

South Asian Studies

Vol. 40, No. 1, January – June, 2025, pp. 53 – 86

Smart Governance: A Conceptual Analysis and Integrative Model

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Received:
May 22, 2025

Published:
Jun 30, 2025

ABSTRACT

Smart Governance is an emerging theme, but its propositions are found to be varied in literature. This study is aimed to extract different propositions for Smart Governance from literature and put them together into a coherent whole with an integrative model to offer a more complete and nuanced view of this theme. Towards this end, a total of eight literature reviews were shortlisted for an in-depth review. Meta-synthesis of the propositions in shortlisted reviews helped develop an integrative model that highlights characteristics, dimensions, and components in conjunction with implementation strategies and the aspired outcomes of Smart Governance. This model can serve as a framework for understanding and applying Smart Governance in local and national contexts.

Keywords: Big Data, Integrative Model, Quality of Life, Smart Governance, Smart Cities

Introduction

Smart Governance propositions are found to be varied in literature. Smart Governance is commonly identified as one of the characteristics of a Smart City (Giffinger et al., 2007; Lopes et al., 2017; Mutiara et al., 2018; Razaghi & Finger, 2018). According to Giffinger et al (2007), Smart Governance should focus on providing “Public and social services”, allow “Participation in decision making”, strive for “Transparent Governance”, and accommodate “Political strategies and perspectives”. But an older perspective is SMART governance wherein **S** stands for “Simple”, **M** stands for “Moral”, **A** stands for “Accountable”, **R** stands for “Responsive”, and **T** stands for “Transparent”, with the intent to minimize role of politics in policy process for regional development (Mooij, 2003). This study is aimed to elicit different propositions for Smart Governance and put them together into a coherent whole with an integrative model to offer a comprehensive and more nuanced view of this theme.

Table 1

List of Abbreviations used Throughout the Paper.

DT	Digital Technologies
EBPDM	Evidence Based Participatory Decision Making
EBP	Evidence Based Policymaking
HR	Human Resource
ICTs	Internet and Communication Technologies
ICT	Internet and Communication Technology
PV	Public Value
PPPs	Public-Private Partnerships
QOL	Quality of Life
SCG	Smart City Governance
SMD	Social Media
SDE	Sustainable Development

Literature Search and Review

Google Scholar presents ‘search results’ from a broad set of academic sources (Martín-Martín et al., 2021), and can be used to find the latest and some of the most relevant publications in scholarly journals pertaining to the topic of interest. Google Scholar provided a total of 3930 ‘search results’ as on 28-12-2021 with following search input: *systematic literature review “Smart governance”*. These results were sorted by relevance and a total of seven literature reviews were shortlisted for an in-depth review; see Table 2. This strategy can help cover as much ground as possible when attempting to review a very large body of literature. Among more reputed academic search systems (Gusenbauer & Haddaway, 2020), ScienceDirect offers unrestricted accessibility and reproducibility in its ‘search results’. ScienceDirect provided a total of 132 ‘search results’ in the (2006 – 2021) period with following search input: *systematic literature review “Smart governance”*. These results were sorted by relevance and one more literature review was added to the list of papers shortlisted for an in-depth review; see Table 2.

Table 2

List of papers shortlisted for an in-depth review.

No.	Code for meta-synthesis in Table 3	Authors	Title	Context	Academic search systems
2.1	[1]	Bolívar and Meijer (2016)	<i>“Smart governance: Using a Literature Review and Empirical Analysis to Build a Research Model.”</i>	Smart Cities	Google Scholar
2.2	[2]	Ruhlandt (2018)	<i>“The governance of smart cities: A systematic literature review.”</i>	Smart Cities	Google Scholar; ScienceDirect
2.3	[3]	Sarker and Wu (2018)	<i>“Smart governance through Bigdata: Digital Transformation of Public Agencies.”</i>	Big Data	Google Scholar
2.4	[4]	Pereira et al (2018)	<i>“Smart governance in the context of smart cities: A literature review.”</i>	Smart Cities	Google Scholar

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2.5	[5]	Tomor et al (2019)	“Smart governance For Sustainable Cities: Findings from a Systematic Literature Review.”	Sustainable Cities	Google Scholar
2.6	[6]	Jiang et al (2019)	“Comparing Smart governance Projects in China: A Contextual Approach.”	Urban	Google Scholar
2.7	[7]	Tomor et al (2021)	“Smart governance in institutional context: An in-depth analysis of Glasgow, Utrecht, and Curitiba.”	Institutional	Google Scholar; ScienceDirect
2.8	[8]	Lin (2018)	“A comparison of selected Western and Chinese smart governance: The application of ICT in governmental management, participation and collaboration”	Different Contexts	ScienceDirect

Proposition of Bolívar and Meijer (2016)

Bolívar and Meijer (2016) reviewed a total of 80 studies and identified various aspects of Smart Governance that were broadly categorized as “*implementation strategies*”, “*defining elements*”, and “*aspired outcomes*”, and presented a framework of their findings; see Figure 1.

Figure 1: Framework of Smart Governance from Bolívar and Meijer (2016)

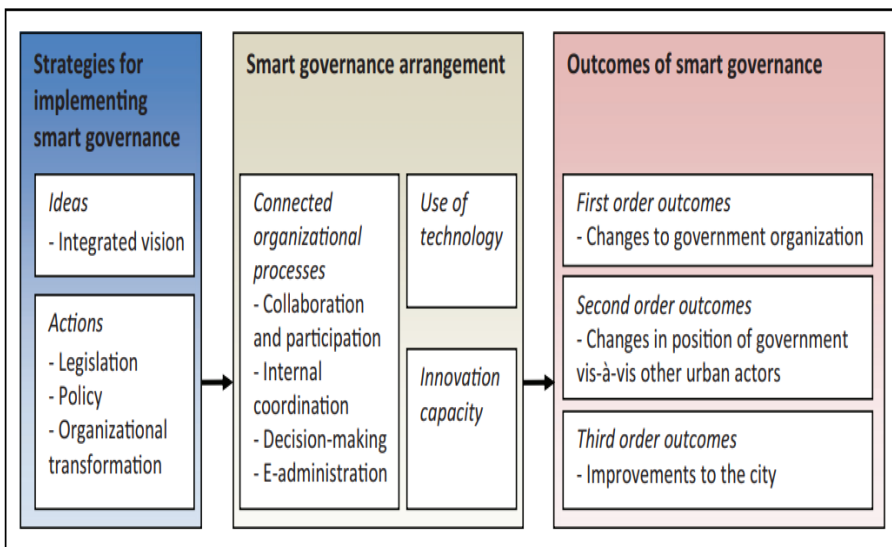


Figure 1 suggests that strategies for implementing Smart Governance should be in place before Smart Governance and its aspired outcomes can be realized in practice.

The “*implementation strategies*” dimension pertains to how a city can realize Smart Governance. These are further categorized as ideas and actions. Ideas such

as integrated vision, and actions such as legislation and policies, the use of ICTs, and Collaborative governance are essential for realizing Smart Governance. Refer to the “*Strategies for implementing smart governance*” section in Figure 1.

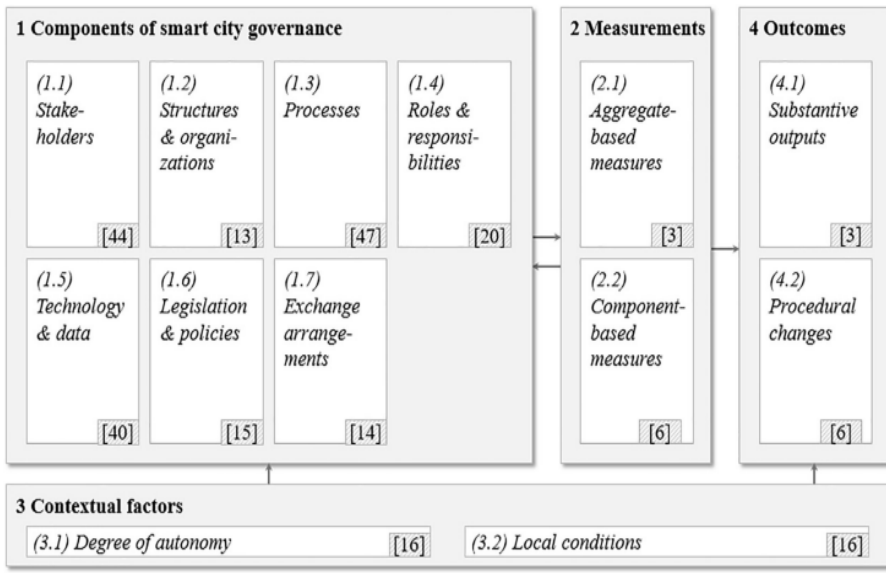
The “*defining elements*” dimension pertains to Smart Governance processes such as collaboration and participation, decision-making process, E-administration, and internal coordination. These processes involve use of technology and collectively define innovation capacity of Smart Governance. Refer to the “*Smart governance arrangement*” section in Figure 1.

