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The Future of Digital Governance: A Bibliometric Exploration of Public Administration Transformation in the Era of e-Government and Artificial Intelligence

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ABSTRACT

Artificial intelligence is rapidly emerging as a transformative force in public administration, reshaping how government services are designed, delivered, and evaluated. This paper presents a bibliometric analysis of scientific literature from 2007 to 2023, focusing on the rise of AI within the broader context of e-government. Using the Bibliometrix package in R, the study maps global collaboration networks, identifies influential publications, and detects key conceptual clusters. The results highlight AI's growing role in automating administrative tasks, enabling data-driven decision-making, and enhancing citizen-centered service delivery. This analysis provides strategic insight into how AI is redefining digital governance and institutional legitimacy in the post-digital era.

1. Introduction

In recent years, the accelerated integration of artificial intelligence (AI) technologies and digital tools in public administration has triggered a paradigm shift in the way public institutions operate, interact with citizens, and make decisions. The transition toward digital governance—often defined as e-government—has evolved beyond simple digitization, moving towards intelligent, data-driven systems that aim to enhance transparency, efficiency, and citizen engagement.

Within the context of increasing complexity in governance processes and societal expectations for responsive and adaptive institutions, AI emerges not only as a technological solution but as a strategic driver of public sector reform. This shift aligns with the European Commission's digital agenda, which prioritizes interoperable public services, data ethics, and administrative innovation.

Despite the growing body of literature on digital transformation, the academic debate remains fragmented across disciplines and geographies. To address this knowledge gap, the present paper employs a bibliometric methodology to systematically explore the scientific landscape of AI-driven digital governance. Using data from the Web of Science and advanced analysis through the Bibliometrix R package, the study maps thematic clusters, publication trends, and international research collaborations from 2007 to 2023.

The main objective of this study is to offer a comprehensive understanding of how AI is shaping public administration practices, highlighting key trends, influential contributions, and emerging research frontiers. This contributes to a more strategic approach for both academic inquiry and public sector innovation policy.

2. Literature Review

The intersection of artificial intelligence (AI) and digital governance has been the subject of increasing scholarly attention, particularly as public institutions seek to modernize their infrastructure and enhance citizen engagement. The concept of e-government, initially focused on digitizing public services, has evolved toward a more complex and strategic paradigm involving automation, predictive analytics, and machine learning.

Early literature, such as that by Heeks (2006), emphasized the role of information and communication technologies (ICT) in improving administrative efficiency. Subsequent research has expanded the scope, highlighting the transformative power of AI in decision-making, policy design, and service personalization (Wirtz et al., 2019).

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Recent studies have also drawn attention to ethical considerations and governance challenges related to AI adoption in the public sector, such as algorithmic transparency, bias mitigation, and data privacy (Taddeo & Floridi, 2018). The emergence of frameworks like "AI for Good" and the European Union's guidelines on trustworthy AI have further structured the academic dialogue around responsible innovation.

A growing body of bibliometric research has analyzed the scientific production around digital governance and AI. For example, Yadegaridehkordi et al. (2021) conducted a bibliometric mapping of e-government literature, identifying core research streams such as digital inclusion, cybersecurity, and open data. However, relatively few studies have offered a focused bibliometric analysis that simultaneously captures the AI dimension within public administration.

In this context, the present study builds upon this literature by employing advanced bibliometric techniques to map the knowledge structure and evolution of AI-driven digital governance. By analyzing co-authorship patterns, keyword co-occurrence, and citation networks, this paper contributes a novel and data-driven understanding of the intellectual foundations and emerging trends in the field.

3. Methods

To provide a comprehensive view of the academic landscape related to AI and digital governance, this study employed a quantitative bibliometric analysis using the R-based Bibliometrix package. The data source was the Web of Science (WoS) Core Collection, chosen for its wide coverage of peer-reviewed, high-impact scientific literature. The search string combined key concepts such as "artificial intelligence," "e-government," "digital governance," and "public administration."

The time window for the analysis was set between 2007 and 2023, capturing the evolution of digital governance over a period marked by rapid technological advancements. After applying inclusion criteria—such as limiting results to articles, reviews, and proceedings papers in English—a total of 356 documents were retained for analysis.

