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Global Research Trends in Smart Cities and Public Administration: A Bibliometric Analysis Using VOSviewer

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ABSTRACT

Smart cities have emerged as an important research area in public administration, particularly in response to rapid urbanization, digital transformation, and the increasing demand for innovative and sustainable public services. This study aims to examine global research trends in smart cities and public administration through a bibliometric analysis using VOSviewer. The study focuses on identifying publication development, influential research contributions, dominant themes, emerging topics, and scientific collaboration patterns. Bibliographic data are collected from the Crossref database, covering a selected observation period, and analyzed using bibliometric techniques. The analysis includes publication trends, keyword co-occurrence, thematic relationships, and collaboration networks among researchers, institutions, and countries. VOSviewer is employed to visualize the intellectual structure and thematic connections within the research landscape. The study is expected to provide insights into the evolution of smart city research and its relationship with public administration. Particular attention is given to the integration of digital governance, e-government, public service innovation, citizen participation, institutional capacity, and sustainable urban development. The bibliometric mapping also helps identify established research themes and emerging areas that may shape future scholarly discussions. Furthermore, the examination of scientific collaboration provides an understanding of how researchers and institutions contribute to the development of knowledge in this interdisciplinary field. By mapping publication patterns and conceptual relationships, this study contributes to a broader understanding of the intersection between smart city development and public administration. Ultimately, the findings are expected to provide a foundation for future research agendas and support the development of more innovative, inclusive, sustainable, and citizen-oriented urban governance.

Keywords: Smart City; Public Administration; Digital Governance; Bibliometric Analysis; VOSviewer.

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A. INTRODUCTION

The development of smart cities has become an increasingly important topic in contemporary urban studies and public administration. Rapid urbanization, technological advancement, and growing societal demands have encouraged governments to adopt innovative approaches to urban management and public service delivery. The smart city concept extends beyond the application of digital technologies, encompassing improvements in institutional capacity, human resources, infrastructure, and urban governance. Caragliu et al. (2011) emphasize that smart cities rely not only on physical infrastructure but also on human and social capital to support urban development. Similarly, Albino et al. (2015) explain that smart cities involve multiple dimensions, including technology, sustainability, urban development, and quality of life. These perspectives demonstrate that smart city development requires an integrated approach connecting technological innovation with administrative effectiveness and public participation. Public administration consequently plays a strategic role in translating smart city visions into policies, institutional arrangements, and sustainable public services. Understanding the development of research in this field is therefore essential to identifying its intellectual foundations, dominant themes, and future directions.

At the global level, smart city initiatives have developed as governments seek to address complex urban challenges through digital innovation and more responsive governance arrangements. Information and communication technologies, big data, artificial intelligence, and the Internet of Things have created opportunities to improve urban planning, infrastructure management, environmental monitoring, and public service delivery. However, technological adoption alone does not guarantee successful smart city development because institutional coordination, public participation, and administrative capacity are equally important. Nam and Pardo (2011) conceptualize smart cities through three interconnected dimensions: technology, people, and institutions. This perspective highlights the importance of integrating technological infrastructure with human capabilities and institutional development. Furthermore, Meijer and Bolívar (2016) demonstrate that smart urban governance involves different approaches to technology, collaboration, and transformation in urban administration. Webster and Leleux (2018) also emphasize the opportunities offered by digital technologies for citizen participation and the co-production of public services. Consequently, global smart city research increasingly requires

an interdisciplinary perspective that connects technological development with public administration, institutional governance, and citizen-oriented urban transformation.

In Indonesia, smart city development has become an important part of the broader agenda for digital transformation, public service innovation, and regional government modernization. Local governments have increasingly adopted digital platforms and technology-based initiatives to improve administrative efficiency, strengthen public information systems, and respond to citizens' needs. These initiatives reflect the growing recognition that urban development requires effective coordination between technological infrastructure, institutional capacity, and public service management. However, smart city implementation across Indonesian local governments faces different levels of infrastructure readiness, human resource capacity, financial resources, and community participation. Research by Parlina et al. (2019) demonstrates the development of Indonesian smart city scholarship and identifies themes such as e-government, transportation, disaster mitigation, the Internet of Things, and big data. More recently, Santoso et al. (2024) examined the development and research focus of smart city studies in Indonesia, demonstrating the continuing academic interest in this subject. Mustar and Rahmadanita (2025) also examined Indonesian smart city research through bibliometric and content analysis, highlighting the importance of mapping the development of this research area. These developments indicate that smart cities have become an increasingly relevant research topic for understanding digital transformation and public administration in Indonesia.

