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Smart Cities as a Local Government Innovation and Governance Reform Agenda: A Bibliometric and Systematic Literature Review

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Abstract: Smart city initiatives have rapidly increased; however, existing literature is fragmented across technological, urban planning, and governance frameworks. This study examined smart city research within the framework of local government innovation and governance reform. This research employed an integrated review strategy that combines bibliometric analysis with a PRISMA-compliant systematic literature review, analyzing 482 peer-reviewed journal articles indexed in Scopus to outline the field's history, intellectual framework, and thematic structure. The results indicate a notable transition from technology-focused narratives to frameworks that emphasize governance and public value. Smart cities should be regarded as socio-technical governance systems that utilize digital platforms to improve citizen engagement, policy development, and service delivery. Institutional capability, regulatory alignment, and organizational learning enable the transformation of digital investments into enduring public benefits. This study presents a capability-oriented framework for the analysis of smart city performance and situates urban digital transformation within decentralized local self-governance systems.

Keywords: Smart Cities, Public Administration, Local Government, Urban Governance, Decentralization.

INTRODUCTION

The trend for smart cities has increased more in the past ten years globally. However, the fact that drew attention is not only a mere development but also how it aligns with local government-level reforms, besides previously being associated only with technology and urban developments. Much literature discussed other associated things that include service design and shared governance (Albino et al., 2015; Bakıcı et al., 2013; Batty et al., 2012). This has become a strong indicator of transition to digitalization at the local government level and utilisation of relevant data across various municipal administrations (Gil-Garcia et al., 2015; Meijer & Bolívar, 2016). The rapid development of smart cities urges investigations on its multiple associated things. Even though the initial literature was more focused on investigating

technology, governance, and urban-level planning. They were more concerned about exploring how to accelerate the development efficiently. The emerging studies now focus on other aspects also, including the institutional capacity affecting the adoption of smart cities across different worldwide administration levels (Anttiroiko et al., 2014; De Guimarães et al., 2020; Yigitcanlar et al., 2019). There is a clear lack of focus on local governance and how decentralization can shape the progress. It is yet to be seen whether a transfer of decision-making power to local municipal bodies works wonders in favor of developments at a rapid pace across the administration (Mora et al., 2017; Ruhlandt, 2018; Vujković et al., 2022). An in-depth study is required at this level considering it may have serious implications for policy and practice levels. Its significance can be understood from the difference that a decentralized and centralized system share. A decentralized system can empower municipalities through fiscal and regulatory autonomy, affecting their ability to support developments through investment in multiple digital platforms suited to the local ecosystem (Anthopoulos, 2017; Tomor et al., 2019). In contrast, a centralized approach can be perceived as forcing local government bodies to adapt to national strategies, creating possibilities for overlooking the demands of local municipalities (Kummitha & Crutzen, 2017; Zheng et al., 2020). When perceiving smart city developments through the lens of a reform agenda, it is necessary to also study the viability at the local government within the realm of decentralization.

The existing literature was good for identifying the significance of emerging technological trends and urban values and how they apply to smart cities. However, these studies focused least on other critical aspects, including urban governance and digital governance as situated at a localized self-government level. Additionally, these studies could not highlight how intellectual thinking and policies apply to municipalities, suggesting limited evidence of developments across administrations (Mora et al., 2023; Sharifi et al., 2021; Zhao et al., 2021). This justifies the rationale for this study, as it bridges this gap by studying smart cities in relation to municipalities, showing innovation and governance at the local level. Bibliometric analysis and PRISMA-bound literature review were adopted as measures to review this area (Aria & Cuccurullo, 2017; Donthu et al., 2021; Paul & Criado, 2020). Eventually, 482 peer-reviewed journals sourced from Scopus were reviewed to present themes embedded into the local system. Key research questions guiding the analysis are as follows:

1. How has the research focus on smart cities transformed into an area of governance?
2. What logical beliefs and structures have shaped the literature focus in the area stated?
3. How have smart city developments related to reforms at the local self-government level shaped the current literature?

As evidenced in the questions outlined, this study aims at changing perceptions towards smart cities from only a technological evolution to public sector reforms. It does so by discussing urban digitalization in line with local governance along with public administration theories (Cordella & Bonina, 2012; Janssen & van den Hoven, 2015; Paul & Criado, 2020). Additionally, it performs a capability analysis of local municipal institutions to evaluate how smart a city performs locally and satisfies the public value (Gil-Garcia et al., 2018; Lewis et al., 2018; Mergel et al., 2019). Moreover, it focuses both on public value and sustainability to demonstrate how smart governance is in congruence with the democratic legitimacy of municipalities (Bibri & Krogstie, 2017; De Guimarães et al., 2020; Meijer & Bolívar, 2016). Going this way, it can help to demonstrate how governance-oriented frameworks can shape smart city developments at municipal levels within a system that empowers local self-government. It is important to consider various factors together to address research questions, including organizational restructuring, regulatory adaptation, and workforce development (Bibri & Krogstie, 2017; De Guimarães et al., 2020; Meijer & Bolívar, 2016). This shows how the research is aligned to institutional and governance models towards the development of digital capabilities at the municipal level.

Literature Review

Public administration and governance theory are adopted as the theoretical framework for this study to investigate smart city progress at the local government level. The idea is to show that a smart city should not only be viewed as a technological innovation but also through the lens of other associated factors, including local public administration. That said, the significance of integrating data intelligence and technology with administrative-level reforms is illustrated. The framework adopted thus has some distinctive components within it. This includes:



The theoretical lens adopted guides the study to evaluate smart cities in terms of decentralization and municipal-level governance.

Smart Cities and Urban Governance

Much existing literature on smart city planning and information systems at the urban level demonstrated the use of technology such as sensors and data analytics (Albino et al., 2015; Bakıcı et al., 2013; Batty et al., 2012). The fundamental elements of smart cities in urban areas include, but are not limited to, intelligence and digital infrastructure. Over the years, scholars learned that smart city does not only mean utilizing advanced technologies to make urban centers more modern. The studies by Yigitcanlar et al. (2019) and Anttiroiko et al. (2014) challenged such assumptions by correlating such developments with associated challenges, including governance and institutional design. In the opinion of Bibri & Krogstie (2017) and De Guimarães et al. (2020), smart cities should not be treated as short-term improvements at the urban level but as long-term sustainability developments across administrations. The word “sustainability” emphasizes prioritizing both technologies and governance when developing smart cities. Some of the recent studies support such views by discussing the integrated form of technology and governance to ensure planning happens at a large scale through improved levels of planning and civic engagement (Mora et al., 2017; Ruhlandt, 2018; Vujković et al., 2022). All these supports a view that development of smart cities is not only about utilising advanced technologies to enhance the daily life of the public but also about understanding the institutional essence within it to learn the reform trajectory.