Data preprocessing involved cleaning duplicates, standardizing author names, and harmonizing keyword terminology. Several bibliometric indicators were computed, including publication trends over time, most productive authors and institutions, and co-authorship patterns. Advanced mapping techniques such as co-word analysis, thematic evolution, and citation network clustering were then applied to reveal conceptual structures and collaborative dynamics within the field.

Visualization outputs such as thematic maps, collaboration networks, and trend topic plots were generated to illustrate the development and concentration of research topics. These outputs provide not only a descriptive overview but also a strategic framework for identifying emerging areas of study and potential research gaps.

4. Result

The bibliometric analysis revealed several key patterns and insights into the evolution of research on AI and digital governance. First, the number of publications has shown a steady increase since 2015, with a significant spike observed in 2020 and 2021, reflecting heightened interest in AI applications during the COVID-19 pandemic.

Table 1. Descriptive statistics and productivity trends

Main information about the data	
Timespan	2007:2023
Sources	223
Documents	1636
Average years from publication	15
Average citations per documents	9.49
Average citations per year per doc	9.23
References	47048
Keywords	3007
Document Types	
article	474
book	18
conference paper	715
conference review	1
editorial	3
review	18
Authors	
No of Authors	3003
Authors of single-authored documents	374
Authors Collaboration	

Main information about the data	
Single-authored documents	480
Co-Authors per Documents	2.41
Collaboration Index	16.69

Source: Author's processing using the Biblioshiny platform

Table 1 presents the main characteristics of the dataset. The analysis covered 1,636 documents published between 2007 and 2023 across 223 sources. These works were authored by 3,003 contributors, with a relatively balanced mix between single-authored documents (480) and co-authored works, resulting in a co-authorship index of 2.41. The collaboration index of 16.69 indicates a high level of joint research activity, suggesting a strong interdisciplinary interest in the topic. The average citation per document (9.49) and per year (9.23) point to a substantial impact in the field.

Figure 1. Annual scientific production and citation trends in AI and digital governance

Source: Author's processing using the Biblioshiny platform

Figure 1 illustrates the temporal evolution of publications, with a visible upward trajectory especially after 2015. The peak in citations in 2019 and 2020 further underscores the increasing scholarly relevance of the field. These trends reflect the rising policy and societal interest in digital transformation and AI, especially in the context of public resilience and service innovation.

Table 2. Core sources of publication

Most relevant sources	
Name	**No**
International journal of public administration	74
Proceedings of the 13th european conference on egovernment	56
Electronic government, proceedings	44
Proceedings of the 4th international conference on e-government	44
Public administration review	42
Public management review	41
Proceedings of the 8th european conference on e-government	35
Proceedings of the 11th international conference on theory and practice of electronic governance (icegov2018)	34
International review of administrative sciences	32
9th international conference on theory and practice of electronic governance (icegov 2016)	31
Proceedings of the 19th annual international conference on digital government research (dgo 2018): governance in the data age	30
Proceedings of 2007 international conference on public administration (3rd), vol i	29
Iceg 2007: proceedings of the 3rd international conference on e-government	26
Proceedings of the 16th european conference on e-government (eceg 2016)	26
American review of public administration	25
International journal of public sector management	25
Transylvanian review of administrative sciences	24
Electronic government	23
E-government website development: future trends and strategic models	21
Technology enabled transformation of the public sector: advances in e-government	20

Source: Author's processing using the Biblioshiny platform

Table 2 identifies the most active publication sources. Journals such as *International Journal of Public Administration*, *Public Administration Review*, and *Electronic Government Proceedings* are among the top contributors. Collectively, the top 20 sources account for 15.5% of the total publications. These findings highlight the dominance of specialized outlets focused on public administration and digital transformation, as well as the role of conference proceedings in disseminating emerging research.

Table 3. Citation distribution by country

Total citations per country			
USA (5531)	Germany (676)	Canada (134)	Greece (112)
Netherlands (1714)	Italy (374)	Ireland (128)	Romania (82)
China (1150)	Denmark (266)	Norway (119)	Slovenia (77)
UK (1108)	Sweden (217)	Brazil (118)	France (64)
Spain (1005)	Austria (148)	Portugal (114)	Turkey (39)

Source: Author's processing using the Biblioshiny platform

Table 3 shows the distribution of total citations by country. The United States is the most cited country with over 5,500 citations, followed by the Netherlands, China, the United Kingdom, and Spain. These figures reflect not only the volume of research output but also the global influence of each country's scientific contributions. Countries like Germany and Italy also exhibit solid citation performance, while others, including Romania and Turkey, show growing but still limited impact. The data suggest a concentration of influential research in North America and Western Europe, alongside emerging contributions from East Asia.