Despite the growing implementation and academic attention given to smart cities, research in this field remains diverse and fragmented across several disciplinary perspectives. Some studies emphasize technological infrastructure, digital platforms, and information systems, while others focus on urban planning, environmental sustainability, and economic development. Within public administration, research frequently addresses institutional capacity, public service innovation, government coordination, citizen participation, and accountability. These different perspectives create challenges in understanding how smart city research is conceptually connected to the development of public administration. Principale et al. (2023) identify several research areas linking public administration and smart cities, including urban planning, sustainable development, governance approaches, the Internet of Things, and information and communication technologies. Nevertheless, the relationship between technological innovation and administrative transformation

requires further examination to understand the broader structure of this interdisciplinary research field. In addition, the growing volume of scholarly publications makes it increasingly difficult to identify influential authors, leading journals, major contributing countries, and emerging research themes through conventional literature reviews alone. Therefore, a systematic bibliometric investigation is needed to map the development, thematic structure, and intellectual relationships of global research on smart cities and public administration.

Previous studies have demonstrated the importance of bibliometric analysis in identifying publication patterns, influential contributions, and the intellectual development of scientific research. Vujković et al. (2022) conducted a bibliometric analysis of smart public governance by examining smart city and smart government research from a comparative perspective. Their study highlights the relevance of technological modernization and governance in the development of contemporary public administration. Principale et al. (2023) specifically investigated public administration research in the context of smart cities and identified several important research areas, including urban planning, sustainable development, governance, and digital technologies. Meanwhile, Parlina et al. (2019) mapped smart city research in Indonesia and identified important technological and public service-related themes. Santoso et al. (2024) further contributed to understanding the development of Indonesian smart city research through bibliometric mapping. These studies provide valuable foundations for examining the relationship between smart city development and public administration. Methodologically, Donthu et al. (2021) explain that bibliometric analysis can systematically evaluate scientific publications, research productivity, citation patterns, and thematic development. Similarly, van Eck and Waltman (2010) demonstrate how VOSviewer can visualize bibliometric networks and relationships among scientific publications, authors, and keywords.

Although previous studies have examined smart cities, smart governance, and public administration, several research gaps remain relevant for further investigation. Some bibliometric studies have concentrated on the general development of smart city research, while others have specifically examined smart public governance or the relationship between smart cities and public administration. However, the integration of publication trends, thematic structures, and scientific collaboration within a single analytical framework remains important for understanding the broader development of this interdisciplinary field. Another research gap concerns the relationship

between technological themes and administrative perspectives, particularly institutional capacity, public service innovation, citizen participation, and governance accountability. The increasing relevance of artificial intelligence, digital governance, sustainable urban development, and data-driven decision-making also creates opportunities to identify emerging research directions. This study addresses these gaps by mapping global research trends in smart cities and public administration through bibliometric analysis using VOSviewer. Its novelty lies in integrating publication development, keyword relationships, thematic evolution, and scientific collaboration to examine the intellectual structure of the research field. Through this approach, the study seeks to provide a broader understanding of how smart city scholarship contributes to the evolution of public administration and contemporary urban governance.

Based on the identified research gaps, this study aims to analyze global research trends in smart cities and public administration using a bibliometric approach. The first objective is to examine the development of scientific publications over the selected observation period and identify changes in scholarly interest in this research field. The second objective is to identify influential authors, journals, institutions, and countries contributing to the development of smart city and public administration research. The third objective is to map the intellectual and conceptual structure of the literature through keyword co-occurrence analysis. The fourth objective is to identify dominant and emerging research themes, particularly those associated with digital governance, public service innovation, institutional capacity, sustainability, and citizen participation. The fifth objective is to examine scientific collaboration patterns among researchers, institutions, and countries to understand the development of academic research networks. These objectives are addressed through bibliometric performance analysis and network visualization using VOSviewer. Ultimately, the study seeks to provide a systematic overview of the development, thematic orientation, and collaborative structure of global smart city research within the field of public administration.

This study is expected to contribute to the advancement of knowledge concerning the relationship between smart city development and public administration. Theoretically, it provides an integrated perspective on how technological innovation, institutional governance, public service transformation, and citizen participation are represented in global scholarly publications. Methodologically, the study demonstrates the usefulness of bibliometric analysis and VOSviewer

in mapping publication patterns, conceptual relationships, and scientific collaboration networks. The resulting research maps can help scholars identify influential contributions, established research clusters, and emerging topics that deserve further investigation. From a practical perspective, the findings may provide useful insights for policymakers and local government institutions seeking to strengthen smart city strategies through effective public administration. In particular, the study highlights the importance of connecting digital infrastructure with institutional capacity, administrative coordination, transparency, and citizen-oriented services. It may also support the development of future research agendas addressing artificial intelligence, sustainable urban governance, digital inclusion, and public sector innovation. Overall, this research is expected to provide a comprehensive bibliometric perspective on global smart city scholarship and its contribution to the development of modern, innovative, inclusive, and sustainable public administration.