Digital Government and Digital-Era Local Governance

Another theoretical framework is based on digital government along with governance in the era of the digital age. This theoretical framework considers smart city developments as not just a kind of temporary project but impacting at the public administration level. Some literature viewed digital government as catalyzing the integration between policy-makers and service improvements at the organizational level (Gil-Garcia et al., 2015; Meijer & Bolívar, 2016). Digital platforms, when governed ethically, can support developments without any accountability compromises. Some other literature discussed that digital transformation is not only about engaging in a technical process but is more than just this. Janssen & van den Hoven (2015) and Cordella & Bonina (2012) opined that digital transformation is also about taking concerns with reforms at the governance level to bring necessary changes in key regulations, organizations, and administrations. In the opinion of Paul & Criado (2020), an integration between governance and technology can drive collaboration between key sectors and contribute to crucial policymaking. Digitalization within the context of local government has shifted the focus to governance in the digital era. This is characterized by making critical data-informed decisions and service delivery across the network (Gil-Garcia et al., 2015; Meijer & Bolívar, 2016). Therefore, smart city projects are not about developments only but also governance reforms.

Public Sector Innovation, Institutional Capacity, and Local Self-Government

Another pillar in this context is the significance of institutional capacity theory and adoption of innovation at the public sector level. There is literature that views innovation in the public sector through the lens of organisational and institutional processes, including learning, leadership, and competencies (Gil-Garcia et al., 2018; Lewis et al., 2018; Mergel et al., 2019). These studies supported a view that technologies facilitate the utilisation of resources; however, it is the administrative-level competence that actually ensures a sustained scalability of innovation. Some studies highlighted the importance of institutional frameworks in bringing advanced-level changes such as smart cities. In this relation, Mora et al. (2017) and Ruhlandt (2018) mentioned that decentralized governance can improve decision-making, organizational structure, and financial management in cities. Institutional frameworks, on the other side, can improve the capacity of the local government to cultivate an innovative ecosystem. As opined by Vujković et al. (2022), smart city projects are influenced by governance structures and administrative projects. Within the realm of decentralized systems, towns can be used to pilot smart city projects with essential focus on digitalization and co-creation of services. In contrast, national regulations on digitalization focus more on centralized frameworks to implement such projects through vertical coordination (Kummitha & Crutzen, 2017; Zheng et al., 2020).

Public Value, Sustainability, and Smart Governance

The next pillar is focused on discussing smart cities in the context of public value and sustainability. According to the public value theory, the needs assessment for reforms in the public sector should consider factors like efficiency, democratic accountability, social legitimacy, and shared outcomes (Gil-Garcia et al., 2015; Meijer & Bolívar, 2016). Digital transformation is ethically correct if it fosters resilience and trust in citizens. Such normative perceptions can be observed among smart city researchers. De Guimarães et al. (2020) and Bibri & Krogstie (2017) investigated the connection between smart city projects and contribution towards sustainability in line with SDG11 (sustainable cities and communities) of the UN's sustainable development goals. In the view of Yigitcanlar et al. (2019), smart city projects should also focus on integrating innovation with serious commitments to environmental stewardship, social equity, and urban resilience in the long run. This can be assured if the local government is aware of its role in securing public interest, regulating shared networks, and ensuring accountability at the urban administration level.

Analytical Framework and Conceptual Positioning

As discussed above, four theoretical frameworks are being applied to this study to show how smart city developments also take concerns with governance and reforms within the realm of self-government in a highly digitized society. The foundational elements that combine governance, institutions, and innovation ecosystems into one single unit include digital platforms, intelligence, and infrastructure supporting real-time data processing. Local governments can devise new policies or modify existing ones to encourage contributions from key stakeholders. Institutional beliefs and workflow act as mediators between digital investment and desired public value. Smart cities, when managed through a decentralized system of governance, improve the functionalities of local government. Municipalities with fiscal and regulatory autonomy can better contribute towards smart cities expanded across cities and towns both. This way a decentralized structure along with the theoretical frameworks discussed offer supportive platform for bibliometric mapping and systematic analysis.

METHOD

Discussing the research design, the study uses a combined approach of bibliometric analysis and a systematic literature review to investigate smart cities as a basis for evaluating innovation, along with governance reforms at the local government level. In this relation, a quantitative mapping has been done with qualitative and theory-specific analysis of the topic to discuss the interrelated elements (Aria & Cuccurullo, 2017; Donthu et al., 2021; Paul & Criado, 2020). The use of the bibliometric method allowed us to effectively define the intellectual structure and themes related to complex fields. In contrast, they proved less significant in highlighting the institutional mechanisms along with public value outputs. While a systematic literature review enhanced the theoretical understanding, bibliometrics offered related findings within the subject in focus. The combination of both enhanced the methodological rigor of the design adopted. This way, the study was able to capture both theoretical understanding and contextual insights into smart city projects (Mora et al., 2023; Vujković et al., 2022).

Data Source and Search Strategy

Scopus was used as the data source, considering that it offers access to plenty of articles on urban governance and smart cities, among other key variables in this research (Choi & Song, 2022; Adenekan et al., 2024; Valencia-Arias et al., 2025). The kind of articles that Scopus contains is very suitable for doing bibliometric analysis as well as systematic review effectively. The search strategy was focused on key variables, including smart city, local government, and municipal innovation. The strategy involved an iterative process to find articles with a pair of keywords and then trying another set of keywords to access the most relevant articles. The search strings that finally worked and benefitted this study are shown in the image below:

```
TITLE-ABS-KEY (("smart city" OR "smart cities" OR "digital city" OR "intelligent city")  
AND ("local government" OR municipality OR municipal OR "city government" OR "urban  
government") AND (innovation OR governance OR "public management" OR "public  
administration" OR "digital government")) AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-  
TO (LANGUAGE, "English"))
```

All sources complied with the desired date range, which is publication from the inception of the field to much more recent publications in 2025. This was the period when multiple studies highlighted a shift from technology-bound smart cities to excellently governed innovation at the local administration level. Initially, the search produced 1,081 records. Only 504 were selected, rejecting others' non-peer-reviewed journals. Further rejection of articles to utilize only those written in English reduced the article size to 482 documents.

