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Smart cities at the intersection of public governance paradigms for sustainability

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Abstract

As a research domain, the smart city keeps growing, despite the remaining contradictions and ambiguity related to its conceptual aspects. We propose to dig deeper into the complex socio-technical nature of the smart city and examine the concept through the lens of different public governance paradigms, therefore aligning it with the sustainability outcomes. Embracing interrelated dimensions of humans, technologies and organisations, the smart city can be viewed through the intersection of public governance paradigms (digital governance, collaborative governance and networks). The case of the smart city initiative of Tampere in Finland serves as an empirical illustration of how the proposed conceptual model might be applied in practice. Providing a novel approach to the smart city from a public management perspective, this model would allow policymakers to acquire a more comprehensive understanding of smart city governance and its multi-dimensional outcomes, in terms of social, environmental and economic sustainability. This approach enables the unlocking of the potential to generate multiple values for each group of actors and ensure more effective integration of smart initiatives, policies and projects, based on the public governance paradigms.

Keywords

public governance, smart cities, sustainability

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摘要

尽管在概念方面仍然存在矛盾和模糊性，智慧城市作为一个研究领域正不断发展。我们建议更深入地挖掘智慧城市复杂的社会技术性质，并通过不同公共治理范式的视角来审视这一概念，从而使其与可持续发展成果保持一致。智慧城市涵盖了人类、技术和组织相互关联的维度，我们可以通过各种公共治理范式（数字治理、协作治理和网络）的交点来考察智慧城市。芬兰坦佩雷智慧城市倡议的案例为所提出的概念模型如何应用于实践提供了实证例证。此模型提供了一种新颖的方法，从公共管理的视角去了解智慧城市，使政策制定者能够更全面地了解智慧城市治理及其在社会、环境和经济可持续发展方面的多维成果。基于公共治理范式，这种方法能够让每个参与者群体释放创造多种价值的潜力，并确保更有效地整合智慧举措、政策和项目。

关键词

公共治理、智慧城市、可持续发展

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Introduction

The body of public management literature on smart cities continues to grow rapidly, illustrating a variety of approaches and interpretations regarding what city 'smartness' means and how it should be achieved (Meijer and Bolívar, 2016; Ruhlandt, 2018). Several ways of conceptualising smart cities have been observed, shifting the focus from the technological towards the social and human components (Meijer, 2018).

In this article, we attempt to move beyond existing debates on a conceptual framework of the smart city and continue the line of research into urban smartness as a multifaceted phenomenon, applying the lens of public governance. We propose to explore in depth the socio-technical nature of the smart city and examine it in the light of different paradigms of public governance (digital governance, collaborative governance and network governance) (Torfing et al., 2020). Being interrelated, each lens respectively reflects the position of a particular factor from the main ones related to the public governance paradigms: technologies, people and organisations. We therefore propose to locate sustainability as an outcome of smartness. Our conceptual model will help to provide a more comprehensive view of smart city initiatives and sustainability and uncover their potential to create multiple values for each group of actors engaged in the complex interaction.

As an empirical example, we selected the city of Tampere in Finland, one of the country's largest metropolitan areas, known for its advancements in introducing technology and innovative practices, as well as for promoting sustainable urban development (Karppi and Vakkuri, 2020). The empirical data was gathered through document analysis and two-round in-depth interviews with city officials who were directly involved in shaping the smart city agenda in the city and region of Tampere. The interviews were the main source of the empirical insights, providing an overall picture of the formation of the smart city idea, while the official documents (e.g. city strategy, presentation on the Smart Tampere Ecosystem Programme) enabled us to obtain a more nuanced view on the content of the smart city policy. Through the empirical illustration, we outline how the proposed theoretical model might be applied in

practice, by combining the three public governance paradigms and different dimensions (social, economic, environmental) of sustainability.

Multifaceted nature of smartness

The smart city concept has achieved considerable popularity among both practitioners and researchers, illustrating a way to make 'cities safer, cleaner, richer, more accessible, and more innovative' (Meijer, 2018: 1) through the extensive adoption of technologies. Plenty of approaches have attempted to interpret this smartness, resulting in diverse nomenclatures without a clearly defined conceptual core (Vanolo, 2014). First, the emphasis was placed explicitly on information and communication technologies (ICT) in determining the smart city (Mora et al., 2017), but this solely technological character was gradually criticised for promoting a strong dependency on private corporations (Hollands, 2015), thereby fostering business-driven development and increasing social inequality (Grossi and Pianezzi, 2017).

