

Towards Understanding Smart Public Governance: A Literature Review

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Abstract

The paper addresses the fuzzy nature of the concept of smart public governance (SPG). Governments and societies all over the world are currently dealing with dynamic economic and societal pressures and public policy challenges brought on by the diversity and complexity of societal goals. These challenges must also be faced and responded to swiftly by the (smart) public governance system. The findings of various scholars indicate that, despite the growing interest in the concept of SPG, the latter is still considered a fuzzy concept that is used inconsistently in the literature. The aim of this paper is to present the findings of a literature review that investigates the current definitions and fundamental dimensions of the SPG concept. Through a five-stage grounded theory approach, we investigate the SPG concept and its dimensions by reviewing existing literature in a specific field. Our analysis reveals that some scholars have proposed their own definitions of SPG, while others have relied on definitions provided by their peers. Additionally, some scholars have not explicitly written about the SPG, but refer to the term smart city governance (SCG). We identify nine dimensions of the SPG concept through a review of definitions, which we group into three categories based on their frequency. The categories are as follows: (i) mostly used dimensions include the smart use of ICT, smart collaboration and participation, and smart decision-making process, (ii) dimensions with moderate frequency encompass sustainability, smart outcomes, and smart e-administration, and (iii) less frequently used dimensions consists of smart internal coordination, safety and security, and ICT infrastructure. The paper first analyses the key concepts that make up SPG: public governance and smart(ness). In addition, previous definitions of SPG are presented and their common denominators identified. By that, the paper offers a comprehensive review of the different dimensions of SPG. Finally, the paper places the concept of SPG in a multitude of related concepts (e.g., good governance, collaborative governance, co-creation etc.).

Points for practitioners

This paper is a valuable resource for practitioners seeking to understand the ongoing SPG debates and to determine what fits within the SPG framework, as it offers a detailed account of the various SPG definitions at both the local and central government levels while highlighting its common denominators.

Keywords: Smart Public Governance; Public governance; Smartness; Literature review

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1 Introduction

The concept of smart public governance (SPG) is seen as a potential solution by various governments and societies globally to tackle dynamic economic and societal pressures and public policy challenges caused by the diversity and complexity of societal goals. Although SPG is seen as a promising approach to address economic, societal, and policy challenges faced by various governments and societies worldwide, implementing SPG systems can be a challenging task – also due to the lacking consensus on the understanding of the concept.

Despite the proposals of various research models and conceptual frameworks for SPG (cf. Scholl & Scholl, 2014; Rodríguez Bolívar & Meijer, 2016; Šiugždinienė, Gaule, & Rauleckas, 2017; Lin, 2018), there remains an ongoing debate about the precise definition of SPG and its essential dimensions. Therefore, this paper aims to present the findings of a literature review that investigates the current definitions and fundamental dimensions of the SPG concept. To guide the literature review, two research questions were formulated: (1) how have scholars defined SPG in the existing literature? (2) what are the defining dimensions of SPG according to the literature? The objective of this literature review is not to provide a singular definition of SPG, but to offer a comprehensive and systematic overview of the diverse definitions and dimensions of SPG. Additionally, it is essential to have a clear conceptual understanding of the fundamental concepts that make up SPG, such as public governance and smart(ness), and to distinguish SPG from other related concepts, including good governance, collaborative governance, and co-creation.

The paper is structured as follows: in section 2, the author revisits the fundamental concepts of public governance and smart(ness) that form the basis of the SPG concept. This section is crucial for gaining a thorough understanding of SPG. Section 3 outlines the methodology. Section 4 employs an SPG research framework to cover the definitions and dimensions of SPG. This section presents an overview and analysis of SPG definitions and highlights the primary dimensions of SPG based on research conducted by previous scholars. In section 5, the authors differentiate the SPG concept from its related concepts. Finally, the paper concludes by summarizing the results of the literature review in the last section.

2 Theoretical background

Understanding the concept of SPG requires a clear grasp of its key components: public governance and smart(ness). Therefore, in this section, we will begin by revisiting these fundamental concepts. This is crucial as it serves as the first and necessary step towards understanding the concept of SPG. By establishing a solid foundation of these concepts, we can delve deeper into the dimensions of SPG.

2.1. *The Dual Nature of Public Governance: An Overview*

The concept of public governance has a long and rich history dating back to ancient times, with origins rooted in the Latin "gubernare" and Greek "kybernân" or "kubernetes" which referred to the act of governing or steering. Over time, the term "gouvernance" emerged in France to describe the role of royal officers responsible for governance, shifting the focus to those in charge of the act of governing. However, it was not until the World Bank's redefinition of public governance in 1989 that the term became widely used, extending beyond its original context. Today public governance has become a multidimensional concept that covers various fields, including corporate governance³, public governance⁴, and global governance⁵. Defining public governance remains a challenge for scholars, despite its widespread use. However, the works of scholars (cf. Pierre & Peters, 2000; Cepiku, 2013; Levi-Faur, 2014; Katsamunská, 2015; Bovaird & Löffler, 2018), have contributed to the literature on public governance, providing valuable insights into its different aspects.

Due to its dual nature, the concept of public governance has been the subject of extensive examination in the literature, resulting in some degree of conceptual uncertainty. To address this, scholars have considered public governance in terms of both structure and process. Furthermore, the current literature on public governance describes two dominant dynamic perspectives, namely the process of steering and coordination – sometimes by scholars referred also as rowing. The predominant perspective is public governance as steering, in which executive authorities, i.e., the government, retain the power to direct society despite their limited legal role. This approach assumes that the government has significant control over resources and determines the public interest. Public

³ Reference to the private sector.

⁴ Reference to the public sector (i.e., public administration).

⁵ Reference to the international institutions like OECD or UN and their policies and recommendations to member countries.

governance as coordination is similar, with the government acting as a coordinator between entities that produce public services and goods, such as public-private partnerships (Katsamunska, 2015; Bačlija, 2016; Pierre & Peters, 2000).

Generally, the literature indicates that Anglo-Saxon scholars tend to view public governance as a structure, while continental European scholars focus more on public governance as a process (see Table 3 in Appx. 1 for a selection of definitions). The origins of public governance in terms of both structure and process can be traced back to the neoliberal era, during which neoliberals believed that the state was inefficient compared to markets. They advocated for the state to either withdraw from directly providing services or to replace state provision with approaches that were based on markets. This resulted in the differentiation between what is now considered good governance i.e., steering, and bad governance i.e., rowing (Bevir & Trentmann, 2007; Bevir, 2009).

Rhodes (2014 as cited in Levi-Faur 2014) noted a significant shift in state power from government to public governance in the early 1990s. This change resulted in two directions in the literature: public governance with government and public governance without government. The former emphasizes collaboration between government, citizens, civil society, and businesses to develop and execute policy, while the latter operates separately with a significant degree of autonomy from the state and prioritizes transformation (Lynn 2014 as cited in Levi-Faur 2014). While public governance and government are distinct concepts, this shift in state power has made public governance a more prominent concept in contemporary literature today (Katsamunska, 2015).

2.2. *Smart(ness) – The Challenge of Defining and Understanding*

Smart(ness) emerged as a concept in engineering⁶, but it has been incorporated into the social sciences due to the impact of information and communication technology, as being the dominant dimension of smart(ness). In the social sciences, the concept of smart(ness) has become increasingly intricate and diverse, with a significant focus on comprehending smart cities in scientific literature and actualizing them in practice (Jucevicius & Liugailaite-Radvickiene, 2014). Despite the concept's popularity, it is still under examination, and scholars are facing challenges in precisely defining it. Technological advancements are only adding to the complexity of the concept. Despite the absence of a widely accepted definition and essential dimensions, some scholars have proposed fundamental building blocks of smart(ness).