Inclusion and exclusion criteria

The criteria that formed the basis for including articles for the study included the following:

- a. Peer-reviewed articles
- b. Articles published only in English language
- c. Articles only those capturing smart cities, municipal innovation, local government, and management in the context of public sector were considered

Below is a list of criteria that formed the basis for rejecting articles from the initial documents:

- a. Conference papers
- b. Chapters from books
- c. Editor notes
- d. Engineering-based articles lacking relevance to the local government and administration level
- e. Articles focusing smart technologies but in the context of the private sector

While the above is a set of points that were considered before rejecting any articles and considering the other set of articles for the present study, this also validates the focus of this study on governance and institutional-level transformation.

Screening and Selection Process

The PRISMA 2020 protocol was adopted for screening and selection purposes to ensure transparency and rigor in the methodological design (Page et al., 2021). Records gathered from Scopus in CSV format were later transported into the Bibliometrix R package for the purpose of preprocessing as well as screening. During the screening process, the following things were considered:

- a. Every single record from Scopus was combined to form single dataset. The automated matching procedure was utilized to figure out as well as eliminate duplicate entries. The matching procedure leveraged the authors, title, publication year, and DOI.
- b. Titles as well as abstracts were analyzed for relevance as the basis of inclusion and exclusion criteria stated earlier.
- c. The leftover articles were further evaluated in terms of empirical relevance. For example, articles focusing on the infrastructure design but ignoring the importance of governance analysis were not considered.
- d. At the end of the process, the researcher was left with a final lot of 482 peer-reviewed and highly relevant articles, comprising bibliometric mapping as well as a systematic analysis of the topic.

Below is a complete presentation of the screening process. The number of records at each stage is clearly labelled and signified in line with the PRISMA 2020 Protocol:

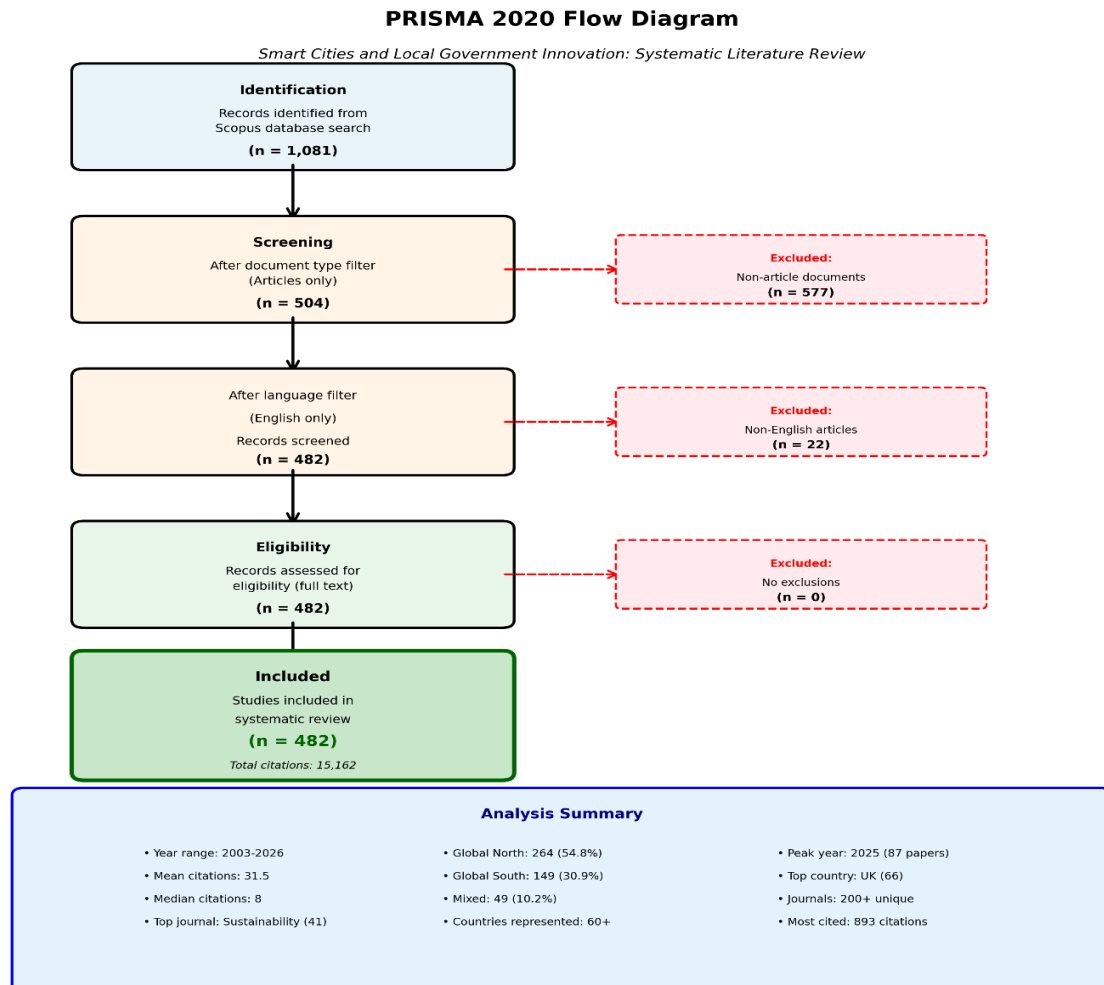


Figure 1: PRISMA 2020 Protocol as Applied to this Study

Bibliometric Analysis

The data cleaning process followed next, which was executed using the Bibliometrix R package again. This further allowed access to the descriptive statistics in addition to performance analysis and scientific maps. VOSviewer did help to identify the network along with data categorization. The method allowed us to analyze multiple things, including citation trends and journal impact belonging to different countries. VOSviewer, on the other hand, came in useful in creating a network for keywords, co-citations, and other things. This way it allowed us to figure out thematic and intellectual clusters within the landscape of the chosen topic (Mora et al., 2023; Sharifi et al., 2021; Vujković et al., 2022; Zhao et al., 2021).

Systematic Literature Review and Thematic Synthesis

The systematic review process was followed to perform a thematic analysis of the final 482 peer-reviewed articles (Snyder, 2019; Tranfield et al., 2003). Each article was further analyzed with a framework to extract and code the numerous aspects of the transformation of smart cities, including the institutional aspects. The coding strategy was executed in line with both deductive and inductive approaches. The theoretical framework discussed in the literature overview section formed the basis for the deductive approach. On the other hand, themes emerging from the data informed the inductive codes. Thematic analysis was used later to devise further categories and reject analytical dimensions.