Table 4. Most cited publications

Most Cited Papers			
Paper	**DOI**	**Total Citations**	**TC per Year**
MEIJER A, 2016, INT REV ADM SCI	10.1177/0020852314564308	654	72.67
OSBORNE SP, 2013, AMER REV PUBLIC ADM	10.1177/0275074012466935	419	34.92
SHIPAN CR, 2012, PUBLIC ADM REV	10.1111/j.1540-6210.2012.02610.x	329	25.31
COURSEY D, 2008, PUBLIC ADM REV	10.1111/j.1540-6210.2008.00888.x	317	18.65
WIRTZ BW, 2019, INT J PUBLIC ADM	10.1080/01900692.2018.1498103	229	38.17
NORRIS DF, 2013, PUBLIC ADM REV	10.1111/j.1540-6210.2012.02647.x	227	18.92
DAWES SS, 2008, PUBLIC ADM REV	10.1111/j.1540-6210.2008.00981.x	226	13.29
TOLBERT CJ, 2008, PUBLIC ADM REV	10.1111/j.1540-6210.2008.00890.x	206	12.12
SHIM DC, 2008, INT J PUBLIC ADM	10.1080/01900690701590553	175	10.29
SONG C, 2015, PUBLIC PERFORM MANAG REV	10.1080/15309576.2015.1108798	163	16.3
PINA V, 2007, PUBLIC ADM	10.1111/j.1467-9299.2007.00654.x	158	8.78
MORGESON FV, 2011, J PUBL ADM RES THEORY	10.1093/jopart/muq006	156	11.14
SCHOLL HJJ, 2007, INT J PUBLIC ADM	10.1080/01900690701402668	152	8.44
LEE C, 2011, PUBLIC ADM REV	10.1111/j.1540-6210.2011.02228.x	139	9.93
BUFFAT A, 2015, PUBLIC MANAG REV	10.1080/14719037.2013.771699	137	13.7
IM T, 2014, J PUBL ADM RES THEORY	10.1093/jopart/mus037	137	12.45
GRIMMELIKHUIJSEN SG, 2015, PUBLIC ADM REV	10.1111/puar.12378	121	12.1
BANNISTER F, 2007, INT REV ADM SCI	10.1177/0020852307077959	120	6.67
JUN KN, 2011, J PUBL ADM RES THEORY	10.1093/jopart/muq020	120	8.57
AHN MJ, 2011, PUBLIC ADM REV	10.1111/j.1540-6210.2011.02225.x	112	8

Source: Author's processing using the Biblioshiny platform

Table 4 lists the most highly cited papers in the dataset. Leading the list is Meijer (2016) with over 650 citations, followed by Osborne (2013) and Shipan (2012). These publications serve as foundational texts for scholars in the field and often provide conceptual or theoretical models that inform later empirical studies.

Many of these articles were published in high-impact journals such as *Public Administration Review* and *Journal of Public Administration Research and Theory*, emphasizing the role of established journals in shaping discourse.

Table 5. Keyword analysis and research themes

Most relevant keywords (no)		
No.		**Appearances**
1	e-government	624
2	public administration	61
3	transparency	53
4	e-participation	41
5	e-governance	38
6	local government	38
7	social media	38
8	government	37
9	governance	32
10	interoperability	31
11	trust	31
12	ICT	29
13	public sector	26
14	e-services	23
15	evaluation	23
16	public services	23
17	corruption	22
18	egovernment	22
19	information technology	20
20	citizen participation	19
21	digitalization	19
22	e-democracy	19
23	open data	19
24	open government	19
25	citizens	18
26	digital government	18
27	innovation	17
28	electronic government	15
29	services	14
30	artificial intelligence	9

Source: Author's processing using the Biblioshiny platform

Table 5 presents the most frequently occurring author keywords. Unsurprisingly, "e-government" appears most often, indicating its centrality to the field. Other frequent terms include "public administration," "transparency," and "e-participation," pointing to enduring interests in accountability and democratic innovation. Notably, “artificial intelligence” appears only nine times, signaling either its emergent status or a tendency for studies to embed AI under broader digital transformation frameworks.

