responsibility: Enhancing Firm Value	14	Agency Theory, Corporate Social Responsibility (CSR), Financial Performance, Investment, Firm Value
3 (blue)	Corporate Governance: Managing Ownership and Disclosure for Performance Improvement	13	Corporate Governance, Firm Performance, Earnings Management, Disclosure, Ownership
4 (Yellow)	Machine Learning Models for Financial Distress and Bankruptcy Prediction	11	Bankruptcy Prediction, Financial Distress, Machine Learning, Neural Networks, Ratios

Source: Web of Science Database.

4. Discussion

The bibliometric analysis revealed significant insights into the current state and future directions of research on artificial intelligence (AI) for good governance in universities. Through bibliographic coupling, four primary clusters were identified, each representing a distinct research focus. The first cluster highlights the role of digital governance in promoting transparency, accountability, and sustainability within academic institutions. The integration of AI technologies, such as predictive analytics and automated decision-making, enables universities to improve administrative efficiency and foster more inclusive governance structures (Liang et al., 2016; Rehman & Umar, 2025; Saba & Pretorius, 2024; Tron et al., 2023; Tuan & Vu, 2024).

However, as digital transformation accelerates, universities must address critical challenges related to data privacy, ethical considerations, and equitable access to technology to prevent the widening of social inequalities (Wang et al., 2021).

The second cluster focuses on the intersection of corporate finance and social responsibility in enhancing institutional value. Drawing on agency theory, universities are increasingly adopting corporate social responsibility (CSR) initiatives to build a positive institutional image and strengthen long-term financial sustainability (Hunjra et al., 2024; Hunjra et al., 2020). CSR activities in education, such as promoting accessibility, environmental stewardship, and community development, not only fulfill social obligations but also increase the institution's attractiveness to prospective students and funding bodies (Manita et al., 2020). This strategic alignment between financial objectives and social responsibility efforts positions universities to achieve sustainable growth in an increasingly competitive education sector (Zengul et al., 2019).

The third cluster centers on the role of corporate governance in managing ownership structures and disclosure practices to improve institutional performance. Effective governance mechanisms ensure transparency, mitigate financial mismanagement, and strengthen stakeholder trust (Tuan & Vu, 2024). In the university context, robust governance practices help prevent earnings manipulation and foster greater accountability among administrators and governing bodies (X. Zhao et al., 2024). Additionally, clear disclosure of financial activities and strategic decisions enhances institutional credibility, supports better resource allocation, and promotes long-term organizational resilience (Barney, 1991).

The final cluster explores the application of machine learning models for predicting financial distress and bankruptcy risk in universities. With increasing financial pressure and operational challenges, higher education institutions increasingly rely on advanced predictive models to anticipate fiscal instability. Techniques like neural networks and support vector machines provide improved accuracy by recognizing intricate, nonlinear connections in financial data. (An & Suh, 2020; Solana-González et al., 2021). These predictive models enable proactive financial management, allowing university administrators to implement timely interventions that safeguard institutional sustainability and resilience in the face of uncertain economic environments (Badolo et al., 2025; Gunathilaka, 2021; Kanaujia et al., 2025; Laptev & Feyzrakhmanova, 2021; Zain et al., 2022).

5. Conclusion

The results of this bibliometric analysis indicate that the application of artificial intelligence (AI) in achieving good governance within universities is receiving increasing attention in the academic literature. Four main themes were identified—namely, digital governance, corporate finance and social responsibility, corporate governance, and the application of machine learning for financial crisis prediction—which demonstrate that AI plays a crucial role in enhancing transparency, accountability, financial efficiency, and the resilience of higher education institutions. However, challenges related to ethics, data privacy, and the digital divide must be addressed seriously to ensure that the implementation of AI will proceed in a fair, responsible, and sustainable manner in the future.

Ethical Considerations

Not applicable.

Conflict of Interest

The authors declare that they have no conflicts of interest.

Funding

This research was not funded.

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