Table 1. Extraction and Codification for the Systematic Literature Review

Coding Dimension	Analytical Focus	Operational Definition
Article Profile	Bibliographic and contextual characteristics	Author(s), year, journal, country/region, policy context, empirical or conceptual
Theoretical Framework	Underpinning analytical perspective	Public sector innovation, digital-era governance, institutional theory, collaborative governance, public value, political economy
Governance Paradigm	Smart city governance model	Managerial–technocratic, collaborative ecosystem, participatory/co-creation, hybrid
Role of Local Government	Institutional function of municipalities	Service provider, platform governor, ecosystem orchestrator, regulator, innovation broker
Institutional Capacity	Administrative and organisational capability	Leadership, skills, interoperability, data governance, regulatory agility, organisational learning
Digital Infrastructure	Enabling technological architecture	AI, IoT, open data, platforms, urban dashboards, digital twins
Innovation Mechanisms	Instruments of public sector innovation	Living labs, sandboxes, PPPs, experimentation platforms, co-design
Policy Domain	Application sector	Mobility, energy, environment, public safety, planning, health, social services
Public Value Orientation	Normative and societal outcomes	Sustainability, inclusion, resilience, transparency, democratic legitimacy
Implementation Logic	Reform trajectory	Pilot-based, project-based, platform integration, city-wide transformation

Integration of Bibliometric and Thematic Findings

In the end, the results obtained from the bibliometric analysis were combined with theme synthesis. Bibliometric profiling offered critical insights into the research field and relevant intellectual frameworks. The systematic literature review was used for a detailed investigation of governance, innovation, and other key variables relating to smart cities in the context of local administrations.

Methodological Rigor and Limitations

As earlier stated, the methodological rigor was assured using multiple frameworks and screening of data to leverage relevant articles only. This included but is not limited to the PRISMA 2020 guidelines and screening protocol. An integrated approach comprising both systematic literature review and bibliometric analysis strengthened the level of triangulation, reducing any possibility for disciplinary bias. Despite all these, the study is not free from limitations. First, using articles sourced from Scopus and available in the English language denied the significance of other publications that may have offered better policy-related knowledge. Also, due to the dependence of bibliometric analysis on citation-oriented indicators, it was hard to avoid relying on older publications. However, the large sample size of 482 finalized documents and the combination of qualitative and quantitative techniques helped overcome the limitations.

RESULTS AND DISCUSSION

Growth and Evolution of the Field

The evolution of research over subsequent years in the past suggests a shift in research focus from smart cities and innovation at the local government level to a more diverse field of

knowledge. The minimum annual publication output was very limited before 2012, as shown in figure 2 below. This can be marked as the period that founded the basis for discussing smart cities in a much larger context than before.

The volume of scientific production increased considerably post-2013 since national city-based programs started taking root across key global markets, including Europe and Asia. This period can be better remembered as an era when revolutionary thinking and research on formalized policy frameworks governing smart cities started capturing the attention of wider scholars.

The time between 2016 and 2019 can be remembered as a period when production volume increased even further due to a higher number of policies focusing on the field and deployment of innovative ideas at urban-level developments. This was the time when publications focused more on the integrated nature of smart cities and different associated aspects, including public administration and governance. Hence, the reform agenda took its ground firmly to support the waves towards smart cities at the local level.

However, the post-pandemic period is regarded to have fueled the progress even further. The developments reached their maximized peak by 2025, indicating key trends in the post-pandemic period that include a higher volume of digitalized public service and data-informed governance, among others. Eventually, the field of smart cities was repositioned as an essential basis for evaluating sustainable development. The upward development in the figure below points to the same changes, suggesting progress from smart cities to governance and innovation at the local government level.

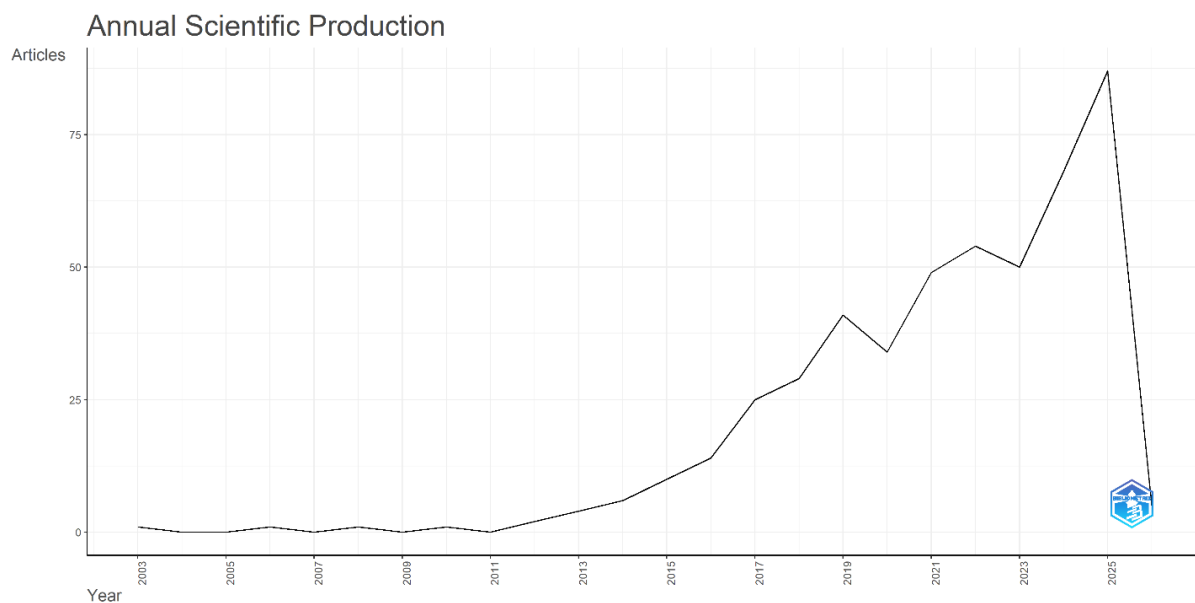


Figure 2: Annual Volumes of Scientific Articles

Knowledge Infrastructure and Core Publication Outlets

The publications in regard to smart city and local government innovation can be seen scattered across a small and large number of journal volumes. A small number of journals like Sustainability in Switzerland, Cities, and Urban Cities attracted a large volume of publications as opposed to a large number of journals totaling an infrequent article count. This is in congruence with Bradford's Law of Scattering. The following is a detailed presentation of journals and publications for each:

Table 2. Journals in the field of Smart City and local government innovation

Journal	Publications
Sustainability (Switzerland)	41
Cities	19
Urban Studies	11
Government Information Quarterly	9
Smart Cities	9
Urban Geography	9
Journal of Urban Technology	9
Technological Forecasting and Social Change	8
IEEE Access	6
Sustainable Cities and Society	6
International Journal of Sustainable Development and World Ecology	6
Information Polity	5
International Journal of Electronic Government Research	5
Journal of the Knowledge Economy	5
Urban Planning	5

These journals served as the basis for gauging data to conduct this study using a systematic literature review method. The diversity in the number of publications for each journal also signifies how hybrid the character of research on smart cities is. This incorporates multiple things within it, including urban and sustainability science, public administration, and digital transformation. This also validates a belief that smart cities are not only about technology and innovation but can also bring critical necessary improvements at policy and governance levels.