Growing research began to draw attention to the social component in the conceptual understanding of the smart city. These streams of literature do not entirely overlook the role of ICT but, rather, place a greater focus on human capital and political and institutional aspects (e.g. Gil-Garcia et al., 2015; Meijer, 2018) and call for the smart city to be brought into alignment with sustainability outcomes (Yigitcanlar and Kamruzzaman, 2018). In other words, the smart city should be examined not in the light of the ICT integration alone but as a complex socio-technical system (Mora et al., 2019). In this regard, the recent policy-oriented research suggested considering the ultimate smart city goal in a close link with the 'fostering and development of public value, sustainability, cooperation, transparency, interactivity, and societal wellbeing' (McBride et al., 2022: 2). In this paper, we continue this line of thought, illustrating the smart city as a multifaceted phenomenon and a continuum that embraces technological, social and managerial elements (Gascó-Hernandez and Gil-Garcia, 2017). We, therefore, propose to devote specific attention to the latter and dig deeper into the area of smart city governance, whose exploration in previous studies has been fragmentary (Broccardo et al., 2019; Viale Pereira et al., 2017).

A number of studies highlight the evident complexity of urban smartness at the stages of both the development and implementation of smart city strategies (e.g. Argento et al., 2020; Brorström et al., 2019); thus, applying a public governance lens enables multiple stages of the governing process to be covered (Ansell and Gash, 2008) and helps to reveal and address the practical challenges which governments confront in introducing smart city initiatives. Given the multidimensional nature of the smart city, we aim to show the implications of employing a public governance lens in the link with its conceptual foundation and different outcomes in term of sustainability. This would enable scholars and practitioners to outline groups of actors involved in smart city initiatives, as well as to better understand how to manage this interaction to produce multiple values for each group.

Public governance paradigms for smart cities

A number of studies have examined different aspects of smart city governance. The existing research centred on addressing confusions in the literature and structuring numerous perspectives on smart governance (Meijer and Bolívar, 2016; Ruhlandt, 2018); other papers focused on building a connection between smart city governance and performance (Argento et al., 2020; Brorström et al., 2019) and establishing strong

interaction among involved actors (Broccardo et al., 2019; Viale Pereira et al., 2017). We propose to go beyond an examination of separate elements and to capture city smartness through the public governance lens. Previous studies acknowledged that the concept of a smart city has significant implications across various disciplines (e.g. urban, public administration/management and organisation studies), prompting a growing interest in exploring its connection with public management research (Grossi et al., 2020) and even touching upon this relationship to some extent (e.g. Meijer and Bolívar, 2016; Sancino and Hudson, 2020). Notably, Grossi et al. (2020) specifically highlighted the interplay between the smart city and different disciplinary perspectives of urban governance, accounting and public administration/management, using urban auditing as an integrated lens. In this study, we build upon this work, placing a stronger emphasis on the link between smartness and sustainability, by adopting public governance lenses. While advocating for an integrated approach to investigating the multidimensional concept of urban smartness, we assert that smart city governance should encompass multiple dimensions.

Public governance itself can be considered from different viewpoints. Observed through a variety of meanings (Rhodes, 2020), public governance can be flexible enough to be applied to the multifaceted nature of the smart city to understand its complexity, especially in terms of the involvement of the wide range of actors (state and non-state) who have different visions and ambitions (Kitchin, 2015). Smart cities tend to be recognised in the relational networks of actors that embrace small and medium-sized enterprises, non-governmental organisations, central, regional and local governments and citizens; hence, this multiple actors' involvement serves as a foundation of the spirit of smart cities – the need to build structures with the purpose of creating multiple values (Grossi et al., 2020).

In other words, public governance should not be considered only as a process but, rather, should reflect 'the outcomes of interactions between all actors in the public domain' (Bolívar, 2015: 3). As far as there is a variety of actors involved in this complex interplay within the smart city, reflecting the realms of the modern polycentric, multi-sector and multi-actor world (Bryson et al., 2017), the outcome of smartness presupposes the generation of multiple values provided for each type of stakeholder (Grossi and Trunova, 2021). The nature of the governance dynamics in the smart city remains challenging to grasp analytically (Grossi et al., 2020); thus, we propose to examine its immersive core from various governance standpoints, that is, paradigms of governance that would respectively reflect the position and elements of the main groups of actors and the generation of value for each of them (Grossi and Argento, 2022; Torfing et al., 2020).