Gil-Garcia, Zhang, and Puron-Cid (2016) define fourteen dimensions of smart(ness) in government, including connectivity, innovation, evidence-based decision-making, citizen centricity, sustainability, creativity, effectiveness, efficiency, equity, entrepreneurship, citizen engagement, openness, resilience, and technology savviness. Conversely, Nam and Pardo (2011) concentrate on smart(ness) within specific social systems, such as cities, and identify technological, human, and institutional factors. Jucevičius, Patašiene, and Ptašius (2014) stress the importance of intelligence integration, networking, agility, innovation, learning, knowledge-driven approaches, and IT in smart development.

In the social sciences, the term smart(ness) is often analysed alongside the concept of intelligence, which can lead to further confusion in the field. Rokonuzzaman et al. (2022) argue that using these terms synonymously creates ambiguity about their meanings. Some scholars (cf. Barab & Plucker, 2010; Hatt & Otto, 2011; Jucevicius & Juceviciene, 2018), emphasize the importance of human involvement in distinguishing between smart(ness) and intelligence. They suggest that smart(ness) is a more human-centred concept that involves quick thinking and responsiveness to feedback, encompassing social and cultural factors, innate intelligence, and creativity. This view suggests that the meaning of smart(ness) can vary depending on who is using the term. Conversely, other scholars, (cf. Hollands, 2008; Pardo, Nam & Burke, 2011; Wolfram, 2012), use smart(ness) and intelligence synonymously, indicating that they can be used with the same meaning. Therefore, while smart(ness) is a popular concept, its meaning is still unclear due to a lack of sufficient research.

3 Methodological framework

To ensure a systematic approach, we followed the literature review guidelines proposed by Webster and Watson (2002), vom Brocke et al. (2009), and Watson and Webster (2020), which enabled us to maintain a reproducible search record. Our review was conducted using the systematic research approach introduced by Wolfswinkel, Furtmueller, and Wilderom (2013), and consisted of a five-stage grounded-theory method as outlined in Table 1 and described in more detail in Table 4 of the Appx. 2.

⁶ Where SMART stands for "Self-Monitoring, Analysis and Reporting Technology" (Papadopoulou & Maniou, 2021).

Table 1: Five-stage grounded-theory method of the literature review study used by the paper's authors

Stages	Tasks	Guidelines
01. Define	<ul style="list-style-type: none"> - Decide on specific search terms - Determine the appropriate database(s) - Indicate the type of filter to be applied (in this paper authors used wildcard token) 	<ul style="list-style-type: none"> - Look for articles with the specific search term(s) in the title, abstract, and keywords - Conduct a search across database(s), and document the search - Because databases have different search functions, narrow down the filtering to selected type(s) of journal articles (e.g., use inclusion/exclusion criteria)
02. Search	<ul style="list-style-type: none"> - Search 	<ul style="list-style-type: none"> - Explore the chosen database(s) and perform the search for appropriate literature related to the research topic
03. Select	<ul style="list-style-type: none"> - Filter out doubles - Refine the sample 	<ul style="list-style-type: none"> - Detect and eliminate double entries - Read the abstract, introduction, and conclusion of all articles to filter out potential false positives
04. Analyse	<ul style="list-style-type: none"> - Coding - Use forward/backward citations (e.g., snowball approach) 	<ul style="list-style-type: none"> - Read the full sample of articles, and categorize the discoveries and observations in the text that are highly relevant to the primary subjects of the research - Improve the sample's quality by conducting forward and backward citation checks and add articles not have not been retrieved by the selected databases
05. Present	Structure the articles	/

Source: Authors.

If any new articles come up in stage 04, Analyse, then repeat stage 03, Select

To focus on the most meaningful literature, we limited our search to journal articles containing specific search terms, including "defin*" OR "concept*" AND "smart governance" OR "smart public governance". During the subsequent selection process, we only included peer-reviewed published journal articles to ensure the research's significance and appropriateness, as suggested by Ruhlandt (2018). To obtain published journal articles, we focused our search on the Scopus database, which we considered the most relevant source for SPG research⁷. We examined the abstracts, introductions, and conclusions of the selected papers to ensure that only relevant articles were included in the study. Despite having passed the initial selection process, any articles that did not provide a definition of the concept of SPG, which is the focus of the study, were excluded. To improve the quality of the sample, we performed forward and backward citation checks (i.e., snowball technique) as recommended by Wolfswinkel et al. (2013, see Table 1 above). The addition of further databases, such as Web of Science, was deemed unnecessary as it would have led to a rise in duplicates. Using the five-stage grounded-theory method of literature review, a final set of 33 articles was detected (cf. table 7 in Appx. 4 presents all articles that offer a definition of the SPG concept). Articles included in our sample were sourced from various journals and cover a time span of the last sixteen years, starting from 2007 and including the latest publications up to 2023.

4 Understanding the Concept of SPG and Its Dimensions

In this section, we will utilize an SPG research framework to examine the definitions and dimensions of SPG as presented by previous scholars.

4.1. Exploring the Diverse Definitions of the SPG Concept in the Literature

The first part of this section addresses the question of how SPG has been defined by scholars in the existing literature. According to the analysis conducted by Rodríguez Bolívar and Meijer (2016), various papers present different interpretations of the concept, indicating a lack of consensus. Our own review, outlined in Table 5 of Appx. 3, supports this diversity in SPG definitions.

In the literature review, we found that multiple scholars have proposed their own definitions or interpretations of the SPG concept. However, other scholars have relied on the definitions put forth by their colleagues in their studies. This variation in the interpretations of the SPG concept highlights the need for standardization and clarification in the academic community for future research.

⁷ We based this decision on the findings of Falagas et al. (2008), who concluded that Scopus offers a more extensive database compared to its competitors.

Furthermore, the integration of the SPG concept into the smart city framework has been discussed by several scholars (e.g., Kociuba, Sagan, & Kociuba, 2023) who have used the term smart city governance (SCG) in their papers to define the SPG concept (cf. Table 8 in Appx. 7)

Some scholars have even used the terms smart government and SPG synonymously. This can be noted, for example, in Batagan's (2011) definition of smart government, which actually refers to SPG: "collaborating across departments and with communities, helping to promote economic growth and at the most important level making operations and services truly citizen-centric." This observation is supported by Rodríguez Bolívar and Meijer (2016), who cite Batagan's definition of smart government as a definition of SPG.

4.2. Unpacking the Complexities of SPG Dimensions: A Redefinition

The second part of this section addresses the question of what the defining dimensions of SPG are according to the literature. In recent years, there has been a growing interest in the concept of SPG in the social science literature. Many scholars have attempted to clarify and outline the dimensions of SPG to enhance understanding of this complex and diverse concept.

Scholl and Scholl (2014) conducted pioneering empirical research in the early 2000s to identify the seven key dimensions of SPG. These are (1) budgeting/controlling/evaluating, (2) e-government/administrative modernization/process streamlining, (3) security and safety, (4) infrastructure overhaul and ubiquitous high-speed connectivity, (5) e-mobility, (6) participation and collaboration, and (7) open data/big data provision and use, as well as (8) open government, transparency, and accountability. Their research was built upon the previous work of Wilke, whose definition of SPG can be found in Table 3 of Appx. 3, and the infrastructure aspect of SPG was identified by Johnston and Hansen (2011).

After examining various definitions of SPG from different sources, Rodríguez Bolívar and Meijer (2016) proposed six specific dimensions to improve understanding of the concept. These dimensions include the use of technology (smart ICT), organizational processes (smart collaboration and participation, smart internal coordination, smart decision-making process, smart e-administration), and desired outcomes (smart outcomes). Lin (2018) expanded on this work by introducing two new dimensions to SPG: institutional context and ICT infrastructure. This edition highlights the importance of considering the broader socio-political and landscape context, as well as internet penetration and broadband when developing and implementing SPG strategies.

Lin, Zhang, and Geertman (2015) conducted a study, which investigated the relationship between SPG and smart city governance (SCG). Although they highlighted the connection between SPG and social sustainability, their study primarily focused on the SCG rather than SPG specifically.

