SMART GOVERNANCE CHALLENGES IN INDONESIAN LOCAL GOVERNMENT

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This research examines the critical role of digital government evolution in enhancing the performance of local governments through smart governance concepts. Focusing on Indonesia's transformative journey, the research highlights the government's adoption of the Electronic-based Government System (SPBE) to tackle inefficiencies, bureaucratic hurdles, and corruption. Jambi City, actively participating in the 100 Smart City Movement, is investigated as a specific case study on smart governance dimension. Employing qualitative methods, the research aims to uncover insights into the challenges of digital transformation at the local level. Despite facing regulatory barriers and resource constraints, the study identifies opportunities for success, particularly through stakeholder collaboration and public-private partnerships. This research carries substantial implications for policymakers, practitioners, and academics interested in the intersection of technology and government in developing nations.

Keywords: smart governance, Smart cities, digital transformation, local government, challenges

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1 Introduction

The Indonesian government has fully embraced ICT integration through the Electronic-Based Government System (SPBE), commonly known as e-government. SPBE serves as a key driver of digital transformation across all government levels, enhancing administrative efficiency, transparency, and public service delivery (BP2D Jawa Barat, 2022). By leveraging electronic platforms, the government aims to streamline processes, allocate resources effectively, and promote citizen engagement. SPBE marks a significant step towards digitally advanced governance, meeting public expectations for modern and efficient administration in Indonesia. Mergel et al., (2019) assert that to meet public expectations for high-value, real-time digital services, governments adapt operational standards to enhance efficiency and effectiveness, focusing on transparency and citizen satisfaction. SPBE embodies Indonesia's commitment to digital transformation, integrating ICT to revolutionize governance (kominfo.go.id, 2020). Digital transformation in the public sector, as advocated by Bolívar (2017), emphasizes organizational change rather than just technical solutions. This shift involves developing online services and policymaking, departing from analog methods, influenced by internal and external factors (Gano, 2013). Despite challenges in strategy formulation and expertise management, success lies in forward-looking leadership, digital capabilities, and aligning digitalization with broader transformation goals (Carayannis & Hanna, 2016).

The rise of the Smart City concept in academic discourse and global policies reflects a broader shift toward digital transformation in the past two decades. Cities worldwide face the imperative to innovate and tackle emerging challenges, notably enhancing transportation connectivity, land-use diversity, and urban services to foster long-term economic growth. Governments encounter challenges in formulating effective strategies and managing expertise, closely tied to the global trend of smart cities. Hence, adopting a forward-looking perspective and seamlessly integrating digital capabilities are crucial for navigating both public service digital transformation and the broader evolution toward smart cities. For example, the development of efficient public transportation systems tailored to economic needs is pivotal for urban development. Many innovative approaches to urban service enhancement rely on technology, particularly information and communication technology (ICT), shaping the concept of "smart cities." Nam and Pardo (2011) distinguish smart cities from related terms such as digital or intelligent cities based

on technology, people, and community aspects. Technologically, a smart city heavily incorporates ICT into critical infrastructure components and services (Washburn et al., 2010). According to the framework proposed by Nam and Pardo (2011), the fundamental constituents of a smart city encompass technology, people (encompassing creativity, diversity, and education), and institutions (encompassing governance and policy). A smart city undeniably offers interoperable, Internet-based government services that facilitate widespread connectivity and streamline essential government functions for citizens and businesses, as highlighted by Al-Hader et al. (2009).

The research focuses on the transformation of smart governance within the local administration of Jambi City government. The research goals aim to present an empirical and practically implementable theoretical framework on the smart governance dimension in juxtaposition with the evolution of digital government. Aligned with these research goals, the central research question is: *What are the challanges of smart governance implementation in Jambi City?*

To address the research question, we outline our methodologies before presenting the actual case studies on West Java Province, Indonesia. The section dedicated to results and discussion highlights significant contributions to the existing scholarly body of work. Initially, we investigate the impact of smart governance transformation on local administration digitalization initiatives. Subsequently, we delve into the challenges on the implementation of smart governance transformation to gain a deeper understanding of how to enhance key areas of public service delivery in the future, as an integrated part of a long-term approach to digital transformation.