B. RESEARCH METHODS

This study employs a bibliometric analysis approach to examine global research trends in smart cities and public administration. Bibliometric analysis is used to systematically evaluate scientific publications, identify influential research contributions, map conceptual relationships, and examine the development of scholarly collaboration (Donthu et al., 2021; Zupic & Čater, 2015). The study focuses on publication trends, influential authors, leading journals, institutional contributions, geographical distribution, dominant research themes, and scientific collaboration patterns. The observation period covers 2016–2026, providing an overview of the development of academic interest in smart cities and public administration over the last decade. The analysis combines bibliometric performance analysis and science mapping to identify the intellectual structure, thematic evolution, and collaborative characteristics of this interdisciplinary research field.

Bibliographic data are collected from the Crossref database, which provides bibliographic metadata of scholarly publications, including article titles, authors, publication years, journal names, abstracts when available, keywords, and digital object identifiers (DOIs). The search strategy uses combinations of relevant terms, including "smart city," "smart cities," "public administration," "smart governance," "digital governance," and "urban governance." The search is

designed to identify publications addressing the relationship between smart city development and public administration. The inclusion criteria cover relevant scholarly journal articles and review articles published between 2016 and 2026. Publications that are unrelated to the research focus, duplicate records, and records with insufficient bibliographic information are excluded. The retrieved metadata are subsequently exported, screened, and cleaned to improve consistency in author names, publication titles, keywords, and other bibliographic information before the analysis is conducted.

The bibliographic dataset is analyzed using VOSviewer and Bibliometrix in R Studio to identify publication patterns and visualize the intellectual structure of the research field. Performance analysis examines annual scientific production, influential authors, relevant journals, contributing countries, and citation-related indicators where metadata are available. Meanwhile, science mapping includes keyword co-occurrence analysis to identify dominant and emerging research themes, co-authorship analysis to examine collaboration among researchers and institutions, and citation-based analysis to explore relationships among scientific publications. Network visualization is used to identify research clusters and connections between smart city concepts and public administration perspectives. Overlay visualization illustrates the temporal distribution of research themes, while density visualization identifies the concentration of frequently occurring keywords. The results are interpreted descriptively to explain publication development, thematic relationships, and scientific collaboration patterns, providing a comprehensive overview of global research trends in smart cities and public administration.