Šiugždinienė, Gaule, and Rauleckas (2017) proposed an evaluation tool for SPG in their published study. The tool comprises four distinct dimensions (1) the strategic dynamic dimension, consisting of strategic vision, and resource flexibility, (2) cross-sector collaboration, including leadership, collaboration platforms, and shared responsibility, (3) inter-institutional collaboration, including interaction platforms and collaboration competencies, and (4) the dimension of empowered citizenship, which encompasses participation opportunities and feedback. Policymakers and public officials can use this tool to identify areas for improvement and develop strategies that promote collaboration and empowerment in SPG.

The scholarly literature on SPG is constantly growing, as more scholars explore its complex dynamics and seek to identify its essential dimensions. The identification of the dimensions of SPG could be of great value. In this paper, we have conducted a review of different definitions of SPG and attempted to extract its essential dimensions. However, there is still ongoing debate regarding a clear understanding of these dimensions. In Appx. 4, Table 6 offers insight into the potential meanings and implications of each SPG dimension based on the definitions analysed. Table 2 displays the distribution of SPG definitions according to the analysed dimensions (graphically see Figure 1 in Appx. 6).

Table 2: Distribution of SPG definitions based on the analysed components

SPG definitions	The use of technology		Smart organisational processes						Sustainability	Security and safety
	Use of smart ICT	ICT infrastructure	Smart collaboration and participation	Smart internal coordination	Smart decision-making process	Smart e-administration	Smart outcomes			
								Dimensions of SPG		
Wilke (2007, p. 165)										
Chourabi et al. (2012, p. 2292)										
Batty et al. (2012, p. 497)										
Kourtit, Nijkamp, & Arribas (2012, p. 232)										
Gil-García (2012, p. 274)										
Lee, Hancock, & Hu (2014, p. 84)										
Meijer and Rodríguez Bolívar (2015, p. 395)										
Albino, Berardi, & Dangelico (2015, p. 12)										
de Wijs, Witte, & Geertman (2016, p. 428)										
Scholl & AlaiWadhi (2016, p. 22)										
Sunina & Rivza (2017, p. 2163)										
Šiugždinienė, Gaulė, & Rauleckas (2017, p. 3)										
Razaghi & Finger (2018, p. 687)										
Vázquez et al. (2018, p. 57)										
Viale Pereira et al. (2018, p. 143)										
Wray, Olstad, & Minaker (2018, p. 66)										
Artmann et al. (2019, p. 16)										
Jiang, Geertman, & Witte (2019, p. 246)										
Yolles (2019, p. 1)										
Tomor et al. (2019, p. 4)										
Lin & Fang (2020, p. 29)										
Cohari et al. (2020, p. 6)										
Cohari et al. (2020, p. 6)										
Jiang, Geertman, & Witte (2020, p. 1642)										
Yahia et al. (2021, p. 1)										
Demirel & Müezzimoğlu (2021, p. 12)										
Pan, Kwak, & Deal (2022, p. 36)										
Vujković et al. (2022, p. 2)										
Pandjaja et al. (2023, p. 5)										

Source: Authors.

5 Clarifying the Boundaries of SPG: What it Excludes?

As noted earlier in this paper, it is imperative to distinguish the concept of SPG from other related concepts (e.g., good governance, collaborative governance, co-creation, etc.), which are more commonly used in contemporary literature. Thus, this chapter aims to delve into some of these related concepts in order to provide clarity and understanding.

According to Sarker, Wu, and Hossin (2018, p. 67), Šiugždinienė, Gaulė, and Rauleckas (2017) assert that “[...] the concept of SPG is closely linked to the World Bank’s notion of good governance.” This perspective is reinforced by a few scholars, such as Bernardo (2019) and Lopez (2017), who steams that SPG originates from the principles of good governance, including openness (i.e., transparency), accountability, and collaboration (i.e., involving all interested parties), as well as the belief in citizens' participation and engagement in public decision-making. UNDP (1997) outlines that good governance involves ensuring that political, social, and economic duties are established on the basis of a broad social consensus and that all relevant and effective actors are given a voice in decision-making. Conversely, SPG leverages digital technologies to ensure that relevant and affective actors voice is taken into account, thereby improving the public governance process and outcomes.

In the domain of public administration, collaborative governance is a term commonly used, though its meaning is not always consistent. While it is an important aspect of SPG, it should not be confused with SPG. Several scholars have contributed to the understanding of collaborative governance, highlighting its potential for improving public decision-making. Ansell and Gash (2008, p. 543) define collaborative governance as a “[...] mode of governance in which various interested parties, including government agencies, non-profit and private organizations, work collaboratively to resolve issues and make decisions.” In contrast, SPG includes the broader structures and processes that are employed in making and implementing public decisions in a smart way and with the use of digital technologies. Collaborative governance is not intended to replace SPG but rather to enhance it. This approach to governance (cf. collaborative) brings a range of perspectives to the decision-making process and encourages greater participation among relevant and effective actors (Emerson, Nabatchi, & Bologh, 2012). Hence, while collaborative governance prioritizes the collaboration of relevant and effective actors to attain shared objectives, SPG places emphasis on the application of emerged technologies and data to enhance public administration procedures, let’s say in a smarter way. Nonetheless, these two concepts can work hand in hand, and a blend of both can boost the effectiveness and efficiency of processes and outcomes.

As the New Public Management (NMP) paradigm faced mounting criticisms, policymakers and scholars began searching for credible alternatives. One such alternative gaining popularity, particularly among scholars, is the transformation of the public sector into a space for co-creation. This approach involves the active participation of citizens and other public administration stakeholders in developing innovative solutions for social problems that outperform existing ones or create entirely new solutions for social problems where none existed before (Torfing, Røiseland, & Sørensen, 2016; Torfing, 2019). Despite being related concepts, co-creation and SPG differ in focus and scope. SPG emphasizes the use of technology and data to enhance government efficiency and effectiveness, while co-creation according to Torfing, Røiseland, and Sørensen (2016, p. 3) refers to a “[...] new approach to public governance that somehow challenges the traditional belief that the public sector is solely responsible for providing public goods and the more recent idea that competition between public and private actors is the key to better and cheaper public services.” Therefore, co-creation offers a promising alternative for wicket problems that the public sector currently encounters.

It is becoming increasingly challenging to differentiate the SPG concept from related terms due to their embryonic nature and the absence of a consensus among scholars regarding their definitions, and general understanding. Despite the wealth of individual analyses on these concepts, there is a scarcity of comparative studies that could improve understanding.

6 Concluding remarks

Upon reviewing the scientific literature, it is evident that SPG has captured the attention of scholars in the social sciences. Some scholars focus on the use of emerging digital technologies in the public sector when discussing SPG, while others use it to conceptualize and develop the idea of a smart city. However, there are those who assess SPG in the context of good governance principles and emphasize the need to integrate these principles into the new (i.e., smarter) public governance process. Despite the absence of a precise definition in the literature, there are different interpretations of SPG that can assist in comprehending the concept.

This paper began by presenting two research questions. In terms of the first question, it is clear that there is no consensus among scholars regarding the interpretation of the SPG concept. As for the second, scholars have attempted to outline and clarify the dimensions of SPG to enhance understanding of this complex and multifaceted concept. However, there is still much room for improvement in this area.

The author acknowledges that this systematic literature review may not be comprehensive enough. Nevertheless, it is hoped that this review will aid scholars in gaining a better understanding of the complex and multifaceted concept of SPG and its various dimensions. It is crucial to note that addressing the challenges and obstacles associated with studying SPG is vital to fully comprehending the concept.

The authors are aware of the potential limitations of this review. First, the selected database may not have been comprehensive enough to capture all relevant literature, particularly given the interdisciplinary nature of the SPG topic. Second, the backward and forward tracking process used to identify additional articles may raise concerns about researcher bias.