This research contributes to the understanding of the transformative potential of digital government evolution in enhancing local government performance through smart governance concepts, with a focus on Indonesia's challages on the journey. By examining the adoption of the Electronic-based Government System (SPBE) to address inefficiencies and bureaucratic challenges, the study sheds light on the potential of technology to mitigate corruption and improve governance effectiveness. Specifically, through a case study of Jambi City's participation in the 100 Smart City Movement, the research offers insights into the challenges implementation of smart governance transformation at the local level. Overall, this research contributes valuable knowledge to policymakers, practitioners, and

academics interested in leveraging technology to enhance governance in developing nations.

1.1 Smart Governance

The concept of smart cities emphasizes the importance of human capital rather than simply relying on the belief that ICT alone can automatically transform a city into a smart one (Shapiro, 2006, Holland, 2008). Smart governance work to eliminate barriers related to language, culture, education, and disabilities. Smart governance entails engaging various stakeholders in the decision-making process and the provision of public services. ICT-mediated governance, often referred to as e-governance, plays a pivotal role in making smart city initiatives accessible to citizens while ensuring transparency in decision-making and implementation. However, the essence of e-governance in a smart city should revolve around being citizen-centric and driven by citizen participation. The increasing role of technology in the operation of urban systems is causing governments to reconsider their position in a knowledge-based society. This role has been termed "Smart governance" (Giffinger et al., 2007). However, there is no unanimous consensus on the definition of this concept. While some prior studies have highlighted aspects such as political involvement and the efficiency of administrative processes (Giffinger et al., 2007), others have focused on the gathering of various types of data and information related to public management (Schuchmann & Seufert, 2015)

In the context of this research, the dimension of smart governance will be analyzed together with digital government transformation, known by Janowski (2015) as digital government evolution. The concept of the evolutionary stages of digital governance is intriguing when comprehensively viewed within the framework of implementing smart city initiatives in local government, which is the focus of this research.

1.2 Challenges to digital transformation

Digital transformation encounters various formidable challenges over the years, encompassing technological hurdles, organizational complexities, legal and ethical dilemmas, and financial constraints. According to Tangi et al. (2021), deficiencies in skills, organizational intricacies, and coordination issues emerge as primary obstacles.

Table 1: Identification of dimensions of smart governance in the literature

No	Component	Categories	Values
1	Defining elements of smart governance	Use of technology Organizational processes	Smart use of ICTs Smart collaboration and participation Smart internal coordination Smart decision-making Smart administration
		Outcomes	Smart outcomes
2	Aspired outcomes of smart governance	First-order outcomes: changes to the government organization	Efficient government Readiness for disaster management
		Second-order outcomes: changes in the position of government vis-a ` -vis other urban actors	Citizen-centric services Interaction with citizens Strong city brand
		Third-order outcomes: improvements to the city	Economic growth Social inclusion Ecological performance Highly educated citizens
3	Implementation strategies for smart governance	Ideas	Vision
		Actions	Legislation Policies Use of ICTs Collaboration

Source: Bolívar & Meijer (2016)

Moreover, Wirtz & Daiser (2015) highlight cognitive barriers rooted in individual perceptions, particularly hindering the implementation of open government data initiatives. Cultural barriers, such as risk aversion and bureaucratic norms, intricately intertwine with structural impediments, necessitating concerted efforts across governance, organizational, managerial, and technical domains. Savoldelli et al. (2014) suggest that solely addressing structural barriers may not substantially boost e-government adoption. Pittaway & Montazemi (2020) contend that the lack of expertise in managing both structural and cultural barriers impedes digital transformation. Additionally, Howes & Bishop (2018) emphasize the importance of articulating compelling arguments regarding the value of transformation and

acknowledging the inherent uncertainty, thereby avoiding rigid and unrealistic timelines.

Table 2: Challenges and Problems of Digital Government Reforms in Developing Countries

Category	Challenges or Problems
Infrastructure and technical aspect	Low ICT infrastructure, poor e-government quality, lacking privacy/security, and limited computer literacy hinder digital advancement.
Human resource and Institutional aspect	Unclear institutional approach, insufficient funding, leadership gaps, resistance to change, lack of policy guidelines, and shortage of skilled personnel.
Regulatory aspect	Lack of ability to create new legal and regulatory framework for e-government to protect privacy and restrict online crime.
Environmental aspect (historical and cultural)	Citizens' resistance to new technologies can stem from cultural and social factors, while lack of inclusivity may arise from geographical and demographic challenges.