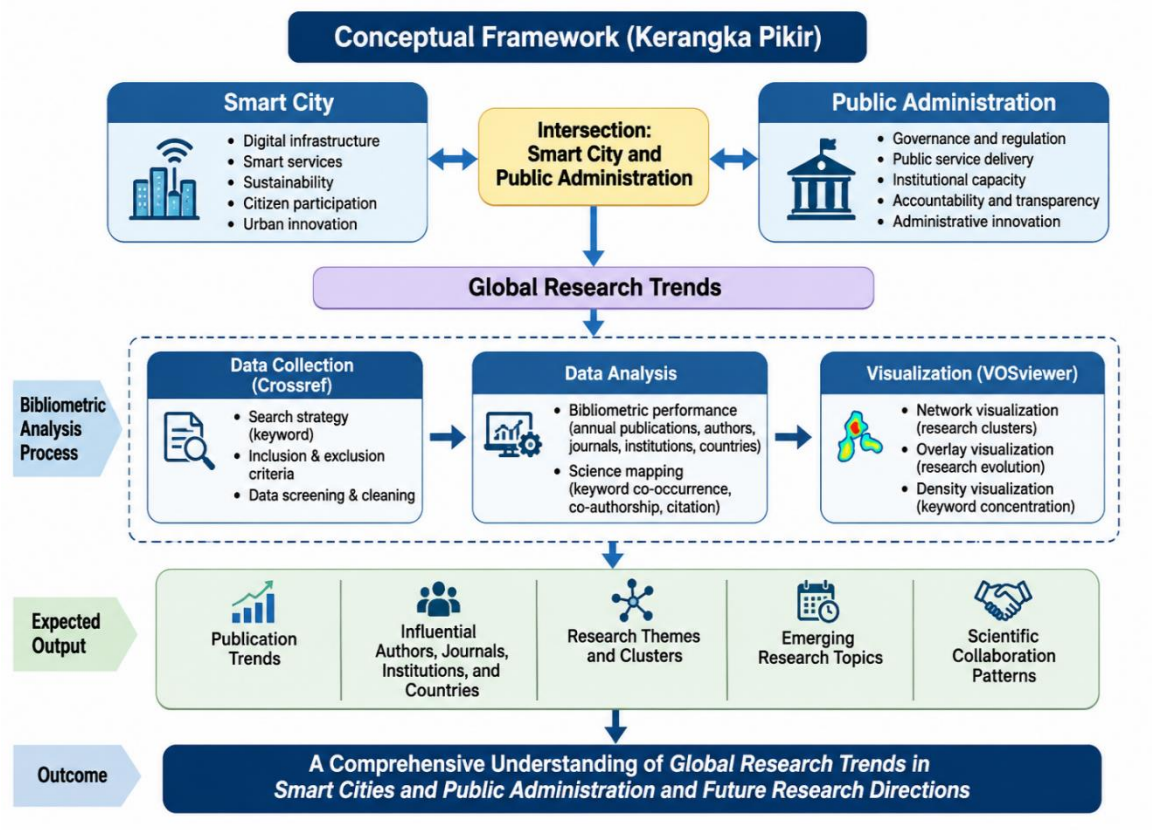


Figure 1 Conceptual Framework of Global Research Trends in Smart Cities and Public Administration: A Bibliometric Analysis Using VOSviewer.

Explanation: Figure 1 illustrates the conceptual framework of this study, which examines global research trends at the intersection of smart cities and public administration through bibliometric analysis. The framework begins by identifying two interconnected research dimensions: smart city development, encompassing digital infrastructure, smart services, sustainability, citizen participation, and urban innovation; and public administration, covering governance, public service delivery, institutional capacity, accountability, transparency, and administrative innovation. Bibliographic data are collected from the Crossref database through a systematic keyword search, followed by publication screening and data cleaning. The selected metadata are subsequently analyzed using bibliometric performance analysis and science mapping to identify publication trends, influential authors, journals, institutions, countries, keyword relationships, and scientific collaboration. VOSviewer is employed to generate network, overlay, and density visualizations that reveal research clusters, thematic evolution, and keyword

concentration. The expected outputs include publication trends, influential scholarly contributions, dominant and emerging research themes, and scientific collaboration patterns. Ultimately, this framework provides a comprehensive understanding of the intellectual development of global research on smart cities and public administration while identifying potential directions for future scholarly investigations.

C. RESEARCH RESULTS AND DISCUSSION

- Research Results

The bibliometric analysis of the study entitled "Global Research Trends in Smart Cities and Public Administration: A Bibliometric Analysis Using VOSviewer" aims to provide a comprehensive overview of the development of scientific publications concerning smart cities and public administration at the global level. The analysis uses bibliographic records retrieved from the Crossref database, covering the period 2016–2026. The collected publications are examined to identify research productivity, influential authors, publication sources, institutional contributions, geographical distribution, citation patterns, thematic developments, and scientific collaboration. Through bibliometric techniques, the study explores the relationships among research topics and identifies the intellectual structure connecting smart city development with public administration. VOSviewer is employed to visualize keyword co-occurrence, thematic evolution, and research relationships through network, overlay, and density visualizations. These analytical procedures provide a systematic basis for understanding how scholarly attention to smart cities and public administration has developed over the selected period. The results provide insights into dominant research areas, emerging topics, and potential directions for future investigations in digital urban governance and public sector transformation.

The keyword co-occurrence network visualization generated using VOSviewer provides insights into the conceptual structure of global research on smart cities and public administration. This visualization identifies groups of interconnected keywords representing major research themes and their relationships within the literature. Keywords such as "smart city," "smart cities," "public administration," "smart governance," "digital governance," and "e-government" can be examined to identify their frequency and connections with other concepts. The relationships

among these keywords illustrate how smart city development is connected to public sector management, institutional transformation, and digital public services. Furthermore, keywords related to "artificial intelligence," "Internet of Things," "big data," "sustainability," "citizen participation," and "public service innovation" may indicate the expansion of scholarly attention toward emerging technological and governance challenges. The size of the nodes represents the relative frequency of keyword occurrences, while the connecting lines indicate the relationships between keywords. The different colors represent research clusters that group closely related concepts. This network analysis is therefore useful for identifying dominant research themes and understanding the conceptual connections between smart city development and public administration.

The overlay visualization illustrates the temporal evolution of research themes by presenting the average publication year associated with different keywords. This analysis makes it possible to distinguish established research topics from relatively recent areas of scholarly interest. Earlier research themes may include "smart city," "urban development," "e-government," "information technology," and "urban planning," which represent foundational discussions in smart city development. Meanwhile, more recent keywords may include "artificial intelligence," "digital transformation," "smart governance," "big data analytics," "Internet of Things," and "sustainable urban development." The emergence of these themes may reflect changing academic perspectives on how governments utilize technological innovation to address urban challenges and improve public service delivery. The connections between established and emerging keywords also provide insights into the continuity and transformation of research interests over time. Furthermore, the temporal distribution of keywords may indicate increasing scholarly attention to citizen-centered governance, digital inclusion, and data-driven public administration. Consequently, the overlay visualization helps explain how smart city research has evolved from technology-oriented approaches toward more integrated perspectives involving institutional development, sustainability, and public governance.