The “*aspired outcomes*” dimension is classified as follows: First-order – focused on “*changes to the government organization*” with emphasis on efficient government and readiness for disaster management; Second-order – focused on “*changes in the position of government*” vis-à-vis other urban actors with emphasis on citizen-centric services, E-governance, and city branding; and Third-order – focused on “*improvements to the city*” with emphasis on economic growth, ecological performance, highly educated citizens, and social inclusion. Refer to the “*Outcomes of smart governance*” section in Figure 1.

Proposition of Ruhlandt (2018)

Ruhlandt (2018) reviewed a total of 62 studies and identified various aspects of Smart Governance that were broadly categorized as “*Components*”, “*Contextual factors*”, “*Measurements*”, and “*Outcomes*”, and presented a framework of their findings; see Figure 2.

Figure 2: SCG Research Scheme from Ruhlandt (2018)



Legend: [#] Number of references per sub-category in the selected literature review sample

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Components – These are identified as “*Stakeholders*”, “*Structures & organizations*”, “*Processes*”, “*Roles & responsibilities*”, “*Technology & data*”, “*Legislation & policies*”, and “*Exchange arrangements*”, respectively.

The “*Stakeholders*” refers to agencies, groups, individuals, organizations, or parties that are involved in SCG in some way or form. These can be categorized as academic (research bodies; universities), civic (citizens; civic groups; community sector organizations; communities; not-for-profit organizations), public (government agencies; governing bodies; public institutions; political leadership & forces), and private (industries; markets; private firms). Further contextual categorizations are on the lines of “*institutional vs. non-institutional*”, “*internal vs. external*”, and “*national vs. international*”, respectively.

The “*Structures & organizations*” should facilitate interaction between stakeholders for SCG needs. These include city-wide ICT infrastructure, intergovernmental networks, interagency networks, and inter-sectoral networks. Relevant interaction processes are illustrated in Figure 3.

Figure 3: Interaction Processes Between Stakeholders for SCG Needs from Ruhlandt (2018)



The “*Roles & responsibilities*” of the stakeholders involved in SCG can manifest in the form of ‘Power Sharing’ and/or ‘Steering’ in practice. Although a local government adopts respective roles of coordinator, funder, and regulator in practice, sharing of power in decision-making with other stakeholders is possible in view of the Engagement/Participation/Collaboration/Coproduction consideration(s). Stakeholders might also have the capacity to steer each other in a ‘Power Sharing’ arrangement.

The “*Technology & Data*” can be used to support or enable SCG activities such as planning, decision-making, steering, and participation. The Data that is collected using technology and made public to inform Smart City functions is identified as Open Data.

The “*Exchange arrangements*” pertain to relationships and exchanges between public and private sector. These exchanges can be market-driven (or contractual arrangements) and/or network-driven (or relational arrangements). Network-driven exchanges are contingent upon cooperation, networks, and partnerships, and deemed more relevant to SCG in practice. These relationships can be fluid and managed informally.

The SCG also calls for modern and novel policy considerations such as laws, municipal ordinances, and rules to address complex urban realities. Significance of legal framework and policies is underscored in relation.

Measurements – These are categorized as “*Aggregate-based measures*” and “*Component-based measures*”; see Figure 2. The SCG can be measured as an aggregate concept (Battarra et al., 2016), and at the component level (Giffinger et al., 2017; Marsal-Llacuna, 2016), but some studies mixed both perspectives in their measurement attempts (Castelnovo et al., 2016; Lombardi et al., 2012).

Contextual factors – These are categorized as “*Degree of Autonomy*” and “*Local conditions*”; see Figure 2. A local government might have limited autonomy to implement SCG. Local conditions such as community activism and capacity within a local government’s areas of jurisdiction and other forms of social pressures can also compound the challenge. Bolívar and Meijer (2016) also hinted the need to analyze how contextual factors such as “*administrative cultures, political or demographic factors, technological factors [...]*” influence SCG.

Outcomes – Bolívar and Meijer (2016) provide a rich view of this theme in Figure 1. Ruhlandt (2018) provides a more concise view of this theme in Figure 2; “*Substantive Outputs*” (i.e., what is generated) and “*Procedural Changes*” (i.e., how the output is generated). Much emphasis is placed on the economic, environmental, and social metrics for the outputs of SCG in the literature body. Related suggestions include maximizing socio-economic and ecological performance of cities (Kourtit et al., 2012), economic growth (Castelnovo et al., 2016), employment (Castelnovo et al., 2016), and social inclusion (Castelnovo et al., 2016). Procedural changes are identified as efficiency, innovation, transparency, and citizen-centricity.

Proposition of Sarker and Wu (2018)

Sarker and Wu (2018) endorse the view of Melhem (2012) that Smart Governance represents ICT-based 3rd generation E-government model labeled SMART government wherein **S** stands for “*Social*”, **M** stands for “*Mobile*”, **A** stands for “*Analytics*”, **R** stands for “*Radical openness*”, and **T** stands for “*Trust*”, respectively.

- The “*Social*” aspect refers to the government providing citizen-friendly & personalized public services and allowing coproduction of public services.
- The “*Mobile*” aspect refers to the government making use of mobile networks and various technologies including Cloud Computing and SMD platforms for public service delivery and daily affairs.
- The “*Analytics*” aspect refers to the government considering Big Data Analytics to inform public policy decisions.
- The “*Radical openness*” aspect refers to the government providing easy access to relevant information for maintaining accountability, transparency, and citizen-friendly services.

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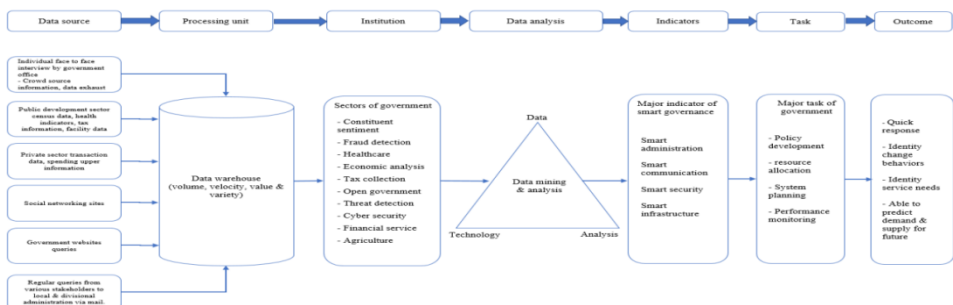
- The “Trust” aspect refers to the government providing cyber-security and privacy-based public services.

Sarker and Wu (2018) promote technology as the key pillar of Smart Governance, and it needs continuous flow of accurate, accessible, discoverable, and usable data to be effective; Big Data to be precise. Meaningful information can be collected from Big Data to inform decision-making and to solve problems of public administration and society at large. Big Data have following characteristics:

- **Value** – Individuals and Organizations provide a large amount of data or information in general. This information can be of value to the government agencies.
- **Velocity** – Organizations and Social Networking Sites provide data on a continuous basis.
- **Variety** – Various sources provide different types of data including text, numeric, audio, and video.
- **Volume** – A large amount of data is generated daily. This information can be collected from various sources, transformed, and processed for potential use by the government agencies.
- **Veracity** – Quality of data is important to help inform decision-making. Size of data will gradually increase but a part of data may be erroneous. The processing unit should be equipped to handle large amounts of data and Big Data Analytics should be applied to enable effective, efficient, and timely public service delivery.