Source: Own elaboration adapted from (Falco & Kleinhans, 2018; Gil-García & Pardo, 2005; Knox & Janenova, 2019; Ndou, 2004; Odat, 2012; Rakhmanov, 2009; Shaheen & Tassabehji, 2007; UNPA and ASPA, 2001)

2 Method

The empirical research employed qualitative methodologies, which included conducting in-depth interviews, detailed observations, and extensive data collection from government agencies at both central and local levels. The research was carried out in Jakarta and Jambi City (Jambi Province), Indonesia, spanning from April 2023 to September 2023. To identify key informants for the study, a combination of purposeful and snowball sampling techniques was employed, in line with Creswell (2013), snowball sampling involved identifying additional relevant informants by seeking referrals from each interviewee, as described by Brayda & Boyce (2014). The process commenced by dispatching official letters and reaching out to individuals holding roles as public managers or heads of specific units within the administration responsible for digital transformation, whether at the central or local level. Interviews were undertaken with key stakeholders, including the Mayor of Jambi, representatives from the Jambi City Communication and Informatics Service,

officials from the Ministry of State Apparatus Utilization and Bureaucratic Reform, delegates from the Ministry of Communication and Informatics, and members of the Jakarta Smart City Department. These individuals were then requested to suggest other informants contributing to the digital transformation agenda. All interviews were conducted by the researchers, recorded digitally, transcribed, and subjected to coding for consistency, following the methodologies outlined by Saldana (2014). The research then advanced into a coding phase, utilizing key concepts such as "smart city," "smart governance," and "digital government evolution" as foundational elements (Bolívar & Meijer, 2016; Janowski, 2015; Meijer et al., 2015). This coding strategy, a common initial step in qualitative research, facilitated data analysis. Through open coding, additional sub-codes were generated to capture specific nuances observed in the cases (Strauss & Corbin, 1998). Subsequently, individual coding of the interviews produced findings extensively deliberated upon in multiple data analysis sessions involving the entire research team. Ongoing discussions focused on interpreting the significance of additional codes, their relationship to existing literature, and their alignment with other empirical categories under scrutiny (Creswell & Creswell, 2018; Eisenhardt, 1989; Hancock et al., 2021; Yin, 2017)

3 Result

3.1 Indonesian Digital Transformation Policy Design

Governments at various levels in Indonesia are steering diverse paths toward digital transformation, influenced by their digital maturity stages. The national digital government policy, known as The Electronic Based Government System (SPBE), is outlined in Presidential Regulation Number 95 of 2018. Aligned with the Long-Term Development Plan (RPJP) and the Indonesian Bureaucratic Reform Grand Design (2010-2025), SPBE envisions an integrated electronic-based government system fostering a high-performance bureaucracy and enhanced public services (indonesia.go.id, 2022). To propel the digital transformation agenda, President Joko Widodo outlined five key steps during a limited cabinet meeting in August 2020: Expand access and enhance digital infrastructure; Develop a digital transformation roadmap for strategic sectors, spanning government, public services, social assistance, education, health, trade, industry, and broadcasting; Accelerate the integration of the National Data Centre; Prepare human resources with digital talent for effective digital transformation; Develop funding and financing schemes for

digital transformation regulations promptly. These strategic steps emphasize the commitment to advancing digital capabilities, fostering innovation, and ensuring a comprehensive and inclusive digital transformation across various sectors in Indonesia (indonesia.go.id, 2022). In Indonesia, as a unitary state, local governments at the provincial and city-district levels hold autonomous authority but are subordinate to the central government.