The density visualization provides an overview of the concentration and intensity of research topics within the bibliographic dataset. In this visualization, areas highlighted in bright yellow indicate higher keyword density, while green and blue areas represent comparatively lower concentrations of keyword occurrences. Core concepts such as "smart city," "smart cities," "public

administration," "smart governance," and "digital governance" can be examined to determine their relative prominence in the research landscape. Other topics, including "public service innovation," "citizen participation," "institutional capacity," "urban sustainability," and "e-government," may represent important supporting themes connecting technological development with administrative and governance perspectives. Emerging concepts related to artificial intelligence, big data, smart infrastructure, and sustainable urban development may also indicate opportunities for further investigation. The distribution of these keywords helps identify areas where scholarly attention is concentrated and topics that remain less extensively connected to the broader research network. Overall, density analysis provides an additional perspective for understanding the relative prominence of research themes and the intellectual concentration of publications on smart cities and public administration.

The scientific collaboration analysis further examines the relationships among researchers, institutions, and countries contributing to global publications on smart cities and public administration. The co-authorship network generated through VOSviewer can reveal the extent of collaboration among scholars and identify groups of researchers who frequently work together. Institutional and country-level collaboration maps provide additional insights into the geographical and organizational distribution of scientific contributions. Strong connections among authors, institutions, or countries indicate established research partnerships, whereas limited connections may suggest opportunities to strengthen international academic cooperation. This analysis is particularly relevant because smart city development involves multidisciplinary issues that benefit from perspectives across public administration, urban planning, information technology, environmental studies, engineering, and public policy. By examining these collaboration patterns alongside publication trends and thematic networks, the study can identify influential research communities and potential areas for future academic partnerships. Ultimately, the bibliometric findings provide a foundation for understanding the dynamics of global smart city scholarship and identifying future research opportunities in public administration, digital governance, and sustainable urban development.

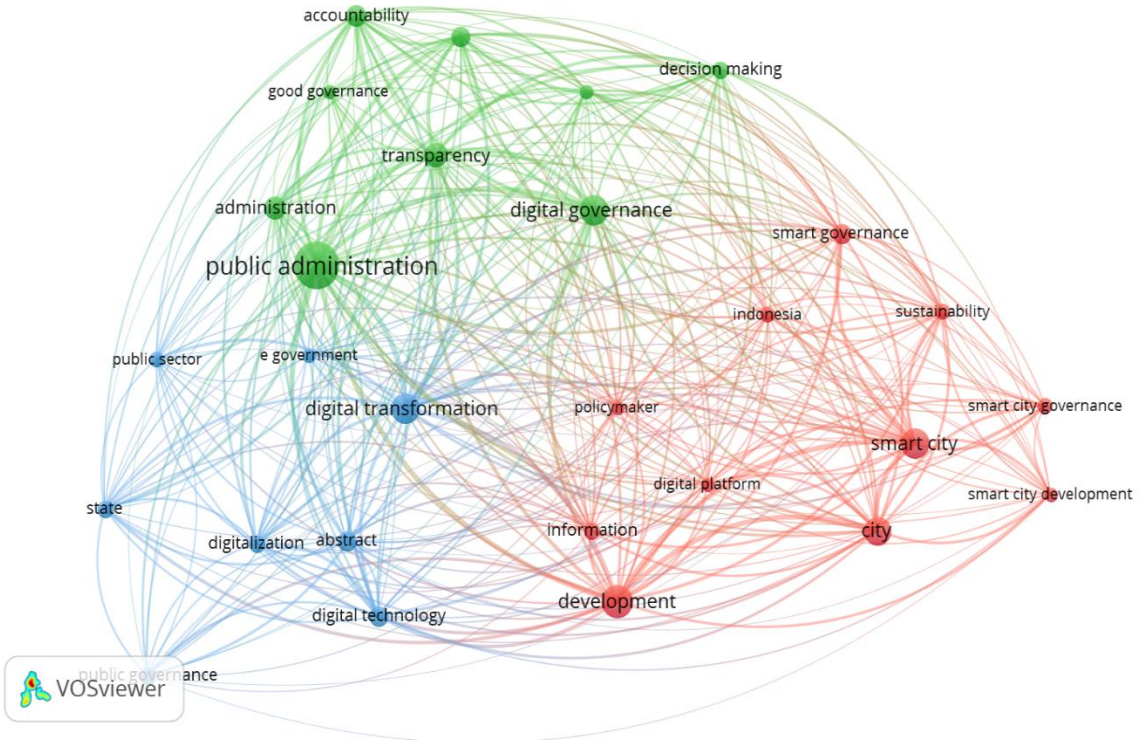


Figure 2 Network Visualization of Keyword Co-occurrence in Global Smart City and Public Administration Research.