Intellectual Foundations and Canonical Contributions

The cited publications in the concerned field also indicate works that have shaped the priorities of the current research. This is clearly depicted in table 3 below, indicating the most cited work among all was Bakıcı et al. (2013). This shows the critical significance of this article for global studies, situating smart cities in the context of transformations at institutional and societal levels, also beside only the technological sector. Talking about other noteworthy publications in this regard, this includes the work by Gil-Garcia et al. (2015) and Meijer et al. (2016), who successfully found the connection between digital government, data governance, and smart city governance. Anttiroiko et al. (2014) can be seen to have used a political-economic lens to situate smart cities within a broader context of the urban innovation systems. On the other hand, De Guimarães et al. (2020) presented the sustainability and circular economy aspects of smart cities in urban areas. The below is a clear presentation of the same:

Table 3. Publications on Smart City and Local Government Innovation

Authors	Year	Title	Journal	Global Citations
Bakıcı et al.	2013	Smart City Initiative: The Case of Barcelona	Journal of the Knowledge Economy	893
Gil-Garcia et al.	2015	Smart Cities and Public Policy	Information Polity	357
De Guimarães et al.	2020	Sustainable smart cities: A framework	Journal of Cleaner Production	339
Anttiroiko	2014	The Political Economy of Smart Cities	AI & Society	295
Gil-Garcia et al.	2016	Data-driven smart cities	Government Information Quarterly	294
Viale-Pereira et al.	2017	Smart governance	IT for Development	292
Komninos	2013	Intelligent cities	Journal of the Knowledge Economy	277

Odendaal	2003	Smart city debates	Computers, Environment and Urban Systems	267
Barns et al.	2018	Platform urbanism	City, Culture and Society	244
Wiig	2015	IBM's smart city	City	240

The above can be summarized as publications that institutionalized smart cities to produce public value and promote policy innovation. Since they were cited multiple times across the global studies, it illustrates their significance in the field concerned here.

Network and Intellectual Structure Analysis

Intellectual Foundations and Co-Citation Structure

The co-citation network approach presented the other facets of research in this field. It indicated that some certain groups of publications and authors were cited together on multiple occasions. This indicates that those studies were constructed using similar conceptual frameworks. Figure 3 below shows the literature buildup based on numerous connected citation groups. Each of these groups offered a different level of thought about smart cities and the importance of governance within the field. The most significant of all these clusters is based on the literary contributions of Batty et al. (2012), Komninos et al. (2013), Albino et al. (2015), Caragliu et al. (2011), and Hollands (2008). This cluster emphasized the involvement of intelligence at the urban level and digital cities. This defined smart cities in the form of an urban system that is technologically advanced and underpinned by multiple things, including data analytics and service intelligence. For instance, the study of Batty on digitalized modelling of urban centers as well as spatial intelligence formed the epistemological foundation for the area of research concerned here. On the other side, the definitional frameworks by Albino et al. (2015) and Caragliu et al. (2011) signified the value of conceptual limits of studies that were focused on smart cities. In addition, Hollands examined the normative assumptions about the smart city, which considerably shaped some early discussions on the same. Hence, it can be said that this cluster was more aligned to early developments in the field. This was the time when smart cities were only viewed as digital infrastructure.

The second in the cluster were the works that revolved around Gil-Garcia et al. (2015), Janssen & van den Hoven (2015), Meijer & Bolívar (2016), and Viale Pereira et al. (2017). They were mostly focused on digital as well as smart governance fields. Their contributions proved significant in a shift towards governance systems from smart cities only. They discussed a few things in more detail, including the technical artifacts and institutional capacity. These publications were more concentrated around a theoretical understanding of public administration and governance in the digital era. This was the time when smart city projects became a clear focus of the reform agendas of the public sector. Therefore, it can be stated that this cluster was more focused on presenting governance and administration as critical aspects of smart cities.

The next cluster was known more for contributions of Anthopoulos (2017), Ruhlandt (2018), Mora et al. (2017), and Angelidou (2014). Their works discussed the value of urban governance as a tradition being followed and policy design. They were some of those to have institutionalized critical strategies for smart cities, stakeholder collaboration, governance frameworks, and mechanisms adopted to support policy implementation. They talked about how local governments can play critical roles in supporting the development of an innovation ecosystem, facilitating digital transformation at a larger urban level. Hence, this cluster can be attributed to having shaped research on smart cities towards an integrated form of urban planning and public-level administration. The frameworks stated contributed positively towards a large-scale adoption of smart city governance.

The fourth cluster can be attributed to scholarly works of Wiig & Wyly (2016), Vanolo (2014), Barns (2018), and Kitchin (2015). Their scholarly works pointed to the importance of

a tradition towards political economy. They were more focused on studying smart cities in terms of data colonialism, platform capitalism, algorithmic governance, and corporate urbanism. They offered solid arguments against studies that focused on the technical aspects of smart cities. They were the first to describe smart cities in terms of power, surveillance, accountability, and governance of demographic variables. Therefore, this cluster could successfully offer an intellectual perspective of a smart city where political economy, urban governance, and public administration were also important beside smart city previously.