To address complex service delivery issues, major cities in Indonesia adopt e-government as a strategic solution. Regulatory support and government policies encourage local governments to leverage digital technologies for effective collaboration with citizens, businesses, civil society, and other government entities, facilitating digital transformation. The implementation of digital governance in different local practices reveals dilemmas, paradoxes, and tensions (Bertot & Jaeger, 2008; Dias & Gomes, 2021; Savoldelli et al., 2014). Despite the uneven progress in Indonesia's digital transformation, with cities like Jakarta, Bandung, Surabaya, and Medan facing challenges, the granting of broad autonomy to local governments has been a contributing factor. The challenges of the digital age are particularly evident in less-developed regions, where central government support, appropriate infrastructure, and human resources are crucial for accelerating digital transformation through SPBE. Digital transformation presents both opportunities and challenges for local governments, impacting public policies such as equal access to education, infrastructure, public transport, and health services. The SPBE framework enables collaboration with various sectors, including NGOs, to address public demands. The concept of digital government is anticipated to assist local governments in formulating new and innovative policies using ICTs (Anderson et al., 2015).

To gauge the progress of the Electronic-Based Government System (SPBE) in both central and local governments, the Ministry of Administrative and Bureaucratic Reform issued Ministerial Regulation No. 5 of 2018. This regulation outlines the monitoring and evaluation framework for electronic-based government systems, conducted annually to measure the maturity level of SPBE implementation in ministries, institutions, and local governments. The resulting SPBE Index serves as a key indicator in assessing the modernization of governance structures in

Indonesia[1]. Various Central and Regional Government Agencies have undertaken SPBE initiatives, enhancing the efficiency and effectiveness of governance. However, the outcomes and maturity levels of SPBE development vary significantly across these agencies. National challenges in SPBE development include:

1. Lack of Integrated National SPBE Governance: The primary challenge lies in the absence of a nationally integrated governance framework for SPBE.
2. Incomplete Implementation of SPBE in Administration and Public Services: SPBE has not been fully and optimally applied in the administration of governance and public services.
3. Suboptimal Reach of ICT Infrastructure: The reach of ICT infrastructure across all regions and layers of society is not yet optimal. ICT infrastructure, especially telecommunication networks, serves as the foundation for connectivity between SPBE implementers and users.
4. Limited Number of Civil Servants with ICT Technical Competence: There is a shortage of civil servants (ASN) with technical ICT competencies.

Table 3: Achievement of the SPBE Index Score in Multilevel Government in Indonesia

	Achievement of the average SPBE index score		Number of SPBE Evaluation Results Predicate	
Description	2019	2020	Above "Good"	Below "Good"
Implementation of the National SPBE	2.18	2.26	247 (40.96%)	356 (59.04%)
Application of SPBE Central Agencies	2.74	2.9	69 (75.82%)	22 (24.18%)
Implementation of Local Government SPBE	2.07	2.14	178 (34.77%)	334 (65.23%)

Source: setneg.go.id (2022)

The maturity level of Indonesia's national digital transformation faces challenges, notably in the collaboration and integration between Central and Regional Government Agencies. To address this, the Indonesian Government introduced the

[1] Interview results, Deputy for Policy Formulation and Coordination of SPBE Implementation, Ministry of State Apparatus Utilization and Bureaucratic Reform, 2023.

Electronic-based Government System Architecture (SPBE), an Enterprise Architecture tailored to Indonesian characteristics. Enacted through Presidential Regulation Number 132 of 2022, SPBE serves as a foundational framework, integrating business processes, data, SPBE services, applications, infrastructure, and security for streamlined government services[2]. Concurrently, Indonesia's digital transformation agenda progresses with the "Towards 100 Smart City Movement" program launched in 2017. Aligned with SPBE goals, this initiative leverages information technology in government administration for enhanced efficiency. The program guides 100 cities/districts in developing Smart City master plans, showcasing exemplary execution in their regions. A collaborative effort among government agencies, the Smart City concept utilizes information technology to optimize city/district management for the collective welfare.