The network visualization generated using VOSviewer illustrates the relationships among keywords in global research on smart cities and public administration. The visualization identifies three main clusters represented by red, green, and blue nodes, indicating different but interconnected research themes. The red cluster is dominated by keywords such as “smart city,” “city,” “development,” “sustainability,” “smart governance,” “smart city governance,” and “smart city development.” This cluster reflects the urban development and smart city governance dimension, particularly the integration of technological innovation, sustainable development, and urban management. The green cluster includes keywords such as “public administration,” “administration,” “digital governance,” “transparency,” “accountability,” “good governance,” and “decision making.” These terms indicate a strong research orientation toward institutional governance, administrative accountability, transparency, and digital transformation in public sector management. Meanwhile, the blue cluster consists of keywords such as “digital transformation,” “digitalization,” “digital technology,” “e-government,” “public sector,” “state,”

and “public governance.” This cluster represents the technological and administrative transformation dimension, emphasizing the use of digital technologies to improve government operations and public service delivery. The relatively large nodes, particularly “public administration,” “smart city,” and “development,” indicate their prominent occurrence within the analyzed research dataset.

The interconnectedness among the three clusters demonstrates that smart city research is closely related to the transformation of public administration and the development of digital governance. The connections between “smart city,” “digital governance,” and “public administration” suggest that urban technological innovation cannot be separated from institutional capacity, administrative coordination, and effective governance arrangements. Furthermore, the relationships among “digital transformation,” “e-government,” and “digital technology” highlight the importance of technological integration in modernizing public sector institutions. The presence of “transparency,” “accountability,” and “good governance” also indicates that smart city development involves institutional values and administrative principles beyond technological infrastructure. Meanwhile, keywords such as “sustainability,” “decision making,” and “public governance” demonstrate the broader connection between smart city initiatives, sustainable urban development, and citizen-oriented governance. Overall, the network visualization reveals that global smart city research has developed through the integration of three major dimensions: urban development and sustainability, public administration and institutional governance, and digital transformation in the public sector. These relationships provide opportunities for future research to examine how digital innovation, institutional capacity, transparency, and collaborative governance contribute to effective and sustainable smart city development.