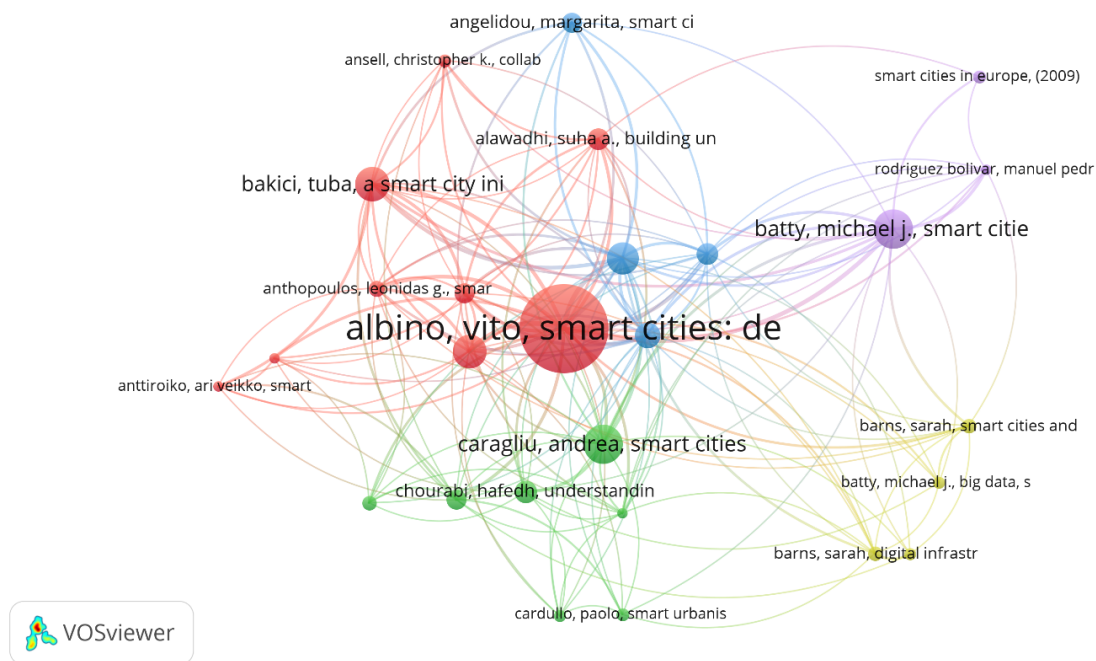


Figure 3. Co-Citation Cluster of Smart City along with Local Government Innovation

Conceptual Structure and Keyword Co-Occurrence Network

The conceptual framework was designed based on the analysis of co-occurrence keywords, which discussed semantic connections among core concepts originating from studies. Figure 4 below depicts the network of co-occurrence keywords, showing that the concept revolves around key concepts, including smart city. It also points out a close connectedness between governance and its specific concepts, including public administration and digital governance. This also reveals a fact that the current body of literature seems more focused on smart cities in respect to institutional transformation, innovation, and administrative capacity.

The second in the cluster revolves around urban planning and urbanization, with utmost emphasis on integrating initiatives aimed at smart city programs aligned to frameworks governing urban planning. This forms a connection between the smart city concept and sustainable initiatives aimed towards urban developments.

The next in the cluster incorporates different digital technologies, including the internet of things (IoT), AI, and blockchain, among others. The uniqueness of this cluster lies in how it operates in conjunction with digital technologies without any institutional and regulatory compromises.

The fourth in the cluster area demonstrates the connectedness between sustainability and innovation in respect to the urban city projects. This indicates the importance of open innovation, smart mobility, open innovation, and the circular economy. Hence, it can be

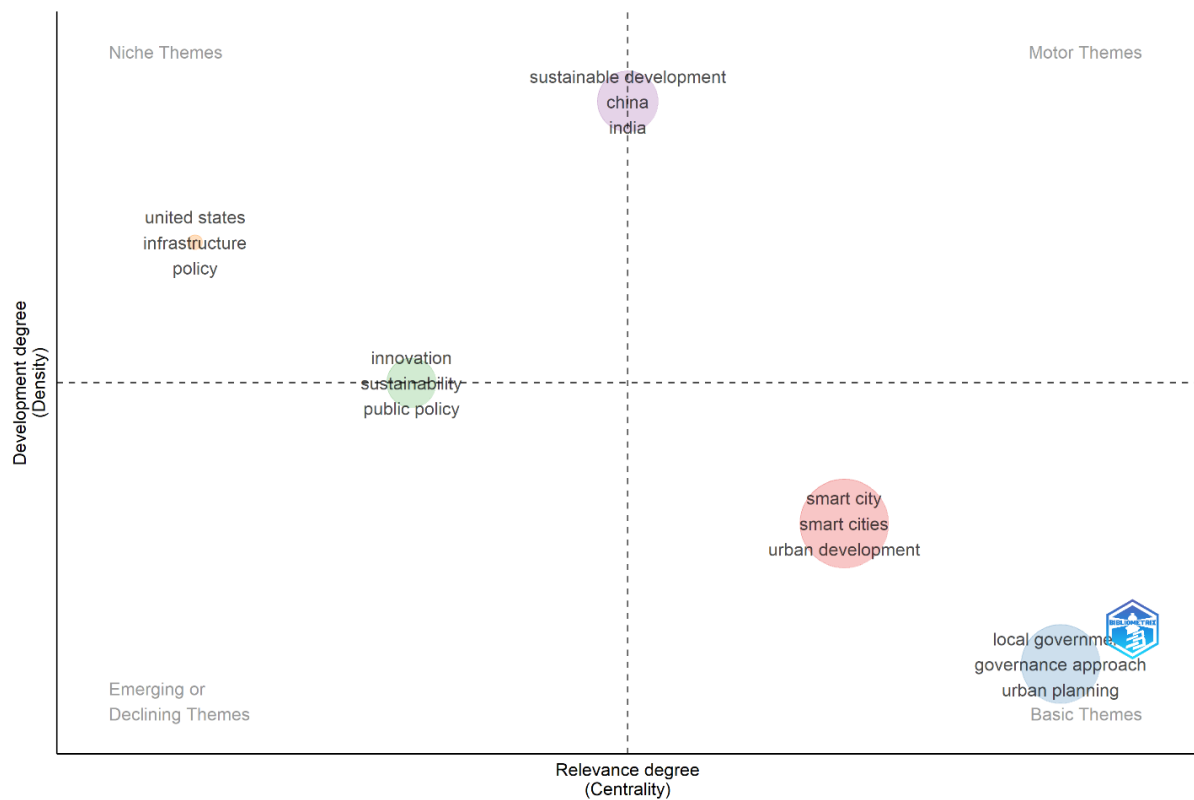


Figure 5: Thematic Configuration and Field Positioning

Synthesis: Towards a Governance-Centered Smart City Paradigm

A study of the network along with intellectual frameworks revealed critical findings. It shows that a smart city can be institutionalized using governance frameworks. This happens when the research is grounded in key principles and policies, including urban policy and institutional-level analysis. The network of co-citation also shows integration between digital government, governance design, urban intelligence, and political economy. On the basis of the conceptual network mapping, the key functionalities of local government in bringing governance reforms in smart cities were highlighted. They can play crucial roles in establishing linkages between sustainability, public value, and innovation. Hence, it can be confirmed that smart city projects can be accomplished in a manner that emerges to be a crucial framework supporting democratic innovation, sustainable development, and urban governance. This leads to the next stage in this project, which is discussing the findings of the systematic literature review alongside topic synthesis.