Sarker and Wu (2018) presented a conceptual model of Big Data implementation for Smart Governance; see Figure 4. Big Data might require a group of data scientists for collecting, handling, processing, and managing it; this is necessary for adopting and maintaining a Smart Governance system and to help the government deliver results in every sector.

Figure 4: Conceptual model of Big Data implementation for Smart Governance from Sarker and Wu (2018)



The government can utilize Big Data to facilitate policy development, resource allocation, performance monitoring, system planning, and social welfare.

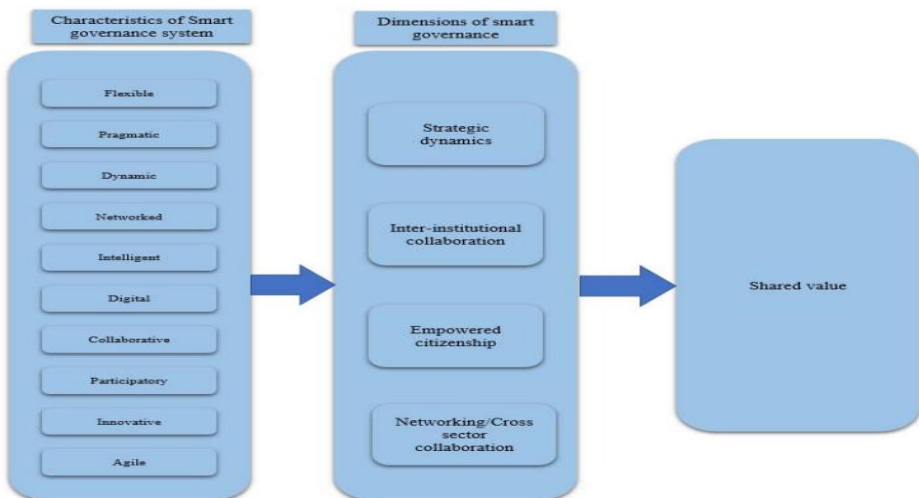
But Big Data implementation is not without its challenges. Fundamental concerns are: (1) “Privacy and security”; (2) “Managing and Sharing Data”; (3) “Challenges related to technology”; and (4) “Challenges related to skills”. The government should secure its Big Data repository and ensure privacy of sources contributing to it; privacy law is underscored to do the needful. Cloud Computing technologies can make it possible to store and analyze a large amount of data and are recommended for Big Data implementation.

The government can utilize Big Data for reducing corruption. Corruption refers to abuse of power for private gains through bribery, deceit, extortion, fraud, influence, and/or nepotism – these social ills not only undermine investment and economic growth but also intensify poverty. The practice of bribery is also responsible for transfer of wealth from poor countries to rich countries leaving them indebted to foreign aid for sustenance. Corruption is, therefore, a global problem.

Big Data implementation also provides opportunities for collaboration between government agencies and with other stakeholders for smooth operations; collaboration helps strengthen organizational networks and improve relationships with new partners.

Sarker and Wu (2018) reviewed a total of 52 studies and presented a conceptual model of Big Data-driven Smart Governance; see Figure 5. This framework highlights key characteristics of the Smart Governance system, which collectively inform dimensions of Smart Governance, and these dimensions collectively create shared value.

Figure 5: Conceptual model of characteristics and dimensions of Big Data-driven Smart Governance from Sarker and Wu (2018)



Smart Governance is supposed to be agile, collaborative, digital, dynamic, flexible, intelligent, innovative, networked, participatory and pragmatic in its form

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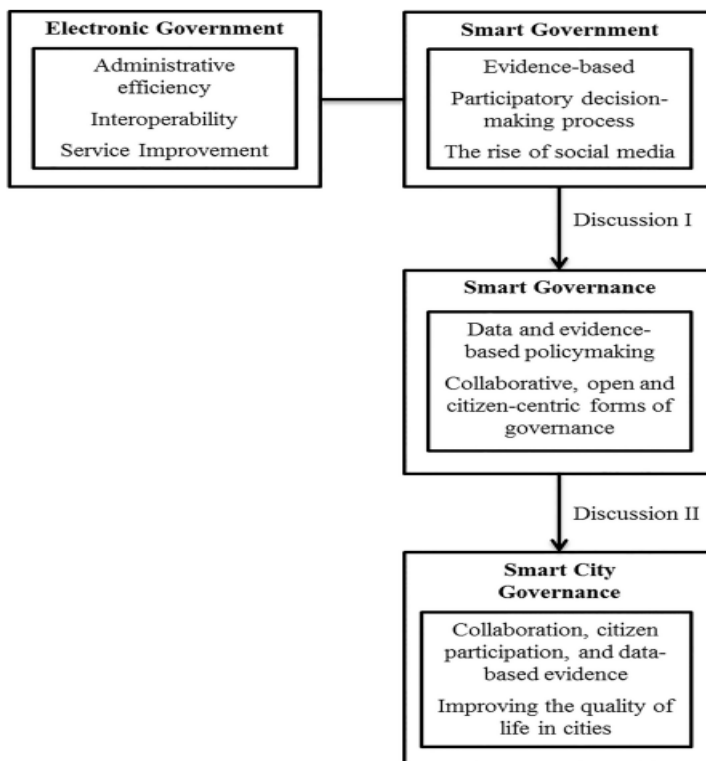
and function. These characteristics are necessary to realize empowered citizenship, inter-institutional collaboration, networking/cross-sector collaboration, and strategic dynamics.

Smart Governance should consider interaction with citizens and encourage them to participate in decision-making process or provide feedback (empowered citizenship), demonstrate collaboration and coordination competencies (inter-institutional collaboration; cross-sector collaboration), and demonstrate the ability to forecast complex political challenges and how to address them (strategic dynamics). Big Data can help realize these dimensions.

Proposition of Pereira et al (2018)

Pereira et al (2018) reviewed a total of 77 studies and identified a pattern of steps in governmental practices that will lead to implementation of SCG; see Figure 6.

Figure 6: Towards SCG implementation from Pereira et al (2018)



Pereira et al (2018) recognize “*Smart Governance*” as an emerging theme (i.e., domain of study) and identify “*Smart Government*” as the platform that is needed to implement “*Smart Governance*” with emerging ICT applications.

Pereira et al (2018) contend that ‘governance’ and ‘government’ are related concepts but can be distinguished from each other in following manner: ‘governance’ refers to the method of governing a constellation of actors (or the state) and ‘government’ is the organization that is responsible to do the needful. This perspective puts “*Smart Government*” before “*Smart Governance*” during the implementation process.

The 1st step is to establish **Electronic Government** (E-government) by introducing ICTs in governmental departments. The use of ICTs has become a strategy for administrative reforms at all levels of the “government.” These reforms might translate to value generators such as “*administrative efficiency*”, “*citizen centrality*”, and “*service improvement*”.

The “*administrative efficiency*” value is aimed to tap ICT automation to improve efficiency, effectiveness, productivity, and performance of administrative functions across all levels of the government, along with governmental inter-departmental relations and information sharing. Interoperability between governmental departments through investment in shared infrastructure involving integration and alignment of system architectures and work processes and data management services, also plays an important role in achieving greater ICT-driven administrative efficiency. By extension the “*Administrative efficiency*” can facilitate “*service improvement*” for citizens.

The “*service improvement*” value is aimed to cater to increased demand of citizens for better access to public services and information with provision of E-services on a 24/7 basis, shorter response times, reduction in human errors, and reduction in costs. Mobile applications and technologies are increasingly vital in improving the performance of E-government service provision.

The “*citizen centrality*” value points in the direction of needs and aspirations of citizens for democratic practices and greater involvement in governmental activities coupled with investment and advances in ICTs leading to improved government-citizen communication. This approach facilitates citizen engagement and community empowerment by means of collaboration and participation. This approach can also lead to greater transparency in governmental activities and by extension stimulate citizen trust and satisfaction.

Next step is to transform **E-government** into **Smart Government**. This can be achieved with continued investment in emerging technologies, innovation, and citizen centrality after integrating ICTs in governmental functions, operations, processes, and relationships with other stakeholders. Movement towards technology ubiquity and Open Data can lead to better understanding of societal problems and improvement in relationships with other stakeholders.