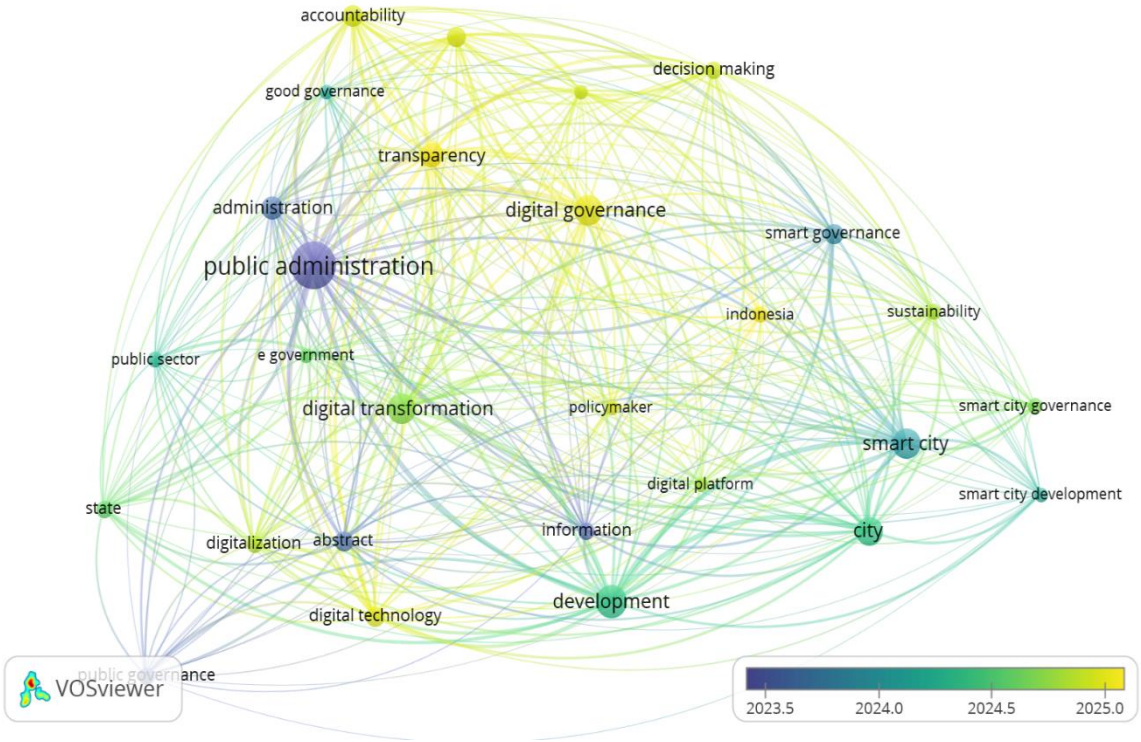


Figure 3 Overlay Visualization of Keyword Evolution in Global Smart City and Public Administration Research.

The overlay visualization generated using VOSviewer illustrates the temporal evolution of research themes related to smart cities and public administration based on the average publication year of the identified keywords. The color spectrum ranges from blue and purple, representing relatively earlier research topics (around 2023.5–2024.0), to green and yellow, indicating more recent research themes (around 2024.5–2025.0). Keywords such as "public administration," "administration," "smart governance," and "information" appear predominantly in blue and purple shades, suggesting their association with earlier publications in the analyzed dataset. Meanwhile, keywords such as "digital transformation," "digital technology," "development," and "city" appear in greenish shades, indicating their presence in relatively more recent research. Furthermore, terms such as "accountability," "transparency," "digital governance," and "decision making" are displayed in green to yellow tones, suggesting increasing scholarly attention to institutional accountability, administrative transparency, and technology-driven governance. This distribution

indicates that smart city research has developed through the interaction of established public administration concepts and emerging digital governance perspectives.

The temporal distribution of keywords also suggests a growing research interest in integrating technological innovation with institutional governance and sustainable urban development. The appearance of “digital governance,” “digitalization,” and “digital technology” highlights the increasing relevance of digital transformation in modern public administration. Similarly, keywords such as “accountability,” “transparency,” “good governance,” and “decision making” demonstrate that recent discussions extend beyond technological infrastructure to include institutional quality and administrative effectiveness. The presence of “smart city governance,” “smart city development,” and “sustainability” further indicates the importance of connecting urban technological innovation with sustainable development objectives. The relationships among these keywords suggest that contemporary smart city research increasingly considers the integration of digital technologies, public sector accountability, and urban governance. Overall, the overlay visualization demonstrates an evolution from traditional public administration and e-government discussions toward more integrated research perspectives involving digital governance, institutional accountability, and sustainable smart city development.