Appendix 1

Table 3: Selection of governance definitions, sorted by Anglo-saxon and continental European scholars

Source	Governance concepts, as defined by Anglo-Saxon and continental European literature, are presented in a curated manner
World Bank (1989 as cited in Bovaird and Löffler, 2018; Rhodes 1996)	Governance is the exercise of political power to manage a nation's affairs
Kooiman (1993 as cited in Bovaird and Löffler, 2018)	Governance is the pattern or structure that emerges in a socio-political system as a 'common' result or outcome of the interacting intervention efforts of all involved actors. This pattern cannot be reduced to [the outcome produced by] one actor or groups of actors in particular
Rhodes (2014 as cited in Levi-Faur, 2014)	Governance refers to the changing boundaries between public, private and voluntary sectors, and to changing roles of the state and seek to develop a more diverse view of state authority and its exercises
Björk and Johansson (2001 as cited in Cepiku 2015)	Governance is a coordination mode of different actors, which can be investigated either from a structural point of view (hierarchy, market, and hierarchy) or focusing on processes (steering and adaptation)
Čebulj in Strmecki (2005)	Governance is the process of leading and guiding organizations from setting goals to their realization and feedback
Schedler (2007 as cited in Benz et al., 2007)	Governance is the process that ensures decision-making and fulfilment of public tasks

Source: Authors.

Appendix 2

Table 4: Results of the five-stage grounded-theory method of the literature review study used by the paper's authors

Stage(s)	Description	Total
01-03.	We collected the total sample of peer-reviewed articles from the Scopus database by formulating appropriate search terms and utilizing wildcard token filters. Our search was we limited out containing specific search terms, including "defin*" OR "concept*" AND "smart governance" OR "smart public governance".	93
04.	We removed any false positives, i.e., articles that did not provide a definition of the concept of SPG.	23
	Further, we performed forward, and backward citation checks to enhance the quality of the sample.	10
	Relevant sample	33

Source: Authors.

Appendix 3

Table 5: Definitions of the SPG concept, sorted by the year of publication

Study	Selected definition of SPG, sorted by year of publication
Wilke (2007, p. 165)	SPG is an abbreviation for the ensemble of principles, factors, and capacities that constitute a form of governance able to cope with the conditions and exigencies of the knowledge society
Chourabi et al. (2012, p. 2292)	ICT-based governance is known as SPG . It widely represents a collection of technologies, people, policies, practices, resources, social norms, and information that interact to support city governing activities
Batty et al. (2012, p. 497)	SPG is much stronger intelligence function for coordinating the many different components that comprise the smart city. It is some sort of structure that brings together traditional functions of government and business
Kourtit, Nijkamp, & Arribas (2012, p. 232)	SPG is pro-active and open-minded governance structures, with all actors involved, in order to maximize the socio-economic and ecological performance of cities, and to cope with negative externalities and historically grown path dependencies
Gil-Garcia (2012, p. 274)	SPG is the next stage of government that use sophisticated information technologies to interconnect and integrate information, processes, institutions, and physical infrastructure to better serve citizens and communities
Lee, Hancock, & Hu (2014, p. 84)	SPG is innovative institutional approach or governance model that bring together multiple stakeholders to drive growth and foster use of smart services
Meijer and Rodríguez Bolívar (2015, p. 399)	SPG is about making the right policy choices and implementing these in an effective and efficient manner
Albino, Berardi, & Dangelico (2015, p. 12)	SPG means various stakeholders are engaged in decision-making and public services
de Wijs, Witte, & Geertman (2016, p. 428)	SPG is a participation in decision-making processes, the transparency of governance systems, the availability of public services and the quality of political strategies
Scholl & AlaWadhi (2016, p. 22)	SPG is the capacity of employing intelligent and adaptive acts and activities of looking after and making decisions about something
Sunina & Rivza (2017, p. 2163)	SPG refers to technology in order to facilitate and support better planning and decision-making. It is about improving democratic processes and transforming the ways that public services are delivered

Source: Authors.

Table 5: (continued)

Study	Selected definition of SPG, sorted by year of publication
Šiugždinienė, Gaule, & Rauleckas (2017, p. 3)	SPG is about the sophisticated process of collecting all sorts of data and information, as well as proactive and open-minded governance structures with actors collaborating across departments and with communities
Razaghi & Finger (2018, p. 687)	SPG is better governance of urban complexity by utilizing data and a stronger role of citizens in the decision-making processes thanks to the prevalence of real-time communication and opinion-sharing channels
Vázquez et al. (2018, p. 57)	SPG is a governance, which integrates information, communication and operational technologies; optimizes planning, management and operations across multiple domains, process areas and jurisdictions; and generates sustainable public value
Viale Pereira et al. (2018, p. 143)	SPG is the intelligent use of ICT to improve decision-making through better collaboration among different stakeholders, including government and citizens, can be strongly related to government approaches
Wray, Olstad, & Minaker (2018, p. 66)	SPG describes the SCC-enabled suite of policy interventions that can respond immediately, or long term, to observable trends in the city
Artmann et al. (2019, p. 16)	SPG is groups of urban stakeholders in addition to city administrations defined as smart government ensuring the structural setup required to realize compact and green cities
Jiang, Geertman, & Witte (2019, p. 246)	SPG is more or less deemed as a way to take advantage of various ICTs, aimed at bringing changes in public policy and government institutions from a public administration perspective
Yolles (2019, p. 1)	SPG may be thought as the combining of digital technologies with innovative practices to improve government service delivery and citizen inclusion in developing and implementing policy
Tomor et al. (2019, p. 4)	SPG is a sociotechnical approach, which aligns technological potential with novel forms of collaboration between local government and citizens with the aim of tackling urban issues based on the principles of sustainability
Lin & Fang (2020, p. 29)	SPG is the implementation of ICT to improve coordination, decision-making processes, the efficiency of public services, and the transparency of governance systems, with the effectiveness of implementation often measured by the online public availability of institutional information

Table 5: (continued)

Study	Selected definition of SPG, sorted by year of publication
Gohari et al. (2020, p. 6)	SPG is about the integration of information and ICTs in the internal administrative operations of governments to achieve governability, efficiency, openness, transparency, accountability, inclusion, and equality
Gohari et al. (2020, p. 6)	SPG refers to the governing process of a city that promotes itself as smart
Jiang, Geertman, & Witte (2020, p. 1642)	SPG can mean making the right policy choices, developing innovative governance structures via ICT, and governing with a focus on the outcomes
Yahia et al. (2021, p. 1)	SPG is a collaborative network of government agencies and external stakeholders including citizens and a socio-technical system
Demirel & Mülazimoglu (2021, p. 12)	SPG is about making the right policy choices and implementing them effectively; covering the need for smart decision-making processes and the implementation of decisions; emphasizing a high level of transformation as it requires a restructuring of the internal organization, and refers to the collaborative transformations of cities by various internal and external actors
Pan, Kwak, & Deal (2022, p. 36)	SPG or open government are terms coined to describe the governance ideal of openness, transparency, and collaboration made possible by emerging ICT infrastructure
Vujković et al. (2022, p. 2)	SPG is a modern approach to public governance that uses sophisticated information technologies to transform processes (interventions) between public administration and citizens with the aim of increasing collaboration, interaction, co-production, improving decision-making, and to achieve results that meet the needs of citizens (that is generating public value)
Pandya et al. (2023, p. 5)	SPG refers to the use of technological innovations to improve decision-making and planning in democratic processes to provide transparency between the government and its citizens