Taking into account a widely recognised socio-technical synergy embraced by the smart city concept (Mora et al., 2019) and its multidimensional goal (McBride et al., 2022), we can roughly outline the actors' nature – technologies, organisations and humans – by highlighting particular characteristics of their governance. All elements are interconnected, meaning that it is important to consider the implementation of technologies in a close link with their institutional embeddedness (Lember et al., 2019) and, therefore, in connection with citizen involvement and political processes (Meijer, 2018). We propose to outline three core types (network, collaborative and digital) of public governance, with a particular emphasis on each individual element, while the smart city is located at their intersection, embracing the characteristics of them all (Figure 1).

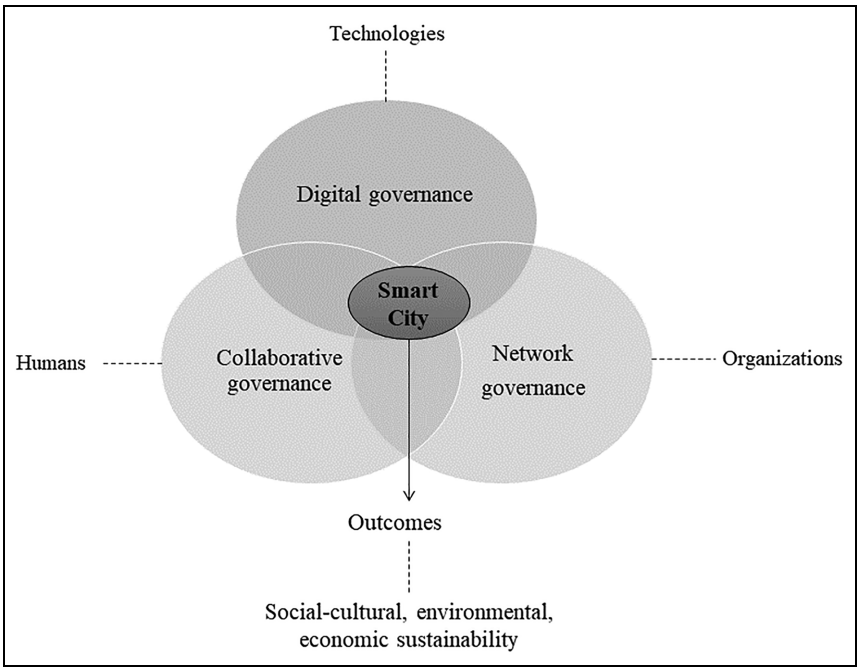

Figure 1. Public governance paradigms for sustainability in smart cities.

Network governance highlights the role of inter-organisational interaction, including intergovernmental relationships that occur within smart city development and implementation. Network governance empowers the mobilisation of resourceful actors within a framework of rules and norms and enables diverse target groups utilising fewer resources to be reached (Sørensen and Torfing, 2016). Although networks are also a part of collaborative activity (Agranoff, 2006), in the smart city context, we align network governance mainly with multi-organisational governance (Provan and Kenis, 2008), in which organisations from both the state and the market are present. Hence, as a result, value should be created not only for public but also for private companies and other stakeholders.

Collaborative governance directs its primary focus towards the collective activity of public and private actors, together within a consensus-oriented process of making decisions in common forums with public institutions (Ansell and Gash, 2008). In other words, collaborative governance emphasises empowerment, dialogue and participation (Ansell and Gash, 2008; Huxham et al., 2000), thus being ideologically juxtaposed to the contrasting top-down governance approach. Embracing a variety of relationships and initiatives across organisational boundaries, collaborative governance can be applied to capture the relationship between the state and non-state stakeholders (private and non-profit organisations), including the participation of citizens, as individuals and organised groups, who are directly involved in decision-making and, thus, contribute to the policy outcomes (Ansell and Gash, 2008). Helping to address public challenges, the ultimate outcome of building this collaboration is the production of public value (Page et al., 2015); thus, collaborative

governance is mainly oriented towards citizens. The measuring of smart cities' performance should focus on the effectiveness and equity of public service delivery rather than just financial efficiency. But trust, efficacy, accountability and equity are also key to driving and motivating changes in the reformational notion. As the smart city concept is very broad and hard to define, a problem exists in creating a multi-dimensional approach for smart cities supporting service development and facilitating collaborative performance (Argento et al., 2020; Grossi et al., 2020).