Systematic Literature Review and Thematic Synthesis

In the synthesis process, a deductive framework for theoretical underpinning and an inductive approach for pattern recognition were applied throughout the course of this literature review. The themes that were primarily identified thereof include:

1. An utter focus on public value along with sustainability
2. Impact of policy and institutional factors on smart governance
3. Digital innovation and transformation in the context of local governments
4. Governance models alongside implementation techniques that shape smart cities

This clearly shows a transition in process from technology-powered smart cities to a perspective more grounded in institutional forces and governance mechanisms.

Public Value and Sustainability as the Normative Orientation of Smart Governance

Existing literature found that public value alongside sustainability acts as a normative orientation, emerging as useful in evaluating innovation towards local governments as well as

smart cities. As a result, early studies were more aligned with technology and innovation in smart cities, including the use of sensors and data systems (Albino et al., 2015; Bakıcı et al., 2013; Batty et al., 2012). However, recent studies changed this perception to illustrate the value of other factors also, including governance and democratic legitimacy (Anttiroiko et al., 2014; De Guimarães et al., 2020; Yigitcanlar et al., 2019). The discussion of public value theory provided a basis for evaluating initiatives aimed at smart cities. These studies highlighted that digital transformation must also focus on enhancing problem-solving, improving the quality of the service, and gaining citizen trust, illustrating a need to look beyond administrative efficiency only (Gil-Garcia et al., 2015; Meijer & Bolívar, 2016). These findings suggest that smart cities are not only about technology and innovation but also concern the essence of other factors, including institutional legitimacy.

Some other current studies found sustainability key to measuring the performance of smart cities. In this connection, Bibri & Krogstie (2017) and De Guimarães et al. (2020) discussed the relationship between smart cities and sustainability. Yigitcanlar et al. (2019), on the other hand, said that policies governing smart cities should not only concern technological advancements in the field but also discuss how they relate to social equity as well as environmental stewardship. Hence, smart cities should be treated as long-term policy tools that make the urban environment much more resilient to adversity and support its sustainable developments. This is a kind of normative picturization of a smart city and the ongoing transformation into a governance framework, showing how local governments can act in the interest of larger public bodies in the urban context.

Institutional and Policy Drivers of Smart City Transformation

The second most crucial theme is the institutional and policy frameworks that remain an inseparable element from smart cities. This means smart cities should not only be viewed as breakthrough technological achievements but also as opportunities to bring critical improvements in multiple areas such as public institutions and regulations. Institutional theory acts as a crucial framework in this juncture between smart cities and reform works across multiple administrative dimensions. As found by Ruhlandt (2018) and Mora et al. (2017), smart cities can be incorporated into national-level administrative practices to showcase relations across the governing structures. Based on comparative studies, it is apparent that the concept and area of smart cities differ across a country. Key factors including decentralization and fiscal autonomy shape this trajectory beyond only technology and innovation (Vujković et al., 2022).

The studies by Tomor et al. (2019) and Anthopoulos (2017) mentioned that a decentralized governance structure can empower local municipalities to act as centers of innovation. If the right opportunities are created, they can contribute towards reform works within the context of multi-level frameworks governing the local administration and innovation. Kummitha & Crutzen (2017) and Zheng et al. (2020) studied smart cities in relation to a centralized construct. They found that digital strategies at the national level shape smart cities by means of administrative personnel situated vertically along the network. Policy frameworks can guide how reform works are governed within the area of smart cities and enable innovation at the municipal level. These studies point out how transformation in the area of smart cities is not a standalone concept of technological advancement. Indeed, this combines other aspects also, such as a decentralized structure and empowering local municipalities with innovation capabilities.

Digital Innovation and Transformation in Local Government

This is the third theme that is focused on studying how digital technologies shape the innovation in the context of the public sector. The literature reviewed highlighted that digitalization can be critical for local governments to identify and introduce key changes in their operations, besides improving the overall service delivery. Such benefits can be realized

only if citizens are made a key member of this transformation journey. The literature unfolded multiple ways digitalization can be adopted. This includes but is not restricted to such things as IoT and integrated dashboards to be used for the purpose of urban affairs. From an analytical point of view, technology on its own is not the matter of discussion here, but how it applies to the government affairs and governance is. With the help of digital platforms, municipal departments can coordinate effectively as needed. Various government levels situated as a vertical hierarchy can benefit as well. They can collaborate easily with multiple organizations, including private enterprises and academic institutions (Cordella & Bonina, 2012; Janssen & van den Hoven, 2015; Paul & Criado, 2020).

An analysis of open data and other associated platforms shows that the integration can be crucial in improving the transparency level, making professionals more accountable and citizens trusting them more to co-produce the development works (Gil-Garcia et al., 2015; Meijer & Bolívar, 2016). Literature, on the other side, also explored challenges associated with implementation. This includes skill shortages, procurement rigidities, dependence on legacy IT systems, and organizational silos, among others. These studies were of the view that the public sector can successfully remain in the digital transformation journey if governance reforms remain a priority, suggesting a shift from a technology mindset to governance-oriented progress. Mergel et al. (2019), Lewis et al. (2018), and Gil-Garcia et al. (2018) believe that organizational learning, leadership, and cross-sector relationships are crucial for sustained progress towards digital programs.

Smart City Governance Models and Implementation Logics

The fourth theme was focused on analyzing smart city governance models along with implementation logics. Governance in regard to smart cities is regarded as a multi-level and multi-actor process, which is much bigger in scope compared to the traditional hierarchy system of the public administration. The analysis found three different forms of governance models existing. The one is the managerial-technocratic perspective that views smart cities to be a system leveraging multiple things, including data analytics for performance improvement. Collaborative governance is a way to keep utmost focus on local governments, civic organizations, and businesses. The fact that co-creation is an improvement for the transformation suggests how important it is to drive social innovation and involve citizens in this journey. According to some empirical studies, hybrid governance structures can be easily seen to have existed in practice. Local governments, on the other side, combine technocratic administration, participatory engagement, and collaborations; however, this is contingent upon various external factors like political environment and institutional capacity (Mora et al., 2017; Ruhlandt, 2018; Vujković et al., 2022).