Gil-Garcia et al (2016) identified multiple dimensions of the adjective ‘Smart’ (or Smartness) for building Smart Government such as “*creativity*”, “*citizen-centricity*”, “*citizen engagement*”, “*evidence-based*”, “*efficiency*”, “*equality*”, “*effectiveness*”, “*entrepreneurialism*”, “*integration*”, “*innovation*”, “*information sharing*”, “*openness*”, “*resiliency*”, “*sustainability*”, and “*technology savviness*”. Pereira et al (2018) condensed these dimensions into following

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respective themes: (1) “*Citizen engagement in and Evidence-based decision-making processes*”; (2) “*Creativity, Entrepreneurialism, and Social Equality*”; and (3) “*Sustainability and Resilience*”.

Creativity, Entrepreneurialism, and Social Equality

These themes have significant cultural effects. Knowledge-based economy or focus on integrating “*knowledge-based*” and “*innovation-oriented*” economic development can facilitate entrepreneurialism. Appropriate strategies such as the use of ICTs and Open Data can facilitate reduction in social exclusion and promote social justice in theory but how technology will affect the elderly, lower income individuals, and people with disabilities warrants attention.

EBPDM Process

This practice indicates use of data, information, and/or knowledge to make informed decisions and improve effectiveness of public policies and programs. This practice increases governmental accountability, openness, transparency, and by extension the quality of relationship between the government and citizens. This practice is one of the most important aspects of a Smart Government.

Smart Government is expected to create collaborative environment(s). Towards this end, public participation (or E-participation) in decision-making should be encouraged and facilitated. Bonsón et al, (2015) cautioned that citizens tend to engage more when they have access to rich information from the government, and when they notice that the government is truly open to interaction and willing to accommodate their point of view in decision-making. E-participation should be aimed to empower people and develop social and political responsibility, therefore. Web 2.0 and SMD can help reshape decision-making processes and relationship(s) between the government and other actors because these technologies facilitate citizen engagement, citizen empowerment, information sharing and dissemination, transparency, openness, and ultimately governance. EBPDM is a good fit, therefore.

Sustainability and Resilience

Gil-Garcia et al (2016) contend that a Smart Government should be privy to ecological implications of growth and development and have the capacity to respond to citizens in situations of emergency and/or natural calamity (covariate shocks).

Next step is to establish **Smart Governance**. Towards this end, the following are important considerations: (1) Evidence-based Policymaking and Data; and (2) Collaborative, Citizen-centric and Open forms of governance.

Evidence Based Policymaking and Data

ICTs can be configured for processing, integration, and exploitation of the ever-growing amount of data (or Big Data) that is extracted from various stakeholders including businesses and ICT infrastructure encompassing SMD platforms and monitoring systems, to facilitate EBP. This practice is contingent upon the EBPDM process. Big Data can also be used for improving knowledge management capacities in tandem.

Collaborative, Citizen-Centric and Open forms of Governance

Pressure from citizens to participate in decision-making is noted to encourage changes in contemporary regulatory, policymaking, and governance processes to enable ICT-facilitated urban management (Khan et al., 2014). Technologies such as Big Data, Mobile Connectivity, Open Data and/or SMD can motivate the government to develop a vision of ICT-facilitated governance that is collaborative, open, and responsive to the needs and aspirations of citizens. The perception that *“information including government data belongs to the public”* is helpful to realize said vision, but the balance of power and the roles and responsibilities of the government, citizens, and other societal actors must be rethought in this context by defining a *“consensus framework for collaboration”* with well-defined allocation of decision-making rights to all stakeholders at different stages of the policymaking cycle to address potential issues of top-down coordination.

Smart Cities in the Context of Citizen-Centricity

The *“Smart Cities”* is a multidisciplinary discourse with well-defined dimensions of Economy, Environment, Governance, Living, Mobility, and People. The fundamental aim is to improve the QOL of citizens with the application of technology, but interpretations and propositions vary across the literature body. Despite varied interpretations of the Smart City concept, governance has a central role in this discourse via connecting relevant initiatives between the government and citizens and transparent decision processes. Of note is a citizen-centric typology for Smart City services proposed by Lee & Lee (2014). The overarching point is this: Smart Cities are defined and shaped by a new way of technology-driven governance which leads to expansion of the public administration capacity to improve the QOL of citizens, provision of public services, and democracy (Anthopoulos & Reddick, 2016; Castelnovo et al., 2015); SCG in short.

Bolívar and Meijer (2016) provide a rich view of the SCG concept with emphasis on collaboration and participation; this view is shared by other authors such as Castelnovo et al (2015) and Osella et al (2016). Castelnovo et al (2015) insist that citizen engagement lays the foundation for SCG; ICT applications including SMD can be used to expand citizen participation. Osella et al. (2016) advocate creating PV by means of visionary leadership with accountability,

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communication, collaboration, citizen participation, data sharing, PPPs, responsiveness, service integration, and transparency. A realistic Smart City strategy is contingent upon contextual condition(s) and PV. The citizen-centricity of the Smart City decision-making process is important for analyzing contribution of SCG to PV including economic growth.

Figure 6 illustrates the pathway towards implementation of Smart Governance in all its forms. E-government can be established by introducing ICTs in governmental spaces, operations, functions, and processes in pursuit of administrative efficiency, interoperability, and service improvement. ICTs can also be used to improve governmental relationships with other stakeholders by adopting the EBPDM process in pursuit of shift from E-government to Smart Government. ICTs can be further configured for processing, integration, and exploitation of the ever-growing amount of data (or Big Data) that is extracted from other stakeholders including businesses and ICT infrastructure encompassing SMD platforms and monitoring systems, to facilitate EBP. These measures provide capacity building for a collaborative, citizen-centric and open form of governance (or Smart Governance) in pursuit of improving the QOL of citizens in contemporary cities and Smart Cities.

Proposition of Tomor et al (2019)

Tomor et al (2019) define Smart Governance as ICTs-based collaboration between citizens and local government(s) for SDE of urban areas. The objective is to adopt principles of sustainability to address urban issues. Citizen engagement (or citizen participation) in urban development advances a democratic or more legitimate decision-making process and serves as an intelligence-gathering tool. Smart Governance is a sociotechnical theme, therefore.

Tomor et al (2019) reviewed a total of 114 studies and identified the following as building blocks and components of Smart Governance: (1) “*Governmental organization*”, (2) “*Citizen participation*”, and (3) “*Use of technology*”.

Governmental Organization

This entails a whole range of considerations such as attitudes, decision-making, knowledge management, motivation, organizational culture, process coordination, roles and responsibilities, strategies as well as provision of financial, regulative, technological means and HR, and vision. Organizational characteristics such as commitment, responsiveness, and operational management are critical for Smart Governance. Commitment refers to what extent local government is motivated to engage in ICT-based collaboration with citizens for SDE. Responsiveness refers to what extent local government is a receptive partner to citizens. Operational management refers to what extent local government is equipped for collaborative government practices. Operational management requires an integrated approach to infrastructural, technological, social, and political systems.

Citizen Participation

Citizens can be consulted for useful and/or helpful suggestions to make better-informed policy decisions.

Use of Technology

DT can be distinguished as receive-only types, one-way communication types, and two-way communication types. Receive-only types are sensing, mapping, and monitoring tools in large part. One-way communication types are Web 1.0 tools or online platforms such as web portals and municipality websites; these can be used to gauge the level of public agreement on local government proposals. Two-way communication types are Web 2.0 tools or online platforms such as discussion forums, wikis, blogs, SMD, and electronic town hall meetings wherein participants can have productive interactions. Web 2.0 tools advance citizen-created content with diversity of opinion, free flow of information, freedom of expression, and socio-political debate while creating an environment conducive to crowdsourcing initiatives.

Tomor et al (2019) identified “*sustainable urban development*” as the “*aspired outcome*” of Smart Governance integrating social, economic, and environmental values. Academics and practitioners see in Smart Governance the potential to create more equitable, healthier, greener, economically, and culturally thriving communities. However, empirical evidence of ICT-facilitated government-citizen interactions leading to sustainability outcomes is lacking. Despite proliferation of collaborative tools, concerned literature reveals prevalence of the one-way information supply in government-citizen interactions because local governments do not encourage deliberation or broad-based public-civil interactions. In fact, both are lacking in willingness to genuinely engage in Smart Governance for urban sustainability.