Digital governance is primarily oriented to the governance of technologies, shaping the digital environment in which citizens and government operate (Dunleavy and Margetts, 2015). It aims to empower strategies to improve organisational performance through the advanced use of ICT. The concept of 'datapolis' is a prominent example of digital governance, serving as a connection between the technical world of technologies and data infrastructure and the social world of politics, governance and strategic interactions between actors in urban environments (Meijer, 2018). Digital governance implies the need to evaluate and assess the processes of interaction and collaboration among stakeholders, as a peculiar characteristic of governance, to fulfil its purpose (Meijer and Bolívar, 2016). Digital technologies have the potential to foster co-creation and generate public value in management processes, based on their collaborative, social and horizontal nature (Criado and Gil-Garcia, 2019).

The three co-existing forms of public governance (network, collaborative and digital) form both a layer cake – with separate public governance models, each focusing on a specific aspect of public value creation, whether organisations, citizen engagement or digital technologies – and a marble cake, with mixed forms of public governance (Torfing et al., 2020), relying on multiple actors' (public, private and civil society) roles in public value creation (Moore, 1995). The co-existence of different forms of public governance also influences how smart cities are designed and used to create public value for multiple stakeholders. Therefore, smart city governance is at the intersection of these three forms of public governance, as visualised in Figure 1.

We propose to illustrate sustainability as an outcome that smart city governance should target, thus aligning the direction of the smart strategy with sustainability goals (Yigitcanlar and Kamruzzaman, 2018). A closer conjunction of smartness and the three pillars of sustainability (social, economic, environmental) is in line with the United Nations (UN) policy and measurement tools, which capture smart city development in connection with the agenda of sustainable development goals (SDGs).

To demonstrate how the smart city can be viewed through the public governance lens in practice, we further provide an empirical illustration of the city of Tampere in Finland, which framed its smart city initiative through the solid integration of technological, human and organisational factors, with a strong orientation towards the different dimensions of sustainability (social, economic, environmental) (Karppi and Vakkuri, 2020).

Empirical illustration of smart Tampere

The city of Tampere is the third largest city in Finland, located in the southern part of the country, with a rapidly growing population of over 213,000 inhabitants (Karppi and Vakkuri, 2020; Lönnqvist et al., 2014). Established as an industrial city, Tampere is widely known for its strong advancement in the technology sector and its innovative practices, relying on extensive long-term partnerships with different stakeholders

from academia and private organisations (Lönnqvist et al., 2014). Considering the substantial degree of autonomy maintained at the local and regional levels in Finland, the city government has legitimacy and authority in setting strategic and policy priorities related to its transformation towards smartness and sustainability (Karppi and Vakkuri, 2020).

The development of the smart city initiative in Tampere was shaped by the gradual evolution of policies enacted at both the national and local levels. One of the starting points became the adoption of the so-called 'Six City Strategy – Open and Smart Services' – a strategic document produced by the Finnish government under the title of 'Cooperation strategy of the six largest cities in Finland' (6Aika, 2014: 1). Based on the existing history of the long-term collaborative relationships among the cities of Tampere, Helsinki, Espoo, Turku, Vantaa and Oulu, that cooperation essentially presented a joint bottom-up initiative, designed at the city level, that was eventually promoted, approved and funded by the national government, along with European Union (EU) institutions. Joining together within a common strategic initiative, the group of cities offered their urban settings as 'a large pilot area' for developing and testing innovative ideas and projects. Despite the cities' differences, their local governments dealt with similar issues, for example, related to citizen needs, the provision of public services, urban infrastructure and sustainable development. Hence, the process of uniting the cities, by employing a common agenda or so-called 'cooperation strategy', aimed to foster joint work on enhancing services and knowledge management, with the help of the infrastructure of smart services, thereby creating a common and relatively universal marketplace suitable for international comparison. The cities' recognised potential and advanced capabilities, in terms of research, innovation and development, were supposed to be utilised to secure and strengthen the country's competitive position in the global arena. Using the city environment as a foundation for experiments on innovation and sustainable urban development, the national agenda was enacted in 2014 (6Aika, 2014) and indicated the general direction of the smart city policy. Under a broad umbrella of three focus areas – 'open data and interfaces', 'open participation and customership' and 'open innovation platforms' – the city participants began their transformations towards creating 'a functional city community consisting of citizens, companies, research and development operators and the authorities' (6Aika, 2014: 3).