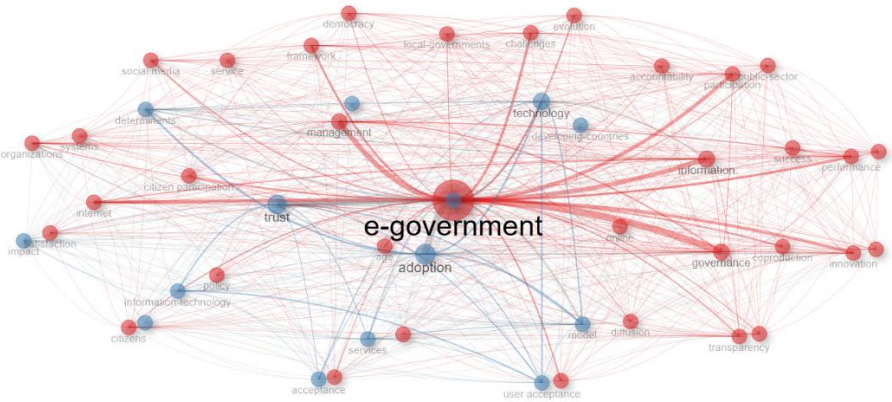

Figure 2. Keyword co-occurrence network in AI and digital governance research

Source: Author's processing using the Biblioshiny platform

Figure 2 visualizes the keyword co-occurrence network, revealing clusters of interconnected terms that define thematic research areas. Dense linkages between terms like "e-government," "ICT," and "governance" demonstrate how interdisciplinary concepts converge in digital public administration. The size

of the nodes reflects the frequency of each keyword's appearance, while the thickness of the connecting lines (edges) indicates the strength of co-occurrence between terms.

Several subgroups are visible, suggesting thematic differentiation: one cluster includes governance, transparency, and public administration, while other focuses on technological terms like ICT, smart city, and digitalization. The presence of bridging terms—keywords that connect two or more clusters—such as "AI" or "innovation," indicates cross-thematic integration.

This network helps uncover how often certain topics are explored together, which in turn reflects the structure of academic dialogue, emerging hotspots of research, and the level of integration among conceptual domains within the field.

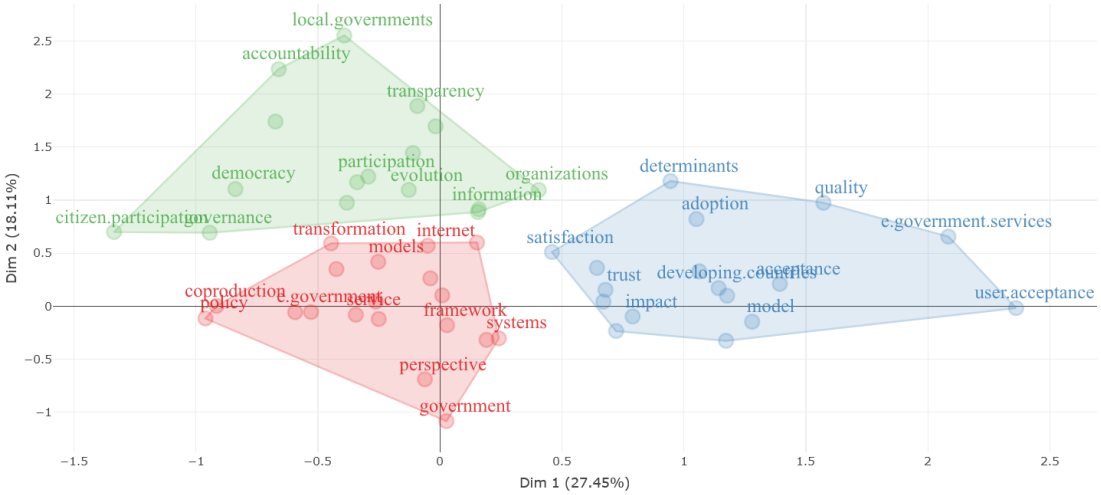

Figure 3. Conceptual mapping and thematic clustering

Source: Author's processing using the Biblioshiny platform

Figure 3 depicts the conceptual structure of the field using multidimensional scaling (MDS) and cluster analysis. Three major clusters are identifiable: (1) smart and emerging technologies, including AI and transformation; (2) civic engagement and administrative reform; and (3) public management theories in the digital context. These clusters align with broader transformations in governance systems and demonstrate how themes such as trust, quality of services, and innovation are intertwined.