Appendix 4

Table 6: Guidance to understand what each SPG dimension could entail

SPG component	Guidance (not definition)
Use of smart ICT	entails the application of advanced digital technologies (such as artificial intelligence, internet of things, machine learning, and data analytics) to optimize and automate various processes, tasks, and functions
ICT infrastructure	comprises the physical and virtual components necessary to support the delivery and operation of ICT services
Smart collaboration and participation	involve the use of advanced digital technologies and tools to support and enhance collaborative efforts and active involvement in various activities and initiatives (such as real-time communication and collaboration, shared access to resources and information, and streamlined workflows and processes), enabling engagement in activities such as community engagement, citizen science projects, and public consultations
Smart internal coordination	refers to the use of advanced digital technologies and tools to streamline and optimize internal communication and collaboration within organizations (such as efficient allocation of resources, effective communication and collaboration between team members, and real-time monitoring and tracking of progress and outcomes);
Smart decision-making process	encompasses the use of advanced digital technologies and data analytics techniques to support and improve decision-making processes (such as predictive modelling to analyse large volumes of data and extract insights that can inform and improve decision-making)
Smart e-administration	involves leveraging technologies such as digital communication tools, workflow management systems, and data analytics tools to improve the efficiency and effectiveness of administrative processes
Smart outcomes	smart outcomes relate to specific, measurable, achievable, relevant, and time-bound goals that are designed to be achieved through the use of advanced digital technologies and tools
Sustainability	pertains to finding ways to utilize natural and other resources in a manner that ensures their availability for future generations
Security and safety	encompass the protection of individuals, organizations, and societies from various types of harm and threats

Source: Authors.

Appendix 5

Table 7: Review articles including SPG concept definition sorted by year of publication

Article	Content of study
Wilke (2007)	Discusses the concept of SG as a response to the challenges of governing in a global knowledge society, and explores the different aspects of SG, including the use of technology, citizen participation, and collaborative governance
Chourabi et al. (2012)	Explores the concept of SC and proposes an integrative framework for understanding the different dimensions of SC
Batty et al. (2012)	Discusses the concept of SC, their use of technology and data to optimize urban systems, and their potential benefits and limitations
Kourtiti, Nijkamp, & Arribas (2012)	Examine similarities and differences in the use of technology and data across various SC and explore factors contributing to the success and non-success of SC projects
Gil-Garcia (2012)	Investigates the potential for inter-agency collaboration and information integration to create a SC capable of making data-driven policy decisions
Lee, Hancock, & Hu (2014)	Examines lessons learned from SC initiatives in Seoul and San Francisco in order to develop a more effective framework for building SC
Meijer and Rodríguez Bolívar (2015)	Reviews existing literature on smart urban governance and examines the various models and approaches to SCG, as well as the challenges and opportunities associated with these models
Albino, Berardi, & Dangelico (2015)	Provides an overview of SC by defining the concept and exploring its various dimensions
de Wijs, Witte, & Geertman (2016)	Examines the implementation of SC objectives in Dutch railway station areas, using both theoretical and empirical considerations
Scholl & AlaWadhi (2016)	Focuses on the transformation of ICT in the city of Munich and the role of SCG in facilitating this overhaul. Therefore, it examines the strategies and initiatives employed to create a more efficient and effective city government, including the use of data-driven decision-making and citizen engagement
Sunina & Rivza (2017)	Focuses on the implementation of unified client service centers in rural areas of Latvia to improve governance and service delivery, and examine the impact of these centers on citizen engagement, service accessibility, and local economic development
Šiugždinienė, Gaule, & Rauleckas (2017)	Examines the implementation of SG initiatives in Lithuania, and develop a model for SG

Source: Authors.

Table 7: (continued)

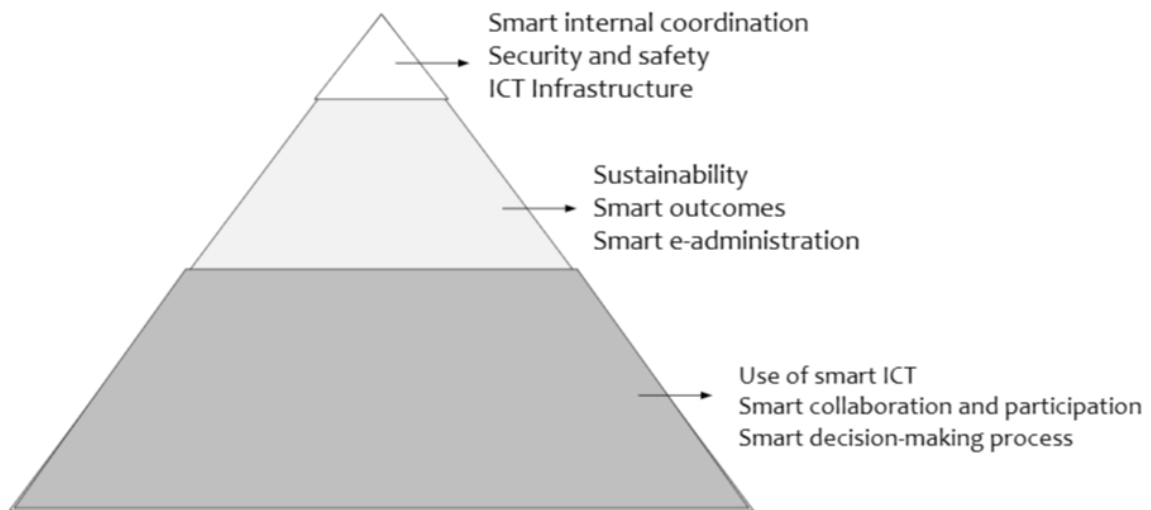
Article	Content of study
Razaghi & Finger (2018)	Explores the concept of SG and its role in building SC, and examines how technology and data-driven approaches can be used to enhance governance and service delivery in urban areas, as well as the challenges and opportunities associated with implementing SG initiatives
Vázquez et al. (2018)	Explores how SC initiatives impact citizens quality of life, and examines the benefits and limitations of SC initiatives on areas such as mobility, safety, health, and the environment, as well as how citizens leaving in SC perceive these initiatives
Viale Pereira et al. (2018)	Provides an overview of the literature on SG in the context of SC, and examines the key characteristics and principles of SG, as well as the role of technology and data-driven approaches in enhancing governance models in urban areas
Wray, Olstad, & Minaker (2018)	Explores the use of technology and data-driven approaches to enhance cancer prevention strategies in smart and connected communities
Artmann et al. (2019)	Explores the relationship between smart growth and green infrastructure in urban planning, and examines how these two concepts can be integrated to create more sustainable, resilient, and green cities
Jiang, Geertman, & Witte (2019)	Proposes a new approach to SCG that is based on collaboration and citizen participation rather than technological solutions alone, and examines the limitations of technocratic models of SCG, which tend to focus on technology-driven solutions rather than social and environmental concerns
Yolles (2019)	Examines how political bureaucracies can be used as a tool for governance in democratic societies, and explores the role of public agencies in implementing public policies and programs, and how they can be held accountable for their actions
Tomor et al. (2019)	Presents a synthesis of existing research on SG and sustainable urban development, and review the current state of knowledge on the use of smart technologies and innovative governance models to promote sustainability in cities
Lin & Fang (2020)	Describes the use of a service blueprint and service catalogue concept to develop a SG system in the southern Taiwan science park
Gohari et al. (2020)	Presents a comparative analysis of the governance approach adopted by SC initiatives in Trondheim, Bergen, and Bodø in Norway, and examines how the governance approach has evolved over time, the factors that have influenced its development, and the outcomes it has produced in terms of improving urban services, enhancing citizen participation, and promoting sustainability
Jiang, Geertman, & Witte (2020)	Examines the limitations of technocratic approaches to smart urban governance and proposes an alternative model that emphasizes citizen participation and democratic decision-making

Table 7: (continued)

Article	Content of study
Yahia et al. (2021)	Examines the concept of sustainable collaborative networks in the context of SC co-governance and proposes a framework for sustainable collaborative networks that can facilitate co-governance in SC
Damirel & Mülazimoglu (2021)	Investigates how the implementation of the smart governance model has shaped cities in Europe. The paper presents case studies from several European cities that have implemented smart governance initiatives, including Amsterdam, Barcelona, and Helsinki. The authors examine how these initiatives have impacted various aspects of urban life, such as transportation, energy use, and citizen engagement
Pan, Kwak, & Deal (2022)	Explores the participatory development of planning support systems (PSS) to improve empowerment and localization. They propose a participatory approach to the development of PSS, which involves engaging citizens and other stakeholders in the process of designing and implementing planning tools
Vujković et al. (2022)	Based on smart public governance (SPG), the authors compare the literature on SC and smart governments, examining the similarities and differences between these two concepts. The authors provide an overview of the main trends and themes in SPG research, including the use of smart technologies in public service delivery, citizen participation, and governance innovation
Pandya et al. (2023)	Provides a comprehensive survey of the use of federated learning in the context of SC. The authors explore the various ways in which federated learning can be applied to SC applications, including traffic management, energy management, and public safety

Appendix 6

Figure 1: Frequency SPG dimensions



Source: Authors.