Later, and parallel with these common efforts, further initiatives were set for carrying out transformations towards smartness in the city of Tampere. The overarching programme, 'Smart Tampere', consisted of three long-term subprogrammes: the 'Digitalization Programme', 'Ecosystem Programme' and 'Sustainable Tampere 2030' (Smart Tampere, 2020). The composition of all three subprogrammes served as an umbrella for the smart city framework and specifically highlighted the governance of the smart city in relation to multiple stakeholders in the city context, for example, local government, academia, private companies and citizens (Table 1). The underlying idea behind this was to provide a sound investment in the city organisation, to ensure cost-efficiency and support better services for citizens. Reflecting a set of priorities, each subprogramme was targeted at the joint nature of developing new solutions for the urban environment, promoting public services in a digital format, as well as sustainable urban planning and energy use.

More specifically, the Digitalisation Programme placed a strong emphasis on digital service experimentation, aiming to greatly increase the number of digital services in the city by 2025. The set of core

Table 1. The composition of main groups of actors involved in Smart Tampere.

Sector	Actors
Government	– Business Tampere – the main coordinator of Smart Tampere, an economic development agency owned and financed by the Tampere region – City council as the highest authority – Local government departments and appointed management teams depending on the service area (public transportation, education, healthcare, etc.)
Academia	Based on the strategic cooperation agreement: – Tampere University (faculties of both engineering and social science) – Technical Research Center of Finland (VTT)
Business	– Local small and medium-sized companies – National-level companies – International vendors
Civil society	Citizens (participation mainly in digital format through the city mobile application, while in rare cases physically through the co-creation events for citizens of certain districts)

priorities of the Digitalisation Programme included the following directions: making mundane city life easier, creating an environment for agile experiments, enabling smooth and fast searches of the most suitable digital services for the city of Tampere and accelerating transformations to largely promote changes in operating public services. Among the most illustrative examples produced as an outcome of the Digitalisation Programme were the installation of city screens with up-to-date information for pedestrians; the creation of digital systems for public transportation (e.g. mobile tickets, bus route planning systems); and the development of the city's mobile application, 'Tampere.Finland App', providing information about the various city services, such as the digital library card, public transport schedules and routes and city events. Reflecting the digital governance lens, the Digitalisation Programme highlighted technologies as one of the major priorities in framing the smart city initiative.

The main target of the Ecosystem Programme was centred around creating ecosystems and city platforms to ensure the further growth of local companies. This offered possibilities for companies to create new solutions to address citizen needs, providing a platform to test those solutions in the city districts, boosting Tampere's potential as an attractive environment for investments and allowing local companies to access international markets. In applying the proposed conceptual model, the Ecosystem Programme was explicitly oriented to strengthening the connection among 'public', 'private' and 'people', thus reflecting the roles of both the human factor within collaborative governance and the organisational factor within network governance. The impact expected through the promotion of the Ecosystem Programme within the Smart Tampere framework directly focused on three main groups of actors that should benefit, roughly defined as the city, companies and citizens.

The final cornerstone that shaped the smart city initiative in Tampere was entirely dedicated to sustainability (Karppi and Vakkuri, 2020). On the wave of the widespread initiatives undertaken by cities across the globe to reach carbon neutrality (Huovila et al., 2022), Tampere also stepped up its ambition, indicating its goal to become carbon neutral by 2030 in a subprogramme, 'Sustainable Tampere 2030'. Therefore, the key targets covered by the subprogramme, as a part of the Smart Tampere initiative, implied transformations of a range of areas, such as mobility,

housing and construction, energy production and consumption, materials economy and the use of natural resources. The greater sustainability of these areas was supposed to be enabled through the implementation of the more efficient use of energy, for example, smart heating, cooling and electricity networks, energy storage and smart buildings, thus reflecting sustainability as an outcome of smart transformations (Table 2).