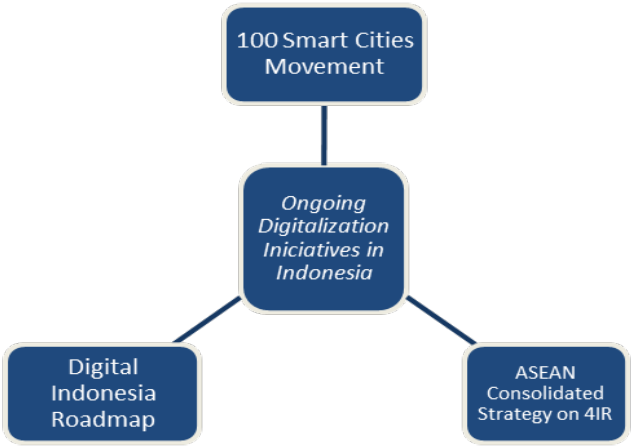

Figure 1: Digitalization Iniciatives in Indonesia
Source: YCP Solidiance, 2020, 2022

In its trajectory, SPBE has paved the way for numerous digital projects across various sectors, contributing to Indonesia's digital transformation agenda, notably through the establishment of smart cities nationwide. Within the 100 Smart Cities Movement framework, the government acts as a key catalyst for digital transformation, recognizing the imperative role of smart cities in delivering

[2] Interview results, Deputy for Policy Formulation and Coordination of SPBE Implementation, Ministry of State Apparatus Utilization and Bureaucratic Reform, 2023.

exceptional services to communities. The surge in the popularity of the smart city concept in local governments aligns with global discussions on the future of urban development. Urbanization in Indonesia has skyrocketed, with an estimated 68% of the population living in urban areas by 2025 and a projected 83% by 2045 (YCP Solidiance, 2020). Acknowledging smart cities as a viable solution to urbanization challenges, Indonesia's central and local governments, along with key ministries, launched the 100 Smart Cities Movement. This nationwide initiative aims to implement smart cities across Indonesia by 2045, addressing unique challenges each city faces during the implementation phase. While the central government has provided comprehensive plans, regulations, and strategic national projects, the dynamic urban landscape and diverse characteristics present significant obstacles for individual cities. To overcome these challenges, cities adopt a collaborative and interdisciplinary approach, recognizing cross-disciplinary collaboration as a crucial instrument for realizing the goals of the smart city initiative (Bolívar, 2017; Herdiyanti et al., 2019)

In contrast to other global cities, the progress of smart city concepts in many Indonesian cities is hindered by a lack of knowledge in identifying suitable action steps, resulting in a slower pace of development. Immediate support from the private sector is deemed crucial to expedite progress. The Indonesian government encourages collaboration with various entities, emphasizing an open approach to smart city development without limitations on collaboration types or involved companies. Significant technological gaps, such as IoT, Big Data, and AI/Machine Learning, present opportunities for both local and foreign companies with specialized expertise to contribute to smart city initiatives (YCP Solidiance, 2020). To practically implement SPBE in the context of digital transformation, especially in the Smart City framework, our research focuses on Jambi City in Jambi Province, Indonesia. As one of the early pioneers of smart cities in Indonesia since 2017, Jambi City, along with 25 other cities, aims to construct sustainable and competitive cities for the nation's future. The ultimate outcome of SPBE is envisioned as smart governance, guided by objectives such as digitizing public services, developing digital-capable public infrastructure, and facilitating increased business transactions, particularly through partnerships with technology companies and start-ups to enhance the growing digital ecosystem (YCP Solidiance, 2022).

3.2 Smart Governance Transformation in Jambi City

The Jambi City Government acknowledges the significance of incorporating digital technology and information systems into governance. This dedication and proactive stance are clearly articulated in Jambi City's Mission for the 2018-2023 period, emphasizing the foremost goal of fortifying the bureaucracy and improving community services through information technology. Commitment to digital transformation is underscored by the enactment of Regional Regulation Number 1 of 2019 on the Implementation of Smart City[3].

The development of Smart Governance in the city of Jambi is reflected in the Mayor of Jambi Regulation Number 89 of 2018 regarding the Jambi Smart City Masterplan. This master plan includes the Comprehensive Plan or Master Plan of Smart City Jambi for the years 2018 – 2028, outlining the vision, mission, and work program plans that serve as guidelines for the Jambi City Government, the community, and the business world in organizing and realizing Jambi as a Smart City over a 10-year period. Additionally, it serves as a direction and guide for the leaders of the Jambi City region in achieving the developmental performance of Jambi as a Smart City. Through the implementation of Smart Governance policies, it is anticipated that effective, efficient, communicative local government management will be established, continually improving bureaucratic performance through innovation and the integrated adoption of technology (jambikota.go.id, 2022).