Tomor et al (2019) identified “*Policy domain*”, “*Trust*”, “*Political and institutional environment*”, “*Internet reach and use*”, and “*Socio-spatial characteristics*” as the contextual factors that will shape and/or influence Smart Governance in practice.

Policy Domain

The socio-political intensity, salience, sensitivity, or urgency of topics may influence the level of commitment of both the local government and citizens to Smart Governance. Topics such as ‘environmental protection’, ‘climate change’, and ‘cultural heritage’ have heightened Smart City policy agendas. Simplicity can also facilitate ICT-based collaboration; complicated issues or tasks that demand expertise can affect citizen engagement and development of an informed opinion about them or discourage continued involvement with them.

Trust

It is reflected in the willingness of citizens to embrace, comply with, and support government policies and innovative programs. Citizens also have expectations from the local government, which in turn are shaped by how it is handling existing policies.

Political and Institutional Environment

Democracy can stimulate ICT-based citizen engagement and top-down digitalization of citizen participation in contrast to slavery, colonial practices, military repression, and authoritative systems.

Internet Reach and Use

Technologically advanced countries with broad internet coverage showcase high level of online participation. But limited internet coverage hinders civic empowerment, public-civil collaboration, and sustainability in developing countries and/or disadvantaged areas in developed regions. Lack of access to ICTs hinders collaborative urban planning as well.

Socio-Spatial Characteristics

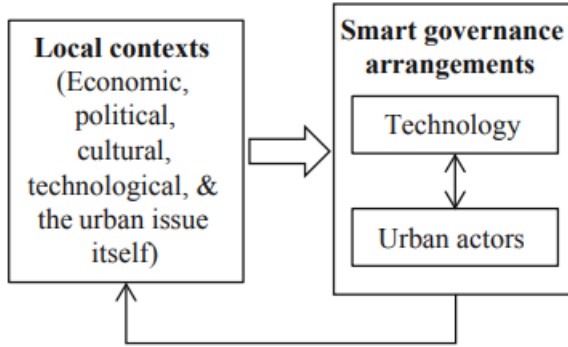
Geography of a city can affect E-administration and E-services. Some locations might be vulnerable to natural disasters such as flooding and earthquakes; this situation calls for joint public-civil actions with use of technology. City size can also affect E-administration and E-services. Large cities are not necessarily more innovative than smaller cities, but large cities can be better equipped to develop public services and other solutions with citizen engagement. Interestingly, citizen participation is more likely in smaller cities or rural communities irrespective of ICT shortcomings. Neirotti et al. (2014) contend that the Smart City initiatives are not correlated with population size but population density. Communal integration can be important for mobilizing collaborative activities in the public domain, and social cohesion is a plus for ICT-based citizen engagement.

Proposition of Jiang et al (2019)

Jiang et al (2019) underscore the importance of understanding urban contextual factors that can affect or shape Smart Governance projects in practice. Jiang et al (2019) reviewed a total of 34 studies to study Smart Governance projects across China and came up with following groupings: (1) Constructing pilot areas in cities such as Chengdu, Guangzhou, and Tianjin; (2) Improving government performance in cities such as Qiqihar and Shenyang; (3) Building trust in the government in cities such as Beijing and Shanghai; and (4) Encouraging

innovation in cities such as Hangzhou and Shenzhen. These differences are tied down to local contexts of each.

Figure 7: “A contextual approach towards Smart Governance” from Jiang et al (2019)



The “*The urban issue itself*” such as rapid urbanization and environmental pollution motivated launch of a pilot Smart Eco-City initiative in Chengdu, Guangzhou, and Tianjin wherein the local government occupies central stage in regional politics and implementation of technology.

The “*Political-cultural conservatism*” is apparent in Smart Governance projects of Qiqihar and Shenyang wherein the local government is resistive to opening government processes to outsiders and technologies are applied for integration of internal organizations and sectors.

The “*National political intentions*” are apparent in Smart community projects of Beijing and Shanghai wherein the central government encourage use of both open-ended and closed-ended technological platforms to build trust and improve connectivity between urban actors on the one hand and enhance the central government’s political authority and dominance on the other hand.

The “*Innovation economy and technology*” is apparent in Smart Governance projects of Hangzhou and Shenzhen courtesy of the two-way communication types between urban actors on open-ended technological platforms that foster a culture of innovation and technological basis to human-centric development through communication and information sharing.

While local context(s) can affect or shape Smart Governance arrangements as illustrated in Figure 7, resulting interaction between “*Technology*” and “*Urban Actors*” can either reinforce or mitigate effects of local context(s) on Smart Governance in the aftermath. This dynamic is apparent in following examples: (1) The “*Tianjin Smart Eco-city Project*” is instructive for mitigating effects of “*The urban issue itself*” with restoration of degraded lands, housing situation, and employment situation; (2) The “*Shenyang Smart Social Governance Project*” is instructive for reinforcing “*Political-cultural conservatism*” of the Shenyang local government with a localized ICT-facilitated Social governance system in place; (3)

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The “*Beijing Changyang Smart Community Project*” is instructive for reinforcing “*National political intentions*” of the central government with promotion of technological platforms to build trust and improve connectivity between urban actors; and (4) The “*Hangzhou Shangcheng Smart Community Project*” is instructive for reinforcing “*Innovation economy and technology*” with ICT-facilitated collaboration networks to build innovation capacity and technological strength.

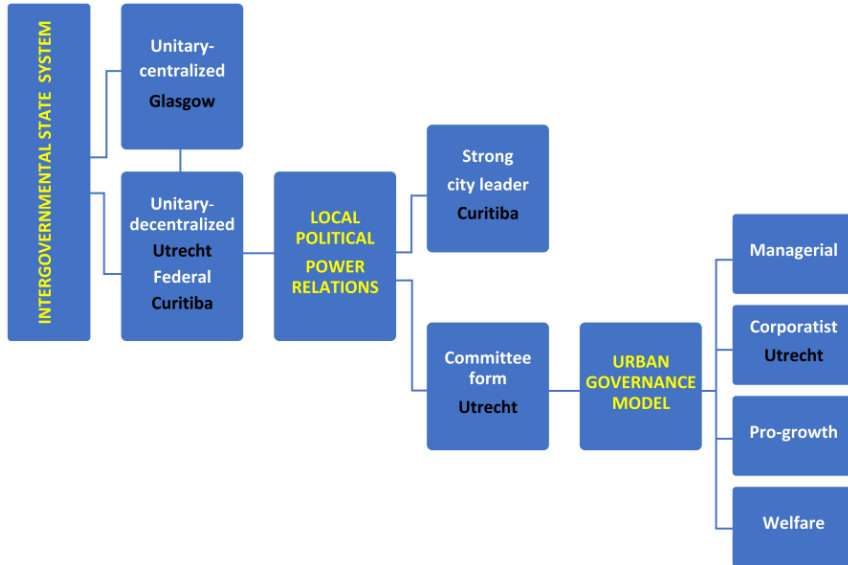
In conclusion, knowledge of the local context is important to come up with a tailored Smart Governance arrangement. Ruhlandt (2018) had also cautioned against neglect of urban contextual factors while planning Smart Governance and emphasized focus on local conditions including topography to do the needful.

Proposition of Tomor et al (2021)

Tomor et al (2021) noted that there is much emphasis on “*community-based*” and “*citizen-centric*” aspects of Smart Governance in theory, which recognize citizens as a valuable driver of ‘urban transformation’ subject to participation in addressing urban issues. This debate has stirred many city governments (or local governments) to launch technology-facilitated collaboration projects.

Tomor et al (2021) identified the following components of Smart Governance: (1) “*Societal goals*”; (2) “*Collaboration*”; and (3) “*Technologies*”. The “*Societal goals*” are defined in pursuit of a better future by addressing urban challenges and creating PV. The “*Collaboration*” entails engagement with potential stakeholders whose perspectives and resources are essential to define and implement collective goals (or “*Societal goals*”); these potential stakeholders can be business entities, citizens, knowledge institutes, and other societal organizations or communities. The “*Technologies*” are adopted to enable collaboration between all potential stakeholders on the matters of public interest; these tools include community platforms, digital maps, discussion forums, geo-referenced 3D visualizations, SMD, smartphones, and websites. The “*Technologies*” are also used to improve urban infrastructure and urban management systems such as garbage pick-up services, safety surveillance, sensor-based street lighting system, and regulation of traffic flows.