The implementation logic, on the other hand, shows some level of variations. Certain communities can be seen designing and implementing a comprehensive plan to support the concept of smart cities. Conversely, some others prefer adopting more of an incremental strategy so that such projects are successfully implemented. Research confirms that implementation that adapts to situations performs better and exhibits better resilience compared to less dynamic models within the realm of decentralized governance levels. This is where the municipalities face different types of institutional challenges.

Integrated Thematic Synthesis

The literature reviewed for the four domains can be summarized as that smart cities illustrate the importance of reforms of local governments that are clearly governance-led and innovation-driven. This is up against the initial belief that smart cities are only some great examples of applications of advanced technologies. While digital technologies enable the transformation journey, it is the institutional design, policy coherence, and administrative capacity, among others, that guarantee successful results in the long run. This way the research

points to a paradigm shift in smart cities. Earlier, studies were more confined to specific aspects of smart cities, including infrastructure and engineering. On the contrary, current studies are shifting towards other critical associated elements, including urban governance and public administration. Indeed, smart cities are more than just a digital journey, as they guarantee public value, ensure smoother progress to sustainability, and facilitate the essence of democratic governance.

Discussion

This section combines the findings of bibliometric profiling, an analysis of network and intellectual structure, and systematic literature review and thematic synthesis to analyze governance reforms. The literature, including Albino et al. (2015), Bakıcı et al. (2013), and Batty et al. (2012), demonstrated an evident transition from a techno-centric mindset viewing digitalization as a means to introduce infrastructural changes in urban areas to a governance-bound mindset. The governance-based viewpoint regarded smart cities as a form of socio-technical systems, which are crucial for key changes at the public administration level and through institutional reforms (Anttiroiko et al., 2014; Mora et al., 2017; Ruhlandt, 2018; Vujković et al., 2022). The significance of a centralized ecosystem along with a conceptual framework aligned to the digital government was recognized. This necessitated the institutionalization of governance in the context of smart cities at the public administration level. Key findings of the network research confirmed an evident shift from an early engineering and technology viewpoint to a more focused governance.

On the basis of thematic synthesis, it is clear that smart city projects can bring transformative changes at a much larger level if key associated elements integrate to produce the results. Current literature, including Cordella & Bonina (2012), Janssen & van den Hoven (2015), and Paul & Criado (2020), discussed the growing role of local governments in fostering an ecosystem of collaboration and thus legally protecting developments and services in urban areas. Municipalities with a robust administrative capacity can play a role in combining different related platforms and help sustain innovation longer (Gil-Garcia et al., 2018; Lewis et al., 2018; Mergel et al., 2019). Conversely, municipalities with limited capacity may not produce such noticeable results.

As per the results, smart city projects may not prosper sustainably in the lack of a decentralized structure and a high-level governance framework. Decentralized governance can be crucial for achieving financial independence, empowering municipalities with administrative authority, and ensuring flexibility in regulations. Moreover, this can help the local governments become a key player in the smart city transformation projects (Anthopoulos, 2017; Tomor et al., 2019). Smart city initiatives in centralized structures can benefit from nationally recognized digital strategies along with vertical hierarchies to support the administrative work (Zheng et al., 2020; Kummitha & Crutzen, 2017). Hence, there is a noticeable difference in smart cities in centralized and decentralized contexts, suggesting that such developments should not only be considered technological progress but also reforms at the governance level (Kummitha & Crutzen, 2017; Vujković et al., 2022; Zheng et al., 2020). The results also validate the criticality of sustainability and public value in supporting smart city governance at a much more profound level. Many recent studies reviewed digital transformation through a multidimensional view including environmental stewardship, democratic legitimacy, and urban resilience, among others (Bibri & Krogstie, 2017; De Guimarães et al., 2020; Meijer & Bolívar, 2016; Yigitcanlar et al., 2019). Hence, it can be inferred that smart city initiatives can benefit from long-term strategic thinking and policy-making to foster longer urban developments.

Discussing the implications of reforms at the local government level, it is an activity to apply the latest technologies to benefit the citizens as well as to introduce reforms in administrative works. Various platforms supporting the developments should integrate through

means of organizational restructuring, regulatory adaptation, and workforce development. At the municipal level, digital capabilities should be nurtured in a way that they emerge to be a critical public asset. This can be done through investments in key activities, including analytics, leadership, organizational learning, and others. While governance is important, key improvements in the area must prioritize a participatory design and more refined frameworks for accountability.

Regarding the outcomes of a decentralized system, municipalities, when empowered through fiscal autonomy, freedom towards regulatory adoption, and administrative capacities, can become a key member of the innovation ecosystem. Such changes can be crucial for better overall outcomes and value for the citizens. On the contrary, a higher centralization dependency can produce negative results such as a lack of experimentation. Hence, a governance-innovation combination is more suited to transformation in relation to smart cities.

CONCLUSION

This study attempts to consolidate smart city research by investigating urban digitalization in the context of local government innovation and governance reform. Using an integrated bibliometric approach, network visualization, and a PRISMA-advised systematic review, this study captures cutting-edge intellectual developments over the last decade and locates smart cities in the current public administration and governance discourse.

They confirm the literature's clear shift away from technology-focused understandings of smart cities, towards governance-oriented models focusing on institutional capacity, public value and cooperative innovation. If in initial research projects smart cities were primarily seen as a tool for urban modernization, recent scholarship situates digitalization within organizational structures, policy instruments, and multi-actor innovation ecosystems. There is a growing appreciation for digital platforms as instruments of governance reform, citizen engagement, data-intensive policymaking and coordinated service delivery not simply technological add-ons.

The study also confirms the primacy of local authorities in leading the smart city transition. Progress depends on the design of governance, administrative capacity and the capacity of municipalities to work with sectors and levels. Decentralized governance modes—underpinned by fiscal and regulatory autonomy—are especially conducive to local innovative and adaptive forms of digital transformation, whereas overly centralized modes stifle contextual responsiveness and experimentation.

Finally, we are witnessing an increasing trend towards a policy-oriented perspective of smart city research, focusing on sustainability and public value. Newer frameworks further connect smart cities with environmental sustainability, democratic accountability, and urban resilience, bolstering the perspective that smart cities are a long-term strategy for governance reform rather than a short-term ICT project. In summary, the results situate smart cities as socio-technical governance arrangements that use digital innovation, institutional capacity, and decentralized public organization types to mold sustainable urban futures.

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