The clustering method, based on K-means and hierarchical variance analysis, enables a precise segmentation of the knowledge base. For example, Cluster 0, emphasizing AI in government, began to emerge prior to 2018 and has remained active through 2023. Frequently used keywords in this cluster include "transformation," "internet," and "e-government," highlighting the technological dimension of public innovation. Cluster 1 addresses citizen involvement in democratic processes and administrative reform, with prominent terms such as "citizen," "participation," "responsibility," and "evolution." Cluster 2, linked to public management theory in the era of New Public Governance, is characterized by keywords like "impact," "satisfaction," "development," and "quality," reflecting a focus on service outcomes and performance.

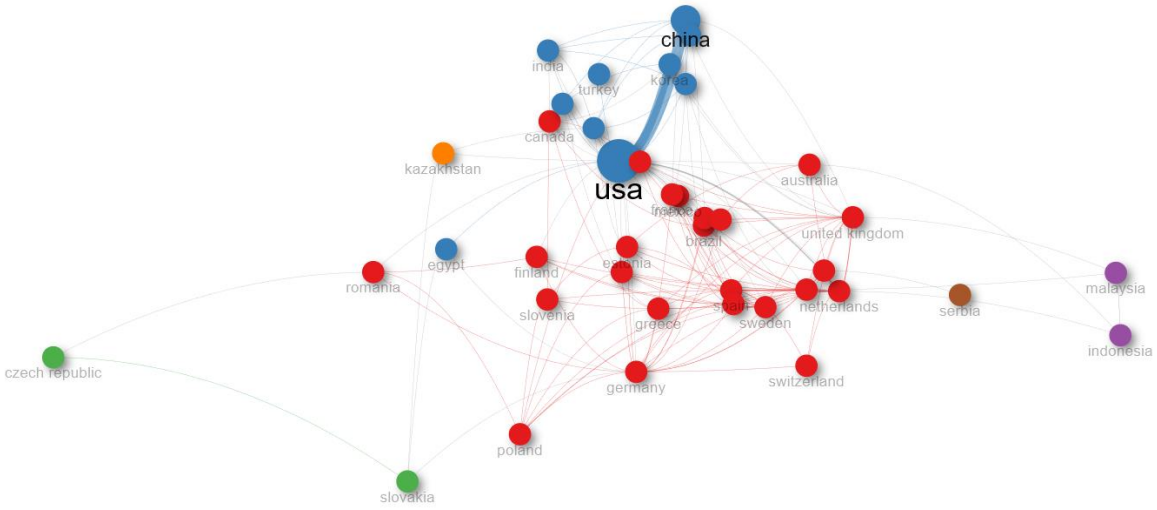

Figure 4. International research collaboration

Source: Author's processing using the Biblioshiny platform

Figure 4 displays international collaboration patterns among the top 40 contributing countries. The size of each node reflects the number of documents, while node colors group countries into collaboration subnetworks. Two dominant hubs are evident: one centered on the United States, China, and India; the other around the United Kingdom and European partners. Romania appears as part of the European collaborative network, forming links primarily with institutions from France, Germany, and the Netherlands. Although Romania's overall publication output is modest, its presence in these transnational research constellations highlights a growing interest in digital governance and public sector innovation. This emerging involvement suggests increased potential for knowledge exchange and visibility in future collaborative efforts. Notably, limited collaboration is observed with African and Latin American countries, highlighting geographic disparities in research inclusion. These findings underscore the importance of fostering more inclusive and diverse international research partnerships.

5. Discussions

The results of this bibliometric analysis highlight the dynamic and expanding nature of the research landscape on AI in digital governance. The growing volume of publications reflects not only technological advances but also rising societal and institutional interest in leveraging AI for improved public service delivery.

One of the most striking observations is the shift from viewing AI as a back-end automation tool toward understanding it as an integral element of strategic governance. This repositioning is supported by the increased prominence of themes like ethical AI, accountability, and citizen trust. These topics underscore the need for public institutions to embed ethical safeguards and participatory principles into their AI systems to maintain democratic legitimacy.

The prominence of terms like “smart cities” and “digital transformation” also signals the convergence of AI with broader urban and infrastructural agendas. AI is no longer seen in isolation but as a core component of interconnected systems that manage urban mobility, health services, energy, and safety. This integration offers both new opportunities and complex governance challenges, particularly around data ownership and cross-sectoral collaboration.