Figure 8: Institutional context of Smart Governance in 3 British cities from Tomor et al (2021)



Tomor et al (2021) further underscore the importance of understanding institutional context(s) that can affect or shape Smart Governance. The institutional approach can be formal (administrative traditions; constitutions; laws; political structures; regulations) and informal (conventions; customs; habits; norms, values) to guide policymaking and governance processes, and is valuable for analyzing, explaining, or predicting urban politics and city development. Tomor et al (2021) considered following cities: (1) Curitiba in Brazil; (2) Glasgow in UK; and (3) Utrecht in the Netherlands, as respective case studies to test the assumption that the institutional context can be the source of variation in Smart Governance from city to city, and findings are in the affirmative as illustrated in Figure 8.

The “*intergovernmental state system*” (formal) defines government levels and processes of interaction between them within the overarching political system. These intergovernmental relations are categorized as following: 1) “*Unitary-centralized*”; 2) “*Unitary-decentralized*”; and 3) “*Federal system*”. These categorizations reflect the degree of (functional and financial) autonomy of local government(s) in relation to the control and support of the national government and by extension determine the extent to which local government(s) can shape their Smart Governance configuration. The “*Unitary-centralized*” system is a bureaucratic setup in large part and offers low (functional and financial) autonomy to local government(s). The “*Unitary-decentralized*” system is relatively less bureaucratic and offers a level of (functional and financial) autonomy to local government(s) that is sufficient to allow them to construct their own policies and services. The “*Federal system*” accords complete (functional and financial)

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autonomy to local government(s), putting them in charge of managing local affairs and raising revenue: local government(s) can engage with a range of potential stakeholders to identify local issues and to implement policies but receive weak top-down support for public provisions which makes them dependent on society to realize urban progress.

The “*local political power relations*” (formal) reflect power dynamics between the city council, the municipal administration, and the mayor (or city leader) in the local government system. These are identified as following: (1) “*The strong mayor form*”; (2) “*The committee-leader form*”; (3) “*The collective form*”; and (4) “*The council-manager form*”.

In the case of “*The strong mayor form*”, the elected mayor assumes control of the city council and is legally and practically in charge of all executive functions. In the case of “*The committee-leader form*”, the elected mayor assumes leadership of the municipality but with limited executive powers because said powers are shared between the leader and collegiate bodies. In the case of “*The collective form*”, a single collegiate body assumes the role of an executive committee that is responsible for all executive functions. In the case of “*The council-manager form*”, the city council has authority over policy but delegates responsibility of all executive functions to the appointed professional administrative (or the city manager).

The “*urban governance model*” (informal) is guided by political objectives and values that lead to differences in aspirations, instruments, and stakeholders. Several urban governance models are identified such as “*Managerial*”, “*Corporatist*”, “*Pro-growth*”, and “*Welfare*”.

In “*Managerial*” model, government officials manage municipal needs and interests with efficient urban planning while citizens are service users. Market forces can be intertwined on the other hand.

In “*Corporatist*” model, importance is given to broader interest representation and consensus-seeking reflecting a localized participatory democracy. This model resembles a socio-democratic welfare system that promotes equality and solidarity by controlling market forces wherein distribution of collective goods is considered through bargaining processes between relevant societal interests and concerted public-private interactions.

In “*Pro-growth*” model, importance is given to concerted public-private interactions between the city council and businesses to boost local economy. This model draws on image-building of the city with urban planning and infrastructural development as instruments to attract investments. This model does not favor broader interest representation as this would politicize growth strategies.

In “*Welfare*” model, the state provides capital to a city through its welfare system. In this case, key stakeholders are both national and local government officials and bureaucrats. This model is the best fit for formerly prosperous industrial cities that failed to regenerate their economy.

Curitiba in Brazil falls under “*The federal system*” intergovernmental state structure, having full (functional and financial) autonomy consequently. The local political power relations structure of Curitiba conforms to *the Strong mayor form*. The urban governance model adopted has Managerial (and market-driven) orientation. The role of local administration is essential in shaping urban governance of this city as it sees fit.

Glasgow in UK falls under “*The unitary-centralized system*” intergovernmental state structure, having low (functional and financial) autonomy consequently. The local political power relations structure of Glasgow conforms to “*The Committee-leader form*”. The urban governance model adopted has Pro-growth orientation. The role of national administration is essential in shaping urban governance of this city as it sees fit.

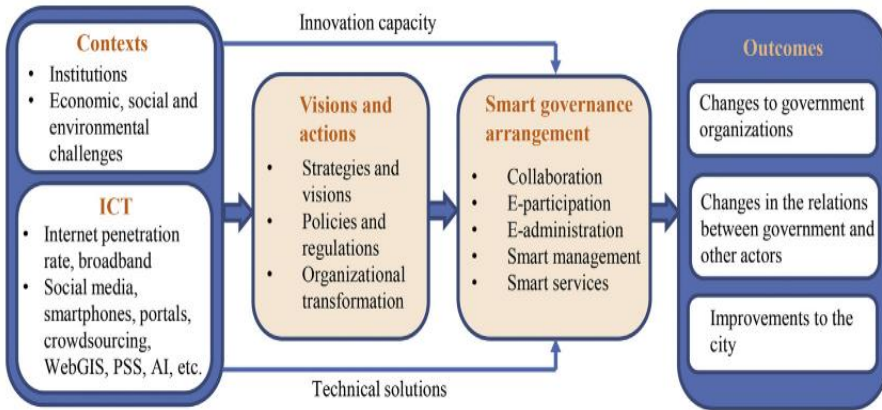
Utrecht in the Netherlands falls under “*The unitary-decentralized system*” intergovernmental state structure, having limited (functional and financial) autonomy consequently. The local political power relations structure of Utrecht conforms to “*The collective form*” (or “*The committee form*”). The “urban governance model” adopted has Corporatist (and increasingly market-driven) orientation. The local government is limited in its capacity to shape urban governance of this city as it sees fit because the consensus-based value system in place prevents it from predominating the formulation of urban strategies.

Tomor et al (2021) cautioned that a definitive blueprint of Smart Governance strategy does not exist and pursuit of the “best model” would only reinforce the distance between the ‘aspired’ and ‘realized’ outcomes of Smart Governance. Local government(s) should try to figure out a Smart Governance strategy in view of location-specific conditions and needs; it will be helpful to figure out and capitalize on advantageous contextual circumstances and circumvent obstacles with citizen engagement to do the needful.

Proposition of Lin (2018)

Lin (2018) reflected on similarities and differences between Smart Governance practices in Western countries and China; Lin (2018) noted that Western countries value E-governance and E-democracy while China value Smart management and service. Lin (2018) admits that DT are facilitating e-participation and collaboration, and these developments can motivate organizational transformation and redefine relationships between stakeholders.

Figure 9: Contextual framework of Smart Governance from Lin (2018)



Lin (2018) presented a framework to understand Smart Governance in different contexts such as institutional, social, and technological; see Figure 9. This framework is based on the framework of Bolívar and Meijer (2016) but suggests that the contextual factors can provide innovation capacity to the Smart Governance arrangement while ICTs can provide technical solutions to the Smart Governance arrangement.

The Synthesis of the Propositions For Smart Governance

Following Smart governance propositions are elicited from the literature body and documented in Table 3: (1) “*Strategies for implementing Smart governance*” (Bolívar and Meijer, 2016); (2) “*Components of Smart governance*” (Ruhlandt, 2018; Tomor et al., 2019; Tomor et al., 2021); (3) “*Dimensions of Smart governance*” (Bolívar and Meijer, 2016; Sarker and Wu, 2018); (4) “*Aspired outcomes of Smart governance*” (Bolívar and Meijer, 2016; Ruhlandt, 2018); (5) “*Contextual factors*” influencing Smart governance in practice (Ruhlandt, 2018; Jiang et al., 2019); and (6) “*Institutional setting*” influencing Smart governance in practice (Tomor et al., 2021). These propositions are theoretically and conceptually put together with associated indicators and pointers in Table 3.