Appendix 7

Table 8: SPG Definitions: Orientation towards local/regional level vs central government level

Source	SPG definitions			
	Local/regional level, which is often referred to as smart city governance (SCG)	Central government level	It could be applied to both	To general to define
Wilke (2007, p. 165)				
Chourabi et al. (2012, p. 2292)				
Batty et al. (2012, p. 497)				
Kourtif, Nijkamp, & Arribas (2012, p. 232)				
Gil-García (2012, p. 274)				
Lee, Hancock, & Hu (2014, p. 84)				
Meijer and Rodríguez Bolívar (2015, p. 399)				
Albino, Berardi, & Dangelico (2015, p. 12)				
de Wijs, Witte, & Geertman (2016, p. 428)				
Scholl & AlaWadhi (2016, p. 22)				
Sunina & Rivza (2017, p. 2163)				
Šiugždinienė, Gaule, & Rauleckas (2017, p. 3)				
Razaghi & Finger (2018, p. 687)				
Vázquez et al. (2018, p. 57)				
Viale Pereira et al. (2018, p. 143)				
Wray, Olstad, & Minaker (2018, p. 66)				
Artmann et al. (2019, p. 16)				
Jiang, Geertman, & Witte (2019, p. 246)				
Yolles (2019, p. 1)				
Tomor et al. (2019, p. 4)				
Lin & Fang (2020, p. 29)				
Gohari et al. (2020, p. 6)				
Gohari et al. (2020, p. 6)				
Jiang, Geertman, & Witte (2020, p. 1642)				
Yahia et al. (2021, p. 1)				
Demirel & Mülazimoglu (2021, p. 12)				
Pan, Kwak, & Deal (2022, p. 36)				
Vujković et al. (2022, p. 2)				
Pandya et al. (2023, p. 5)				

Source: Authors.

References

- Albino, V., Berardi, U., & Dangelico, R. M. (2015). Smart cities: Definitions, dimensions, performance, and initiatives. *J. Urban Technol.*, 22(1), 3–21. doi: 10.1080/10630732.2014.942092
- Ansell, C., Sørensen, E., & Torfing, J. (2020). The COVID-19 pandemic as a game changer for public administration and leadership? The need for robust governance responses to turbulent problems. *Public Manag. Rev.*, 1–12. doi:10.1080/14719037.2020.1820272
- Ansell, C. & Gash, A. (2008). Collaborative Governance in Theory and Practice. *J. Public Adm. Res. Theory*, 18(4), 543-571. doi:10.1093/jopart/mum032
- Anthopoulos, L., Sirakoulis, K., & Reddick, G. C. (2022). Conceptualizing Smart Government: Interrelations and Reciprocities with Smart City. *Digit. Gov. Res. Pract.*, 2(4), 1-28. doi: 10.1145/3465061
- Artmann, M., Kohler, M., Meinal, G., Had, J., & Joja, C. I. (2019). How smart growth and green infrastructure can mutually support each other - A conceptual framework for compact and green cities. *Ecol. Indic.*, 96(0), 10-22. doi: 10.1016/j.ecolind.2017.07.001
- Bačlija, I. (2016). *Vladovanje in menedžment: evropeizacija slovenske javne uprave*. Ljubljana: Fakulteta za družbene vede.
- Barab, A. S. & Plucker, A.J. (2010). Smart People or Smart Contexts? Cognition, Ability, and Talent Development in an Age of Situated Approaches to Knowing and Learning. *Educ. Psychol.*, 37(3), 165-182. doi: 10.1207/S15326985EP3703_3
- Barcevičius, E., Cibaitė, G., Gineikytė, V., Klimavičiūtė, L., Matulevič, L., Misuraca, G., & Vanini, I. (2019). *Exploring Digital Government Transformation in the EU - Analysis of the State of the Art and Review of Literature*. Publications Office of the European Union. <https://doi-org.nukweb.nuk.uni-lj.si/10.2760/17207>
- Batagan, L. (2011). Smart Cities and Sustainability Models. *Informatica economica*, 15(0), 80-87. Available on [IE Paper Template \(ase.ro\)](#)
- Batty, M., Axhausen, K. W., Giannotti, F., Pozdnoukhov, A., Bazzani, A., Wachowicz, M., Ouzounis, G., & Portugali, Y. (2012). Smart cities of the future. *Eur. Phys. J.*, 214(0), 481–518. doi: 10.1140/epjst/e2012-01703-3
- Bernardo, M. do R. M. (2019). Smart City Governance: From E-Government to Smart Governance. In Information Reso Management Association (eds.), *Smart Cities and Smart Spaces: Concepts, Methodologies, Tools, and Applications* (pp. 196-232). IGI Global.