While there was a division into the three programmes which demonstrate the core priorities in the overall smart city agenda for Tampere, there was still quite explicit interconnection among them; for example, in building an ecosystem, the link with technology was highlighted, and, in enhancing digitalisation and sustainability, the partnership with private companies and the importance of citizen participation were also strongly emphasised. As an example, one of the overarching targets set up across the entire Smart Tampere programme specifically stressed the reformation of the city in an 'agile, sustainable, and cost-efficient way', placing a particular focus on 'citizen engagement and co-creation with companies' (Smart Tampere, 2020). In this regard, the set of performance indicators, for example, the number of platforms introduced and partners who use them, the number of new methods and approaches of work developed and implemented, as well as an increase in the reputation of Smart Tampere at the national and international levels, were pointed to as capturing the performance of the whole initiative. In other words, the Smart Tampere programme presented a composition of different though interrelated priorities that cover technologies, humans and organisations at their core and are strongly linked with the aim to enhance sustainability.

Discussion

The strategy of the city of Tampere in framing the smart city initiative presents an example of gradual development of policy in this field. The foundation of the Smart Tampere programme was set on the previous experiences of the city in relation to digitalisation, as well as already existing strong partnerships with different actors from other sectors (e.g. business, academia) that had been built previously. In this setting, Business Tampere – a regional economic development agency that took a leading role in the entire process of development and management of the smart city initiative – became a coordinator in complex cross-

Table 2. Smart Tampere through public governance paradigms.

Dimension	Core factors	Smart Tampere initiatives	Priorities and targets	Outcomes
Network governance	Organisations	Ecosystem programme	Enabling joint development of new solutions	Network performance
Collaborative governance	Humans	Sustainable Tampere 2030	Carbon neutrality and sustainable urban planning and energy use	Non-financial performance (social and environmental sustainability)
Digital governance	Technologies	Digital programme	Promoting city digital services	Benefits of digital technologies for better creation of public value

sectoral interaction, serving as a mediator among the various actors.

Drawing on the existing ties with local organisations, Business Tampere played a proactive role and facilitated new connections, extending the network with business and academia, while still maintaining a strategic focus on citizen needs. In other words, an understanding of the significance of building up a vast network with various actors – for example, research partners (both local universities and national research institutions), companies of different sizes and origins (local, national and international), governmental bodies at both local and national levels, citizens (through digital participation) – allowed the city of Tampere to move beyond corporate and entrepreneurial governance versions of the smart city (Hollands, 2015). Acknowledging the different visions and interests of the various sides involved in forming the urban smartness (Kitchin, 2015) allowed the entire smart city initiative to be constructed in a way that enables multiple values to be produced for the different actors from each sector (Grossi and Trunova, 2021). Therefore, conceptual understanding of smartness evolved to be framed more broadly, not being limited solely to the technological aspect (Mora et al., 2017). Designing the Smart Tampere programme through three separate yet interrelated subprogrammes allowed the assigning of key priorities and targets that the smart city aims to achieve, explicitly reflecting its multidimensional goals (McBride et al., 2022) and, thus, covering its socio-technical synergy (Mora et al., 2019), together with the focus on sustainability (Yigitcanlar and Kamruzzaman, 2018).

Overall, examining the smart city through the lens of all three public governance paradigms – digital, collaborative and network governance – can provide a more in-depth understanding of the concept and its complex integration in a specific context, from the public governance perspective (Torfing et al., 2020). The proposed model embraces the set of dimensions, allowing technologies, humans and organisations to be outlined as components covered by urban smartness that should, therefore, be aligned with sustainability outcomes. Our conceptual model enables the socio-technical nature and multidimensional goals of the smart city to be articulated, providing a more comprehensive view on developing smart initiatives, policies and projects, based on the public governance structure.

The empirical illustration of Tampere served to provide the application of the conceptual model in practice. The overarching initiative, 'Smart Tampere', covers various but interrelated priorities united within three programmes: the Digitalisation Programme, the Ecosystem Programme and Sustainable Tampere 2030. Recognising the multifaceted nature of the smartness, Smart Tampere places specific emphasis on building partnerships among different city actors to achieve the set of targets related to the digitalisation of public services, joint work on developing solutions and enhancing sustainability at different levels, thus discerning technologies, humans and organisations as core elements of the smart city. Outlining the dimensions of the smart city, both conceptually and empirically, may enable its potential to be unlocked, to generate multiple values which target the different groups of actors involved in smart city realisation and to provide a more careful examination of the values and benefits for both state and non-state stakeholders.