The development plan for Smart Governance in Jambi is divided into three forms of planning: the Short-Term Plan for 2018, the Medium-Term Plan for 2018-2023, and the Long-Term Plan for 2018-2028. These plans aim to create a governance framework that is not only efficient and effective but also communicative, fostering continuous improvement in bureaucratic performance through the integration of innovative and technological advancements.

[3] Interview results, Mayor of Jambi, 2023.

Table 4: Priority Program Plan of the City Government of Jambi in the Development of Smart Governance

Short-Term Plan	Medium-Term Plan	Long-Term Plan
• Strengthening the Local Government Work Plan Formulation Application (RKPD) - (E-musrenbang) • Interoperability of e-planning (SIMREDA) • Optimizing the information provider portal for both citizens and stakeholders - Open data • Information Technology Competency Certification • Citizen problem reporting system through the application (siKesal) • Interoperability of e-government applications - Phase 1 • Management of information for the impoverished population • Management of information for Non-Governmental Organizations (ORMAS) and Political Parties	• Online social assistance fund management system (bansos) • Electronic drug abuse counseling • Government asset management • Employee official travel application • Application for the management of rooms and assets (venue management)	• Public services using IoT (Internet of Things) • Community participation in online, sustainable policymaking

Source: Own elaboration (2023)

The incorporation of digital technology and information systems is a strategic initiative aimed at improving the efficiency, transparency, and accessibility of government services. This involves leveraging technology to streamline administrative processes, enhance citizen engagement, and support data-driven decision-making. At the forefront of the Jambi City Government's efforts to

embrace digital technology is the development of the SIKOJA (Sistem Informasi Kota Jambi) application, officially launched in July 2019. SIKOJA serves as the central hub for an integrated information system, consolidating various e-government service facilities in Kota Jambi. The primary objective of the SIKOJA application is to simplify public access to information about Kota Jambi, facilitating the seamless delivery of services to the community (jambiupdate.co, 2019).

The SIKOJA application in Kota Jambi offers diverse services, including citizen complaints, food prices, live CCTV feeds, weather forecasts, licensing, health information, and exploring locations. As part of the Jambi City Government's digital transformation, the SIKOJA application integrates various services into a single platform. Each department (SKPD) is now required to coordinate with the Communication and Informatics Office (Diskominfo) for connectivity with SIKOJA, discontinuing independent information system development. Jambi City's notable digital progress earned recognition as one of the 25 pioneer Smart Cities in Indonesia for 2021. This achievement is attributed to the "Gerakan Menuju 100 Smart City" program, a collaborative effort involving key ministries and government offices. The program aims to guide regencies and cities in creating Smart City Masterplans, leveraging technology for improved public services and regional development (kominfo.go.id, 2017).

Table 5. presents a comprehensive list of application-based government services in Jambi City, showcasing the city's commitment to leveraging technology for improved public administration. These services span various sectors, from licensing and mail management to healthcare, emergency assistance, and urban planning. The digital transformation in Jambi City signifies a profound shift in traditional government mechanisms, aligning with broader trends in Indonesia. In this era, technology serves as the cornerstone of public administration, blurring the boundaries between citizens and the government. The city's initiative reflects a commitment to widespread digitization across public service sectors, underscoring the government's dedication to technologically transforming service provision. Jambi City's digital ambitions extend to crucial areas like transportation, urban planning, security, and administrative services. The overarching goal is to enhance the efficiency and quality of public services, fostering a more modern and

competitive city[4]. This multifaceted approach mirrors Jambi City's resolute determination to stride confidently into a digital and inclusive future, where technology becomes a catalyst for positive change and improved governance.