Table 3
Meta-synthesis of the Smart Governance propositions and indicators

Proposit ions	Theoretic ally associated indicators	Catego rization	Catego rization descri ption	Affiliate d indicato rs	Charac teristic s	Measuremen ts*

Strategies for implementing Smart Governance [1a]	Integrated vision**** [1a]	Ideas [1a]	⊗	Data and evidence-based policymaking**** [4]	Pragmatic**	⊗	Aggregated-based measures [2]
	Legislation [1a]	Actions [1a]	⊗		Dynamic**	⊗	
	Policies [1a]	Actions [1a]	⊗			⊗	
	Organizational transformation [1a]	Actions [1a]	⊗			⊗	
	ICTs**** * [1a]	Actions*	⊗			Digital**	
	Collaborative governance [1a]	Actions*	⊗	Collaborative, open and citizen-centric forms of governance**** [4]	Collaborative* *; Participatory**	⊗	
Components of Smart Governance [2][5][7]	Stakeholders [2a]	⊗	⊗	Exchange arrangements [2a]	Collaborative* *; Networked**	Component-based measures [2]	
	Structures & Organizations***** [2a]	⊗	⊗	Processes [2a]; Stakeholders [2a]	Collaborative* *; Networked**		
	Processes [2a]	⊗	⊗	Connected organizational processes***** [1b]; Stakeholders [2a]	Dynamic**; Networked**		
	Roles & Responsibilities**** [2a]	⊗	⊗	Stakeholders [2a]; Technologies [2a]	Pragmatic**		
	Technology & Data [2a]	⊗	⊗	ICTs**** ** [1a]; Collabor	Collaborative* *;		

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				ation [2a]; Decision-making [2a]; Big Data *** ** [3]; Use of technology* [5]; Policies [5]; Technologies* [7a]	Digital **; Innovative**; Networked**		
Legislation & Policies [2a]	⊗	⊗		Use of technology***** ** [5]	Pragmatic**		
Exchange arrangements [2a]	⊗	⊗		Collaboration [7a]	Collaborative*		
Governmental organization**** [5]				Roles & Responsibilities [2a][5]; Decision-making [5]; ICTs [5]; Citizen Participation [5]; Collaboration [5][7a]	Collaborative* *; Digital **; Networked**; Participatory **		
Collaboration [7a]	⊗	⊗		Connected organizational processes***** [1b]; Exchange arrangements [2]; Networking/Cross	Collaborative* *; Digital **; Networked**; Participatory **		

				-sector collaboration [3]; Citizen participation [5]; Collaboration, citizen participation, and data- based evidence *** [4]			
	Societal goals [7a]	⊗	⊗	⊗	Pragmatic**		
Dimensions of Smart Governance [1c][3]	Defining elements [1c]	⊗	⊗	The use of ICTs [1d]; External Collaboration and Participation [1d]; Internal Coordination [1d]; Decision-making process* ***** [1d]; E-administration; Outcomes [1d]	⊗	⊗	
	Aspired outcomes [1c]	First-order [1c]; Second-order [1c]; Third-order [1c]	⊗	Efficient government [1e]; Readiness for disaster management [1e]; Citizen-centric services	⊗	⊗	

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				[1e]; Branding [1e]; Economic growth [1e]; Social inclusion [1e]; Ecological performance [1e]; Highly educated citizens [1e]		
Implementation strategies [1a][1c]	Ideas [1a]; Actions [1a]	⊗	⊗	Integrated vision [1a]; Legislation [1a]; Policies [1a]; Organizational transformation [1a]; ICTs [1a]; Collaborative governance [1a]	⊗	⊗
Strategic dynamics [3]	⊗	⊗	⊗	Flexible [3]; Pragmatic [3]; Dynamic [3]; Networked [3];	⊗	⊗
Inter-institutional collaboration [3]	⊗	⊗	⊗	Intelligent [3]; Digital [3]; Collaborative	⊗	⊗
Empowered citizens [3]	⊗	⊗	⊗		⊗	⊗
Networking/Cross-	⊗	⊗	⊗		⊗	⊗

	sector collaboration [3]				[3]; Participatory [3]; Innovative [3]; Agile [3]	
Aspired outcomes of Smart Governance [1c][2]	Efficient government [1e]	First-order [1c]	Changes to government organization [1c]	Procedural changes [2b]	Pragmatic**	⊗
	Readiness for disaster management [1e]					⊗
	Citizen-centric services [1e][4]	Second-order [1c]	Changes in position of government vis-à-vis other urban actors [1c]; Empowered citizens [3]		Participatory**	⊗
	Interactions with citizens [1e][4]					⊗
	Branding [1e]					⊗
	Economic growth [1e][4]	Third-order [1c]	Improvements to the city [1c]	Substantive outputs [2b]	Pragmatic**	⊗
	Social inclusion [1e]					⊗
	Ecological performance [1e]					⊗
	Highly educated citizens [1e]					⊗
	Improving the QOL in cities*** [4]	⊗	⊗			⊗

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	Sustainable Urban Development***** ** [5]	⊗	⊗			⊗
Contextual factors influencing Smart Governance in practice ***** ** [2][6][8]	Degree of autonomy [2]	⊗	National political intentions [6]	Unitary-centralized [7a]; Unitary-decentralized [7a]; Federal [7a]	⊗	⊗
	Local conditions [2]	⊗	The urban issue itself [6]; Political-cultural conservatism [6]; Innovation economy and technology [6]	Local political power relations [7a]	⊗	⊗
Institutional setting influencing Smart Governance in practice ***** ** [7b]	Intergovernmental state system [7b]	Unitary-centralized [7b]; Unitary-decentralized [7b]; Federal [7b]	Formal [7c]	⊗	⊗	⊗
	Local political power relations [7b]	The strong mayor form [7d];		Urban governance models [7b]	⊗	⊗

		The committee-leader form [7d]; The collective form [7d]; The council-manager form [7d]				
	Urban governance models [7b]	Managerial [7b]; Corporatist [7b]; Pro-growth [7b]; Welfare [7b]	Informal [7c]	⊗	⊗	⊗

Pointers

[1a] See section 2.1, and (Bolívar & Meijer, 2016, pp. 10 – 11).

[1b] See Figure 1 in section 2.1.

[1c] See section 2.1, and (Bolívar & Meijer, 2016, p. 14)

[1d] See section 2.1, and (Bolívar & Meijer, 2016, pp. 8 – 9)

[1e] See section 2.1, and (Bolívar & Meijer, 2016, pp. 9 – 10)

[2a] See Figure 2 in section 2.2, and sections (5.1.1.2 – 5.1.1.7) in (Ruhlandt, 2018).

[2b] See Figure 2 in section 2.2. Procedural changes are identified as “*efficiency*”, “*innovation*”, “*transparency*”, and “*citizen-centricity*” (Ruhlandt, 2018); these pointers collectively indicate how the output is generated. The “*Procedural changes*” indicator is an affiliate of the “*aspired outcomes of Smart Governance*” dimension advanced in (Bolívar & Meijer, 2016); see (Ruhlandt, 2018, pp. 9 – 10) for related information. The “*Procedural changes*” indicator is conceptually positioned in view of the indicators such as “*Efficient government*” [1e] and “*Citizen-centric services*” [1e]. Other indicators such as “*Readiness for disaster management*” [1e] and “*Interactions with citizens*” [1e] are also indicative of how the output is generated.

[3] See Figure 5 in section 2.3.

[4] See Figure 6 in section 2.4, and Table 1 (p. 154) in (Pereira et al., 2018).

[5] See section 2.5, and (Tomor et al., 2019, pp. 7 – 12).

[6] See Table 1 (p. 105) in Jiang et al (2019), and Table 1 (p. 6) in (Tomor et al., 2021).

[7a] See section 2.7, and (Tomor et al., 2021, pp. 2 – 3).

[7b] See Figure 8 in section 2.7.

[7c] See section 2.7.

[7d] See section 2.7.

[8] See Figure 9 in section 2.8.