In addition, our findings implicitly underscore the importance of tailoring smart city strategies to local conditions, as well as contributing to the understanding of how smart city initiatives can effectively cater to diverse urban landscapes. In this regard, the study aligns with previous research on the smart city which shares the perspective on the

absence of a universal 'smart city policy' (Clement and Crutzen, 2021), thereby recognising the influence of contextual factors and local policy priorities in shaping the smart city agenda. While there has been a worldwide adoption of the smart city concept, there exists a divergence of views and perspectives regarding the dialogue between local political priorities and global agendas, so the approaches in shaping smart city policies vary significantly across different geographies. Specifically, Chang et al. (2021) observed that Northern interpretations of urban smartness emphasise a strong modernist assumption and focus on established practices, whereas examples from the South and East highlight emerging perspectives in adopting smart city ideas. In the latter case, the local smart city agenda often evolves through experimentation, being provincialised (Chang et al., 2021), translated (Khodachek et al., 2023) and negotiated by multiple actors (Trunova et al., 2022) in a specific empirical setting. Throughout this journey, the smart city encounters contextual factors, such as aligning with the political environment and being problematised through suitable smart city solutions (Clement and Crutzen, 2021). In our study, while acknowledging the impact of the contextual specificity and local priorities in framing the smart city agenda in the city of Tampere, our focus remained centred on examining the link between smart city policy, its governance and sustainability outcomes. Nonetheless, we suggest that future research delves more comprehensively into the relationship between the formation of the conceptual framework of smartness and the intricacies of local processes.

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References

6Aika (2014) Smart Cities work together. Available at: https://6aika.fi/in-english/ (accessed 10 June 2022).

Agranoff R (2006) Inside collaborative networks: Ten lessons for public managers. *Public Administration Review* 66: 56–65.

Ansell C and Gash A (2008) Collaborative governance in theory and practice. *Journal of Public Administration Research and Theory* 18(4): 543–571.

Argento D, Grossi G, Jääskeläinen A, et al. (2020) Governmentality and performance for the smart city. *Accounting, Auditing and Accountability Journal* 33(1): 204–232.

Bolívar MPR (ed.) (2015) *Transforming City Governments for Successful Smart Cities*. Berlin, Germany: Springer.

Broccardo L, Culasso F and Mauro SG (2019) Smart city governance: Exploring the institutional work of multiple actors towards collaboration. *International Journal of Public Sector Management* 32(4): 367–387.

Brorström S, Argento D, Grossi G, et al. (2019) Translating sustainable and smart city strategies into performance measurement systems. *Public Money and Management* 38(3): 193–202.

Bryson J, Sancino A, Benington J, et al. (2017) Towards a multi-actor theory of public value co-creation. *Public Management Review* 19(5): 640–654.

Chang ICC, Jou SC and Chung MK (2021) Provincialising smart urbanism in Taipei: The smart city as a strategy for urban regime transition. *Urban Studies* 58(3): 559–580.

Clement J and Crutzen N (2021) How local policy priorities set the smart city agenda. *Technological Forecasting and Social Change* 171: 120985.

Criado JI and Gil-Garcia JR (2019) Creating public value through Smart technologies and strategies. From digital services to Artificial Intelligence and beyond. *International Journal of Public Sector Management* 32(5): 438–450.

Dunleavy P and Margetts H (2015) Design principles for essentially digital governance. In: *Annual meeting of the American Political Science Association*, San Francisco, CA, 3–6 September.

Gascó-Hernandez M and Gil-Garcia JR (2017) Is it more than using data and technology in local governments: Identifying opportunities and challenges for cities to become smarter. *UMKC Law Review* 85(1): 915–923.

Gil-Garcia JR, Pardo TA and Nam T (2015) What makes a city smart? Identifying core components and proposing an integrative and comprehensive conceptualization. *Information Polity* 20(1): 61–87.

Grossi G and Argento D (2022) The fate of accounting for public governance development. *Accounting, Auditing and Accountability Journal* 35(9): 272–303.

Grossi G, Meijer A and Sargiacomo M (2020) A public management perspective on smart cities: 'Urban Auditing' for management, governance and accountability. *Public Management Review* 1: 1–15.

Grossi G and Pianezzi D (2017) Smart cities: Utopia or neoliberal ideology? *Cities* 69: 79–85.

Grossi G and Trunova O (2021) Are UN SDGs useful for capturing multiple values of smart city? *Cities* 114: 103193.