Table 5: List of application-based government services in Jambi City

No	Application	Information	Users' classification
1	Silancar	Jambi City One Stop Integrated Licensing Service	Public and private
2	Sipadek	Management of the mail system in the Jambi city government.	Government
3	Sipaten	Public services at district (kecamatan) and sub-district (kelurahan) levels.	Government and public
4	Sibapok, Siharko	Information on prices of basic necessities in Jambi city markets	Public
5	e-SPPT PBB	Payment of Land and Building Tax (PBB)	Public and private
6	Sipaduko	Information on population administration services.	Government and public
7	Simenap	Services provision at the Abdul Manap Regional Hospital, consist of information on bed availability, doctor schedules, online registration, and complaints.	Public
8	Si Komedo	Medical Consultation Services	Public
9	Ppdb Kota Jambi	School registration information based on zoning.	Public
10	iJambikota	Digital library.	Public
11	Satudata kota jambi	Management of sectoral statistical data for the Jambi City Government.	Government, public, and privat
12	Kliping digital Kota Jambi	Collection of news on th Jambi City Government in print, online and television media	Public
13	Sikesal	Jambi city community complaints online.	Public
14	112	Jambi City Emergency Assistance Services.	Public
15	Simerahkoja	Fire prevention and rescue in Jambi City.	Public
16	Sp4anlapor	Complaint application regarding government services.	Public
17	Info Data ASN	Government employee archives	Government
18	E Planning	Digital-based regional development planning.	Government, public, and privat
19	JCOC (Jambi City Operation Center)	Integrated control and monitoring center.	Government

Source: Own elaboration (2023)

[4] Interview results, Mayor of Jambi, 2023.

Various programs that have been established and implemented require strong synergy between the central and regional governments. In Jambi, in addition to support from the central government, it must be acknowledged that the commitment of the regional government plays a crucial role. In this context, the role of the mayor is crucial in allocating additional resources that are not always available in the State Budget (APBN). Sometimes, written statements are needed as a form of commitment from the regional government to provide everything needed. Regions also greatly rely on assistance from the central government to support the implementation of ongoing programs[5]. The digitization process in Jambi is systematically initiated through meticulous digitalization planning, which commences at the Regional Development Planning Agency (Bappeda). Serving as the epicenter for formulating strategies and programs related to digital transformation, Bappeda orchestrates specific missions for various stakeholders from related units, spanning sectors such as transportation, communication, and public services. Key players in this coordinated effort include the Communication and Informatics Department (Diskominfo) and the Transportation Office (Dishub), with the Joint Command Operation Center (JCOC) playing a pivotal role in overall coordination.

The SIPADEK application stands out as a practical tool for online document management in Jambi City. This application facilitates the efficient handling of correspondence documents, whether incoming or outgoing, and their management at various levels, including the city mayor. SIPADEK empowers seamless document processing, providing flexibility for users to engage with correspondence from any location and at any time. The designation of Jambi City as one of the pioneer smart cities has spurred competition among Local Government Agencies (OPD) to actively engage in digital transformation by developing various applications. However, the success of these efforts' hinges on the quantity and quality of available human resources within each institution. Jambi City Communications, and Information Department (Diskominfo), tasked with preparing IT professionals within the city government, employs strategic approaches such as recruiting contract personnel based on the city's needs and engaging them in training activities. The recruitment process is conducted professionally, involving higher education institutions and offering competitive compensation to attract high-quality talent.

[5] Interview results, Head of Jambi City Communications, and Information Department, 2023.

Efforts to enhance human resource capabilities extend to participation in diverse training programs. Diskominfo collaborates with entities like the Regional Human Resources Development Agency (BPSDM) and organizes international training programs such as the Digital Technical Scholarship (DTS) and the Government Talent Academy. These initiatives underscore the city's commitment to nurturing a skilled workforce capable of driving digital transformation effectively[6].

To address citizen concerns, Jambi City offers accessible complaint services such as Sikesal, E-Lapor, and the 112-telephone service. Sikesal, initiated in 2017, serves as a dedicated platform for citizens to lodge complaints, facilitating the identification of prevalent issues in the city and the allocation of budgets for necessary assistance. The 112 service provides emergency assistance, while E-Lapor caters to general complaints, which may not be exclusive to Jambi City. These services collectively reflect the city's dedication to open communication and citizen engagement in the digital era.