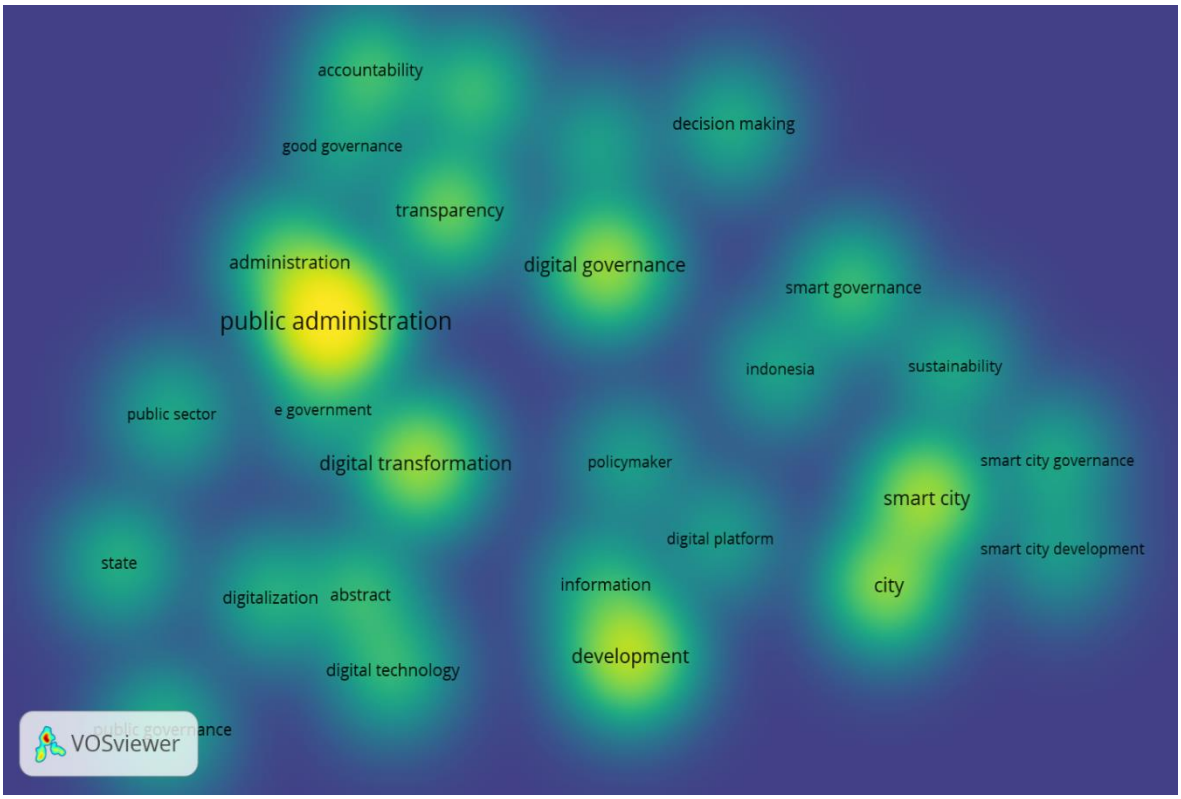


Figure 4 Density Visualization of Keyword Distribution in Global Smart City and Public Administration Research.

The density visualization generated using VOSviewer illustrates the concentration and intensity of keyword occurrences in global research on smart cities and public administration. The visualization uses a color gradient ranging from dark blue, green, to bright yellow, where yellow areas indicate higher keyword density and stronger concentrations of research activity. The most prominent concentration appears around the keyword "public administration," indicating its dominant position in the analyzed dataset. Other keywords with relatively high density include "smart city," "digital governance," "digital transformation," "development," and "city," suggesting that research discussions are substantially concentrated on the relationship between public administration, technological transformation, and urban development. Meanwhile, keywords such as "accountability," "transparency," "good governance," "e-government," and "digital technology" appear in greenish areas, reflecting their presence as important supporting themes. This distribution demonstrates that the analyzed literature connects smart city

development with administrative modernization, digital governance, and institutional transformation.

Furthermore, the density visualization reveals several interconnected areas of scholarly interest, particularly the relationship between public administration, smart city governance, digital transformation, and sustainable urban development. The presence of keywords such as "smart governance," "smart city governance," "sustainability," and "smart city development" indicates that contemporary research extends beyond technological infrastructure toward institutional effectiveness and sustainable urban management. Similarly, the keywords "accountability," "transparency," and "good governance" highlight the importance of administrative principles in supporting technology-driven urban development. The appearance of "digitalization," "digital platform," and "digital technology" also reflects the growing relevance of technological integration in public sector management. Overall, the visualization suggests that global research on smart cities and public administration is strongly concentrated around public administration and smart city development, while digital governance, institutional accountability, and sustainability represent important complementary research directions. These patterns provide opportunities for future studies to investigate how digital innovation and institutional capacity can strengthen transparent, accountable, inclusive, and sustainable urban governance.

D. CONCLUSION AND RECOMMENDATIONS

- Conclusion

This study demonstrates that global research on smart cities and public administration has developed through the integration of technological innovation, institutional governance, and urban development. The bibliometric network visualization identifies three interconnected research dimensions: public administration and institutional governance, digital transformation in the public sector, and smart city development and sustainability. The overlay visualization indicates the evolution of research themes, with increasing scholarly attention to digital governance, accountability, transparency, smart governance, and sustainable urban development. Meanwhile, the density visualization reveals that "public administration," "smart city," "digital

transformation," "digital governance," and "development" represent prominent areas of research concentration. These findings highlight the important relationship between technological advancement and the transformation of public administration in supporting smart city initiatives.

Overall, the findings indicate that smart city research is no longer limited to technological infrastructure and digital applications but increasingly encompasses institutional capacity, administrative accountability, public participation, and sustainable governance. The integration of digital technologies with effective public administration is essential for developing smart cities that are innovative, transparent, inclusive, and responsive to citizens' needs. This study contributes to understanding the intellectual structure and thematic development of global smart city research while identifying opportunities for further investigation into the relationship between digital transformation, public sector innovation, and sustainable urban governance.

- Recommendations

Future research should examine more deeply the relationship between smart city development and public administration, particularly regarding digital governance, institutional capacity, accountability, transparency, citizen participation, and sustainable urban development. Researchers are encouraged to conduct interdisciplinary studies integrating public administration, information technology, urban planning, and environmental governance to obtain a more comprehensive understanding of smart city implementation. Furthermore, international research collaboration should be strengthened to compare smart city policies and governance practices across different countries. Future bibliometric studies should also consider combining Crossref data with other reputable academic databases to expand publication coverage and improve the robustness of bibliometric mapping. These efforts are expected to support the development of more effective, inclusive, and sustainable smart city governance strategies.

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