* *Ruhlandt (2018) also hinted mixed (i.e., combination of component-based and aggregate-based) measurements.*

***These are conceptual attributions.*

****See Figure 6 in section 2.4. These indicators are not clearly identified as components but sub-themes in which ICTs play a central role towards setting an 'integrated vision', facilitate collaboration, and by extension help inform decision-making and/or policymaking matters (Pereira et al., 2018).*

*****Governmental Organization has a role in formulating a strategy to achieve vision, shaping roles and responsibilities, and provision of technology and resources (Tomor et al., 2019, pp. 7 – 8).*

******Jiang et al (2019) identify Big Data, Monitoring Tools, Sensors, and SMD as notable examples of ICTs in use and sources of information.*

******Structural or organizational formations allow processes (Ruhlandt, 2018, section 5.1.1.2), which pertain to interaction and collaboration between stakeholders (Ruhlandt, 2018, section 5.1.1.3). Structures & Organizations also support provision of ICTs to improve existing structures (Ruhlandt, 2018, section 5.1.1.2). Connected organizational processes pertain to collaboration, internal coordination, decision-making, and E-administration (Bolívar & Meijer, 2016, Figure 1, p. 15). Governmental Organization involves process coordination (Tomor et al., 2019, pp. 7 – 8).*

******See (Tomor et al., 2019, p. 10).*

******Sustainable Urban Development is identified as the aspired substantive outcome of Smart Governance; see (Tomor et al., 2019, p. 12).*

******These are interrelated themes and carefully mapped with information provided by Jiang et al (2019) and Tomor et al (2021) respectively. Contextual factors such as "the urban issue itself", "political-cultural conservatism", and "innovation economy and technology" are indicative of local intentions in Chinese cities Tianjin, Shenyang, and Hangzhou respectively (Jiang et al., 2019, Table 1, p. 105). Contextual factor such as "national political intentions" is indicative of the political mindset in Chinese capital Beijing (Jiang et al., 2019, Table 1, p. 105).*

Visual associations between propositions and indicators are shaded in grey whereas theoretical associations between propositions and indicators are unshaded in Table 3. The "Characteristics of Smart governance system" are mentioned in the 'Characteristics' column and theoretically attributed to the four "Dimensions of Smart governance" referenced as [3] in line with illustration in Figure 5, but

conceptually attributed to other indicators and shaded in light blue in Table 3. These propositions and indicators are put together into a coherent whole in Figure 10.

Figure 10: The Smart Governance Implementation Framework

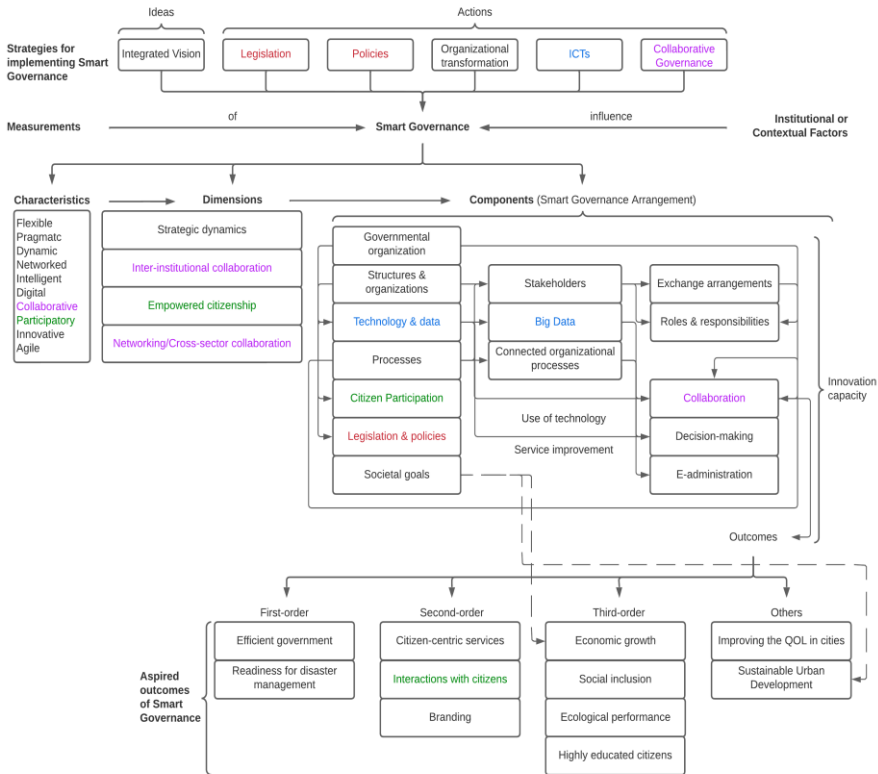


Figure 10 was prepared using Lucidchart application and provides a rich view of Smart Governance. This model can serve as a framework for understanding and applying Smart Governance in a broader context.

According to Pereira et al (2018), E-governance involves application of technology by the government to transform itself, its interactions with customers, and relationships with other stakeholders, creating impact on the society. E-governance is the key to “organizational transformation” in other words – one of the measures needed to realize Smart Governance. Other measures such as appropriate legislation, policies, ICTs, and Collaborative governance should be in place under an integrated vision to realize Smart Governance. Sarker and Wu (2018) postulate that E-governance can help combat corruption and improve relationship between the government and citizens/nationals. Towards this end, Sarker and Wu (2018) suggest the use of Big Data technology and analytics as a

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cost-effective method to reduce dependence on a corrupt bureaucracy to manage and enhance productivity of government departments in developing countries.

Speaking of ICTs, Jiang et al (2019) identify Big Data, Monitoring tools, Sensors, and SMD as notable examples and sources of information. Sensors and SMD produce Big Data in fact (Pereira et al., 2018). Big Data provides the foundation of integration between proposed characteristics, dimensions, and components of Smart Governance in view of Figure 5. Technology & Data is highlighted as the key component of Smart Governance, therefore.

Tomor et al (2021) noted that “*Societal goals*” are aimed to create a better future in a variety of tangible and intangible ways by tackling urban challenges. Societal goals can be aimed at ‘economic development’, or ‘environmental development’, or ‘social development’; it is complex to achieve urban sustainability with balancing priorities between economic return, environmental preservation, and social equity. Tomor et al (2021) identified “*Societal goals*” as a component of Smart Governance but Figure 10 shows that “*Societal goals*” can be set to achieve the “*aspired outcomes*” of Smart Governance.

Bolívar and Meijer (2016) recognized “*the use of ICTs*” as one of the defining elements of Smart Governance with emphasis on E-governance and E-democracy. Bolívar and Meijer (2016) also identified Collaborative governance as one of the implementation strategies for realizing Smart Governance. Bolívar and Meijer (2016) defined Smart Governance in following terms:

“Smart governance is about crafting new forms of human collaboration through the use of ICTs to obtain better outcomes and more open governance processes.”

Pereira et al (2018) suggest that Smart Governance represents a collaborative, citizen-centric and open form of governance, which strives for EBP with application of technology for processing, integration, and exploitation of the ever-growing amount of data (or Big Data) that can be extracted from other stakeholders including businesses and ICTs infrastructure encompassing SMD platforms and monitoring systems. But Pereira et al (2018) insist on creating a “consensus framework for collaboration” to define decision-making rights of all stakeholders at different stages of the policymaking cycle to do the needful.

The open form of governance (or “*Open governance*”) stipulates use of Open Data to foster collaborative form(s) of governance wherein accessible information increases transparency of (and trust in) government agencies (Pereira et al (2018). This inference is in line with the “*Transparent Governance*” pointer of Giffinger et al (2007).

Conclusion

Smart Governance can be realized through a well-planned combination of the tenets of Collaborative governance, E-governance, and Open Governance with appropriate legislation, policies, and the use of ICTs under an integrated vision tailored to place-specific conditions and needs. This approach is recommended for developing and managing increasingly sophisticated human settlements such as Smart Cities with greater emphasis on improving the QOL of citizens and sustainable urban development. Smart Governance can also be applied on a broader level using Big Data technologies and analytics to reduce corruption and dependency on bureaucracy to manage and enhance productivity of government departments in developing countries. Smart Governance has both place-specific and national applications, therefore.

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