Moreover, the bibliometric findings on author collaboration and citation networks confirm the global, interdisciplinary nature of this research area. The fact that top contributors span multiple countries and disciplines reinforces the relevance of AI in public administration as a universal concern, demanding coordinated academic and policy responses.

Finally, while the thematic mapping identifies well-established areas, the presence of underexplored themes such as algorithmic fairness, AI ethics in procurement, and public trust points to fertile ground for future research. Addressing these gaps can support the development of more inclusive and responsible digital governance frameworks.

6. Conclusions

This study contributes to a deeper understanding of how artificial intelligence is reshaping the field of public administration through the lens of digital governance. By employing bibliometric techniques, it has mapped the evolution of key concepts, highlighted dominant research streams, and identified influential contributors and emerging topics.

The findings confirm that AI is no longer a peripheral tool but a central component in the strategic transformation of public institutions. As governments worldwide adopt AI-driven systems to enhance service delivery, efficiency, and citizen engagement, the need for ethical oversight, cross-sector collaboration, and inclusive policy frameworks becomes increasingly urgent.

This paper also reveals the importance of interdisciplinary collaboration and international knowledge exchange, as evidenced by dense co-authorship networks and citation patterns. Moving forward, scholars and practitioners alike must focus on building governance models that balance technological innovation with transparency, accountability, and societal trust.

Overall, the bibliometric approach used in this research not only provides a snapshot of the current academic landscape but also serves as a guidepost for future inquiry and strategic policymaking in the era of digital governance.

References

1. *European Commission. (2020). White Paper on Artificial Intelligence: A European Approach to Excellence and Trust. Brussels.*
2. *Heeks, R. (2006). Implementing and managing eGovernment: An international text. Sage.*
3. *Janssen, M., Charalabidis, Y., & Zuiderwijk, A. (2012). Benefits, adoption barriers and myths of open data and open government. Information Systems Management, 29(4), 258–268.*
4. *Meijer, A., & Bolívar, M. P. R. (2016). Governing the smart city: a review of the literature on smart urban governance. International Review of Administrative Sciences, 82(2), 392–408.*
5. *Wirtz, B. W., Weyerer, J. C., & Geyer, C. (2019). Artificial Intelligence and the Public Sector—Applications and Challenges. International Journal of Public Administration, 42(7), 596–615.*
6. *Taddeo, M., & Floridi, L. (2018). How AI can be a force for good. Science, 361(6404), 751–752.*
7. *Yadegaridehkordi, E., Hourmand, M., Nilashi, M., & Samad, S. (2021). Mapping the structure of e-government research using bibliometric analysis: A study from 1998 to 2019. Government Information Quarterly, 38(1), 101536.*

8. *OECD. (2019). Recommendation of the Council on Artificial Intelligence. OECD Publishing.*
9. *United Nations. (2022). E-Government Survey 2022: The Future of Digital Government. Department of Economic and Social Affairs.*
10. *Mergel, I., Edelmann, N., & Haug, N. (2019). Defining digital transformation: Results from expert interviews. Government Information Quarterly, 36(4), 101385.*
11. *Sun, T. Q., & Medaglia, R. (2019). Mapping the challenges of Artificial Intelligence in the public sector: Evidence from public healthcare. Government Information Quarterly, 36(2), 368–383.*
12. *Wirtz, B. W., & Müller, W. M. (2023). Public AI Strategy Development: Comparative Analysis of National AI Strategies in the Public Sector. International Journal of Public Administration, 46(1), 1–14.*
13. *Dunleavy, P., Margetts, H., Bastow, S., & Tinkler, J. (2006). New Public Management is Dead—Long Live Digital-Era Governance. Journal of Public Administration Research and Theory, 16(3), 467–494.*
14. *Misuraca, G., & van Noordt, C. (2020). Artificial Intelligence for the Public Sector: Results of the first European Survey. JRC Technical Report, European Commission.*
15. *Aria, M., & Cuccurullo, C. (2017). bibliometrix: An R-tool for comprehensive science mapping analysis. Journal of Informetrics, 11(4), 959–975.*
16. *Zupic, I., & Čater, T. (2015). Bibliometric methods in management and organization. Organizational Research Methods, 18(3), 429–472.*