- Björk, P. G. & Johansson, H. S. H. (2001). Multi-level governance for improved public services in Sweden: The actor-dimension of co-ordination. In D. Cepiku, *Unraveling the Concept of Public Governance: A Literature Review of Different Traditions in Conceptualizing and Researching Governance in Public and Non-Profit Organizations* (p. 13). Studies in Public and Non-Profit Governance. doi: 10.1108/s2051-6630(2013)0000001005
- Bevir, M. (2009). *Key concepts in Governance*. London: Sage Publications Inc.
- Bevir, M. & Trentmann, F. (eds.) (2007). *Governance, Consumers and Citizens: Agency and Resistance in Contemporary Politic*. London: Palgrave Macmillan.
- Bovaird, T. & Löffler, E. (eds.). (2015). *Public Management and Governance*. London: Routledge.
- Castelnovo, W., Misuraca, G., & Savoldelli, A. (2016). Smart cities governance: The need for a holistic approach to assessing urban participatory policy making. *Soc. Sci. Comput. Rev.*, 34(6). doi: 10.1177/0894439315611103
- Cepiku, D. (2013). Unraveling the Concept of Public Governance: A Literature Review of Different Traditions. *Studies in Public and Non-Profit Governance*, 3–32. doi:10.1108/s2051-6630(2013)0000001005
- Chawviang A. & Kiattisin S. (2022). Sustainable Development: Smart Co-Operative Management Framework. *Sustainability*, 14(6), 1-25. doi:10.3390/su14063641
- Chourabi, H., Nam, T., Walker, S., Gil-Garcia, R. J., Mellouli, S., Nahon, K., Pardo, A. T., & Scholl, J. H. (2012). "Understanding Smart Cities: An Integrative Framework," In *45th Hawaii International Conference on System Sciences, Maui, HI, USA*. pp. 2289-2297, doi: 10.1109/HICSS.2012.615.
- Čebulj, J. & Strmecki, M. (2005). *Upravno pravo*. Ljubljana: Fakulteta za upravo.
- Dameri, R. P. & Benevolo, C. (2016). Governing smart cities: An empirical analysis. *Soc. Sci. Comput. Rev.*, 34(6), 693–707. <http://dx.doi.org/10.1177/0894439315611093>
- Demirel, D., & Mülazımoğlu, E. M (2021). How the smart governance model shapes cities? Cases from Europe. *Journal of Enterprising Communities: People and Places in the Global Economy*, 16(1), 8-25. doi: 10.1108/JEC-08-2021-0115
- Emerson, K., Nabatchi, T., & Balogh, S. (2012). An Integrative Framework for Collaborative Governance. *J. Public Adm. Res. Theory*, 22(1), 1-12. doi:10.1093/jopart/mur011
- Falagas, M. E., Pitsouni, E. I., Malietzis, G. A., Pappas, G. (2008). Comparison of PubMed, Scopus, Web of Science, and Google scholar: Strengths and weaknesses. *The FASEB Journal*, 22(2), 338–342. doi:10.1096/fj.07-9492lsf
- Faraji, S. J., Nozar, M., & Arash, M. (2021). The analysis of smart governance scenarios of the urban culture in multicultural cities based on two concepts of “cultural intelligence” and “smart governance”. *GeoJournal*. 86(1). doi: 10.1007/s10708-019-10074-6.
- Gil-Garcia, J. R., Zhang, J., & Puron-Cid, G. (2016). Conceptualizing smartness in government: An integrative and multi-dimensional view. *Gov. Inf. Q.*, 33(3), 524–534. doi:10.1016/j.giq.2016.03.002
- Gil-Garcia, J. (2012). Towards a smart state? Inter-agency collaboration, information integration and beyond. *Inf. Polity.*, 17(0), 269–280. doi: 10.5555/2656990.2656996
- Gohari, S., Ahlers, D., Nielsen, B. F., & Junker, E. (2020). The Governance Approach of Smart City Initiatives. Evidence from Trondheim, Bergen, and Bodø. *Infrastructures*, 5(4), 1-20. doi:10.3390/infrastructures5040031
- Hatt, B. & Otto, S. (2011). A Demanding Reality: Print-Media Advertising and Selling Smartness in a Knowledge Economy. *Educ. Stud.*, 47(6), 507-526. doi: 10.1080/00131946.2011.621075
- Head, B. W. (2008). Three Lenses of Evidence-Based Policy. *Australian Journal of Public Administration*, 67(1), 1–11. doi:10.1111/j.1467-8500.2007.00564.x
- Hollands, R. (2008). Will the Real Smart City Please Stand Up?. *City*, 12(3), 303-320. doi:10.1080/13604810802479126.
- Jiang, H., Geertman, S., & Witte, P. (2020). Smart urban governance: an alternative to technocratic “smartness.” *GeoJournal*, 87(0), 1639-1655. doi:10.1007/s10708-020-10326-w
- Jiang, H., Geertman, S., & Witte, P. (2019). Smart urban governance: An urgent symbiosis? *Inf. Polity*, 24(0), 245-269. doi: 10.3233/IP-190130
- Johnston, W. E. & Hansen, L. D. (2011). Design Lessons for Smart Governance Infrastructure. In A. P. Balutis, T. F. Buss, & D. Ink (edr.), *Transforming American Governance: Rebooting the Public Square* (pp. 197–212). Taylor and Francis.
- Jucevicius, R. & Juceviciene, P. (2018). Knowledge dimension in smart development. In *European Conference on Knowledge Management; Kidmore End 2018* (pp. 369-376).

- Jucevicius, R., Patasiene, I., & Patašius, M. (2014). Digital Dimension of Smart City: Critical Analysis. *Procedia Social and Behavioral Sciences*, 156(0), 146-150. doi: 10.1016/j.sbspro.2014.11.137.
- Jucevicius, R. & Liugailaite-Radzvickiene, L. (2013). Smart Development: A Conceptual Framework. In *Proceedings of the 10th International Conference on Intellectual Capital, Knowledge Management & Organisational Learning 2013* (pp. 212-219).
- Katsamunska, P. (2016). The Concept of Governance and Public Governance Theories. *Econ. Altern.*, 2(1), 133–141. Pridobljeno s Polya_1_br2_2016_en.pdf (unwe.bg)
- Kociuba D, Sagan M, & Kociuba W. (2023). Toward the Smart City Ecosystem Model. *Energies*, 16(6), 2-26. doi: 10.3390/en16062795
- Kooiman, J. (1993). Modern governance: new government–society interactions. In T. Bovaird & E. Löffler (eds.), *Public Management and Governance* (p. 216). London: Routledge.
- Kourtit, K., Nijkamp, P., & Arribas, D. (2012). Smart cities in perspective—A comparative European study by means of self-organizing maps. *Innovation: The European Journal of Social Science Research*, 25(0), 229–246. doi: 10.1080/13511610.2012.660330
- Lee, J. H., Hancock, M. G., & Hu, M. C. (2014). Towards an Effective Framework for Building Smart Cities: Lessons from Seoul and San Francisco. *Technol. Forecast. Soc. Chang.*, 89(0), 80–99. doi: 10.1016/j.techfore.2013.08.03
- Lin, T. C. & Fang, D. (2020). Using a service blueprint and the service catalogue concept to plan a smart governance system: the case study of the southern Taiwan science park. *Int. J. Electronic Governance*, 12(1), 26-39. Doi: 10.1504/IJEG.2020.106996
- Lin, Y. (2018). A comparison of selected Western and Chinese smart governance: The application of ICT in governmental management, participation, and collaboration. *Telecommunications Policy*, 42(10), 800–809. doi:10.1016/j.telpol.2018.07.003
- Lin, Y., Zhang, X., & Geertman, S. (2015). Toward smart governance and social sustainability for Chinese migrant communities. *Journal of Cleaner Production*, 107(0), 389–399. doi:10.1016/j.jclepro.2014.12.074
- Lopes, N. V. (2017). Smart governance: A key factor for smart cities implementation. In *IEEE International Conference on Smart Grid and Smart Cities (ICSGSC)*, (pp. 277-282). doi:10.1109/icsgsc.2017.8038591
- Lynn, E. L. (2014). The Many Faces of Governance: Adaption? Transformation? Both? Neither? In D. Levi-Faur (eds.), *The Oxford Handbook of Governance* (pp. 50–64). Oxford: Oxford University Press.
- Meijer, A. & Rodriguez Bolivar, P. M. (2015). Governing the smart city: a review of the literature on smart urban governance. *Int. Rev. Adm. Sci.*, 82(2), 392–408. doi: 10.1177/0020852314564308
- Nam, T & Pardo, T.A. (2011). Conceptualizing smart city with dimensions of technology, people, and infrastructure. In *Proceedings of the 12th Annual International Digital Government Research Conference: Digital Government Innovation in Challenging Times* (pp. 282-291). College Park, ZDA.
- Pan, H., Kwak, Y., & Deal, B. (2022). Participatory Development of Planning Support Systems to Improve Empowerment and Localization. *J. Urban Technol.*, 29(2), 33-54. doi: 10.1080/10630732.2022.2031431
- Pandya, S., Srivastava, G., Jhaveri, R., Rajasekhara, M. B., Bhattacharya, S., Maddikunta, R. K. P., Mastorakis, S., Piran, J., & Gadekallu, R. T. (2023). Federated learning for smart cities: A comprehensive survey. *Sustain. Energy Technol. Asses.*, 55(0), 2213-1388. doi: 10.1016/j.seta.2022.102987
- Pardo, T. A., Nam, T., & Burke, G. B. (2011). E-Government Interoperability. *Social Science Computer Review*, 30(1), 7–23. doi:10.1177/0894439310392184
- Papadopoulou, L. & Maniou, A.T. (2021). Digital Media and New Forms of Journalism. In M. Khosrow-Pour (eds.), *Encyclopaedia of Information Science and Technology, Fifth Edition* (pp. 1130–1139). Pennsylvania, USA: IGI Global.
- Peters, B. G. (2017). What is so wicked about wicked problems? A conceptual analysis and a research program. *Policy and Society*, 36(3), 385–396. doi:10.1080/14494035.2017.1361633
- Pierre, J., & Peters, G. B. (2000). *Governance, politics and the state*. New York, NY, USA. St. Martin's Press.
- Razaghi, M. & Finger, M. (2018). Smart Governance for Smart Cities. In *Proceeding of the IEEE*, 106(4), 680-689. doi: 10.1109/JPROC.2018.2807784
- Rhodes, R. A. W. (2014). Waves of Governance. In D. Levi-Faur (eds.), *The Oxford Handbook of Governance* (pp. 33-48). Oxford: University of Oxford Press.
- Rittel, H.W. and Webber, M.A. (1973) Dilemmas in a General Theory of Planning. *Policy Sci.*, 4(0), 155-169. <http://dx.doi.org/10.1007/BF01405730>
- Rokonuzzaman, M., Kim, K.K., Dugar, K.K., & Fox, J. (2022). What makes an object smart? Conceptualization, development, and validation of a scale to measure the Smartness of a Thing (SoT). *J. Bus. Res.*, 141(0), 337-352. doi: 10.1016/j.jbusres.2021.11.040