Hollands RG (2015) Critical interventions into the corporate smart city. *Cambridge Journal of Regions, Economy and Society* 8(1): 61–77.

Huovila A, Siikavirta H, Antuña Rozado C, et al. (2022) Carbon-neutral cities: Critical review of theory and practice. *Journal of Cleaner Production* 341: 130912.

Huxham C, Vangen S, Huxham C, et al. (2000) The challenge of collaborative governance. *Public Management: An International Journal of Research and Theory* 2(3): 337–358.

Karppi I and Vakkuri J (2020) Becoming smart? Pursuit of sustainability in urban policy design. *Public Management Review* 22(5): 746–766.

Khodachek I, Aleksandrov E, Nazarova N, et al. (2023) Smartocracy: Context entanglement of the smart city idea and bureaucracy in Russia. *Organization Studies* 44(10): 1625–1647.

Kitchin R (2015) Making sense of smart cities: Addressing present shortcomings. *Cambridge Journal of Regions, Economy and Society* 8(1): 131–136.

Lember V, Brandsen T and Tõnurist P (2019) The potential impacts of digital technologies on co-production and co-creation. *Public Management Review* 21(11): 1665–1686.

Lönnqvist A, Käpylä J, Salonius H, et al. (2014) Knowledge that matters: Identifying regional knowledge assets of the Tampere region. *European Planning Studies* 22(10): 2011–2029.

McBride K, Cingolani L and Hammerschmid G (2022) Policy Brief. Human centric smart cities: Redefining the smart city. Hertie School Centre for Digital Governance. DOI: 10.13140/RG.2.2.23464.44801.

Meijer A (2018) Datapolis: A public governance perspective on "Smart Cities". *Perspectives on Public Management and Governance* 1(3): 195–206.

Meijer A and Bolívar MPR (2016) Governing the smart city: A review of the literature on smart urban governance. *International Review of Administrative Sciences* 82(2): 392–408.

Moore MH (1995) *Creating Public Value: Strategic Management in Government*. London: Harvard University Press.

Mora L, Bolici R and Deakin M (2017) The first two decades of smart-city research: A bibliometric analysis. *Journal of Urban Technology* 24(1): 3–27.

Mora L, Deakin M, Reid A, et al. (2019) How to overcome the dichotomous nature of smart city research: Proposed methodology and results of a pilot study. *Journal of Urban Technology* 26(2): 89–128.

Page SB, Stone MM, Bryson JM, et al. (2015) Public value creation by cross-sector collaborations: A framework and challenges of assessment. *Public Administration* 93(3): 715–732.

Provan KG and Kenis P (2008) Modes of network governance: Structure, management, and effectiveness. *Journal of Public Administration Research and Theory* 18(2): 229–252.

Rhodes RAW (2020) Governance and public administration. In: Pierre J (ed.) *Debating Governance: Authority, Steering, and Governance*. Oxford, UK: Oxford University Press, pp.54–90.

Ruhlandt RWS (2018) The governance of smart cities: A systematic literature review. *Cities* 8: 1–23.

Sancino A and Hudson L (2020) Leadership in, of, and for smart cities – case studies from Europe, America, and Australia. *Public Management Review* 22(5): 701–725.

Smart Tampere (2020) Smart Tampere (presentation). City of Tampere. Available at: https://smarttampere.fi/en/ (accessed 10 June 2022).

Sørensen E and Torfing J (eds) (2016) *Theories of Democratic Network Governance*. New York, NY: Springer.

Torfing J, Andersen LB, Greve C, et al. (2020) *Public Governance Paradigms: Competing and Co-Existing*. Cheltenham: Edward Elgar Publishing.

Trunova O, Khodachek I and Khodachek A (2022) Visualising and calculating the smart city: A dialogue perspective. *Journal of Public Budgeting, Accounting & Financial Management* 34(5): 644–664.

Vanolo A (2014) Smartmentality: The smart city as disciplinary strategy. *Urban Studies* 51(5): 883–898.

Viale Pereira G, Cunha MA, Lampoltshammer TJ, et al. (2017) Increasing collaboration and participation in smart city governance: A cross-case analysis of smart city initiatives. *Information Technology for Development* 23(3): 526–553.

Yigitcanlar T and Kamruzzaman M (2018) Does smart city policy lead to sustainability of cities? *Land Use Policy* 73: 49–58.