- Rodríguez Bolívar, M. P. & Meijer, A. J. (2016). Smart Governance. *Soc. Sci. Comput. Rev.*, 34(6), 673–692. doi:10.1177/0894439315611088
- Ruhlandt, R. W. S. (2018). The governance of smart cities: A systematic literature review. *Cities*, 81(0), 1-23. doi:10.1016/j.cities.2018.02.014
- Sarker, M. N. I., Wu, M., & Hossin, M. A. (2018). Smart governance through bigdata: Digital transformation of public agencies. In *International Conference on Artificial Intelligence and Big Data (ICAIBD)*, (pp.62-70). doi:10.1109/icaibd.2018.8396168
- Scholl., H. J. & Scholl, M. (2014). Smart Governance: A Roadmap for Research and Practice. In *iConference 2014 Proceeding* (pp. 163–176). Available on Smart Governance: A Roadmap for Research and Practice (illinois.edu)
- Scholl, H.J. & AlAwadhi, S. (2016). Creating smart governance: the key to radical ICT overhaul at the city of Munich. *Inf. Polity*, 21(1), 21–42. doi: 10.3233/IP-150369
- Schedler, K. (2007). Public Management und Public Governance. In A. Benz, S. Lütz, U. Schimank, & G. Simonis, (eds.), *Handbuch Governance: Theoretische Grundlagen und empirische Anwendungsfelder* (pp. 253-268). Wiesbaden: VS Verlag für Sozialwissenschaften Wiesbaden.
- Sunina, L. & Rivza, B. (2017). Unified client service centres for rural development and smart governance in Latvia. *Agronomy Research*, 15(5), 2161-2172. doi: 10.15159/AR.17.034
- Šiugždiniienė, J., Gaule, E., & Rauleckas, R. (2017). In search of smart public governance: the case of Lithuania. *Int. Rev. Adm. Sci.*, 85(0), 1-20. doi:10.1177/0020852317707814.
- Tomor, Z., Meijer, A., Michels, A., & Geertman, S. (2019). Smart Governance For Sustainable Cities: Findings from a Systematic Literature Review. *J. Urban Technology*, 26(4), 3-27, doi: 10.1080/10630732.2019.1651178
- Torring, J. (2019). Collaborative innovation in the public sector: the argument. *Public Manag. Rev.*, 21(1), 1-11. doi: 10.1080/14719037.2018.1430248
- Torring, J., Røiseland, A., & Sørensen, E. (2016). Transforming the Public Sector into an Arena for Co-creation: Barriers, Drivers, Benefits and Ways Forward. In *Proceedings of EGPA Annual Conference* (pp. 1-17). doi:10.1177/0095399716680057
- United Nations Development Programme. (1997). *Governance for Sustainable Human Development*. Available on <https://digitallibrary.un.org/record/3831662>
- Vázquez, J. L., Lanero, A., Gutiérrez, P., Sahelices, C. (2018). The Contribution of Smart Cities to Quality of Life from the View of Citizens. In J. Leitao et al. (eds.), *Entrepreneurial, Innovative and Sustainable Ecosystems*. Springer: Cham.
- Viale Pereira, G., Parycek, P., Falco, E., & Kleinhans, R. (2018). Smart governance in the context of smart cities: A literature review. *Inf. Polity*, 23(2), 1–20. <https://doi.org/10.3233/IP-170067>.
- Viale Pereira, G., Cunha, M. A., Lampoltshammer, T. J., Parycek, P., & Testa, M. G. (2017). Increasing collaboration and participation in smart city governance: a cross-case analysis of smart city initiatives. *Inf. Technol. Dev.*, 23(3), 526–553. doi:10.1080/02681102.2017.1353946
- Vujković, P., Ravšelj, D., Umek, L., & Aristovnik, A. (2022). Bibliometric Analysis of Smart Public Governance Research: Smart City and Smart Government in Comparative Perspective. *Soc. Sci.*, 11 (293), 1-22. doi: 10.3390/socsci11070293
- Watson, T. R. & Webster, J. (2020): Analysing the past to prepare for the future: Writing a literature review a roadmap for release 2.0. *J. Decis. Syst.*, 0(0), 1-19. doi: 10.1080/12460125.2020.1798591
- Webster, J., & Watson, R. T. (2002). Analyzing the Past to Prepare for the Future: Writing a Literature Review. *MIS Quarterly*, 26(2), xiii–xxiii. Available on <http://www.jstor.org/stable/4132319>
- de Wijs, L., Witte, P., & Geertman, S. (2016). How smart is smart? Theoretical and empirical considerations on implementing smart city objectives – a case study of Dutch railway station areas. *Innovation: The European Journal of Social Science Research*, 29(4), 424-441. doi: 10.1080/13511610.2016.1201758
- Willke, H. (2007). *Smart governance: Governing the global knowledge society*. New York, NY, USA. CampusVerlag.
- von Brocke, J., Simons, A., Niehaves, B., Riemer, K., Plattfaut, R., Cleven, A. (2009). Reconstructing the giant: On the importance of rigour in documenting the literature search process. In *European conference on information systems (ECIS)*, 9(17), 2206-2217. Available on <https://aisel.aisnet.org/ecis2009/161>
- Wolfswinkel, J. F., Furtmueller, E., & Wilderom, C. P. M. (2013). Using grounded theory as a method for rigorously reviewing literature. *Eur. J. Inf. Syst.*, 22(1), 45–55. doi: 10.1057/ejis.2011.51
- Wolfram, M. (2012). *Deconstructing Smart Cities: An Intertextual Reading of Concepts and Practices for Integrated Urban and ICT Development*. Available on [PDF] Deconstructing Smart Cities: An

- World Bank. (1989). *Sub-Saharan Africa. From crisis to sustainable growth: a long-term perspective study* In T. Bovaird & E. Löffler (eds.), *Public Management and Governance* (p. 216). London: Routledge.
- World Bank. (1989). *Sub-Saharan Africa. From crisis to sustainable growth: a long-term perspective study* In R. A. W. Rhodes, *The New Governance: Governing without Government* (p. 626). *Political Stud.*, XLIV, 652-667.
- Wray, A., Olstad, L. D., & Minaker, M. L. (2018). Smart prevention: A new approach to primary and secondary cancer prevention in smart and connected communities. *Cities*, 79(0), 53–69. doi: 10.1016/J.CITIES.2018.02.022
- Yahia, B. N., Eljaoued, W., Saoud, B. B. N., & Colomo-Palacios, R. (2019). Towards sustainable collaborative networks for smart cities co-governance. *Int. J. Inf. Manage.*, 56 (0), 1-16. doi:10.1016/j.ijinfomgt.2019.11.0
- Yolles, M. (2016). Governance through Political Bureaucracy: An Agency Approach. *Kybernetes*, 48(0), 1-29. doi: 10.1108/K-09-2017-0329.