4 Discussion

Challenges On Smart Governance Implementation

The research provides a comprehensive overview of the journey towards Smart Governance in Jambi City, highlighting both the city's commitment to innovation and the challenges it faces. The discussion emphasizes the importance of leveraging technology for urban development and the mayor's leadership in driving this agenda forward. However, it also acknowledges the persistent challenges, such as educational disparities and resistance to technology adoption, which hinder progress. In analyzing the situation, it becomes clear that achieving Smart Governance requires addressing various obstacles, as noted by Tangi et al. (2021), including skills deficiencies, organizational complexities, and coordination issues. These challenges align with the broader context of the concepts, where the delay in updating and disseminating government data underscores the need for improved skills, streamlined processes, and better coordination among government agencies. It's essential to recognize that overcoming the challenges identified requires a holistic approach. Jambi City's efforts towards Smart Governance should not only focus on

[6] Interview results, Mayor of Jambi, 2023.

technological solutions but also address underlying issues related to skills development, organizational effectiveness, and inter-agency collaboration. By acknowledging and addressing these challenges, Jambi City can better position itself to achieve its goals of sustainable progress and effective governance.

Other challenges arise regarding the delay in document submission from other government entities, attributed to bureaucratic procedures, administrative bottlenecks, and coordination challenges, poses a significant obstacle to transparency and accountability initiatives, hindering the timely updating and accessibility of crucial information for the public. Addressing this challenge requires efforts to enhance data synergy and streamline information dissemination processes. Moreover, as emphasized by Wirtz & Daiser (2015), cognitive barriers rooted in individual perceptions hinder the implementation of open government data initiatives. These barriers, along with cultural norms like risk aversion and bureaucratic practices, intertwine with structural challenges, necessitating comprehensive efforts across governance, organizational, managerial, and technical domains to overcome them. Connecting these points, it becomes evident that addressing the delay in document submission is not merely a technical issue but also involves addressing cognitive and cultural barriers, aligning with the broader goal of fostering Smart Governance practices in Jambi City.

Persistent educational and skill disparities, along with resistance to technology adoption, underscore the need for a comprehensive examination of prevailing challenges. This analysis should encompass their impact on efficiency metrics, employee compliance levels, and any unforeseen consequences in the adoption process, aiming for a nuanced understanding of barriers to technology integration. Moreover, the ongoing pursuit of an on-demand innovation program aligns with adaptive governance principles, highlighting the importance of further research into community awareness, responsiveness, perceptions, participation factors, and the effectiveness of communication strategies. Investigating these aspects will yield valuable insights into societal dynamics and interactions shaping program success, facilitating a more informed and adaptive governance approach. Tangi et al. (2021) emphasizes deficiencies in skills, organizational intricacies, and coordination issues as primary obstacles, echoing findings on human resource and institutional aspects such as unclear institutional approaches, insufficient funding, leadership gaps, resistance to change, lack of policy guidelines, and shortages of skilled personnel

(Falco & Kleinhans, 2018; Gil-García & Pardo, 2005; Knox & Janenova, 2019; Ndou, 2004; Odat, 2012).

From the research we found challenges arising from regulations and legislation, influencing development projects, and potentially leading to conflicts, highlight the complexities of governance processes. A thorough exploration of these challenges is essential for suggesting targeted solutions, enhancing public policy effectiveness, and ensuring alignment with regulatory frameworks. This nuanced examination lays the groundwork for a more resilient and adaptable governance system, capable of navigating evolving regulatory landscapes and fostering sustainable development. Nonetheless, consensus on the implementation of smart governance remains elusive. While some research also emphasizes political involvement and administrative efficiency (Giffinger et al., 2007), others concentrate on gathering various types of data and information related to public management (Schuchmann & Seufert, 2015).

Smart governance assumes a crucial role in facilitating accessibility to smart city initiatives for citizens while upholding transparency in decision-making and execution. Yet, the essence of e-governance within a smart city should center on being citizen-centric and driven by citizen participation. The expanding influence of technology in urban systems prompts governments to reevaluate their position in a knowledge-based society (Giffinger et al., 2007). Smart governance underscores the need to understand community participation dynamics, considering socio-economic factors shaping involvement levels. Proposed strategies for fostering more equitable engagement can gauge the impact of community participation on socio-economic factors, ensuring governance initiatives inclusive of diverse communities' specific needs in the future.

While this research provides valuable insights into the role of digital government evolution in enhancing local government performance, it is not without limitations. Firstly, the study's focus on Indonesia's transformative journey on smart governance may limit the generalizability of findings to other contexts. Additionally, the qualitative approach employed in this research may offer rich insights but could also limit the breadth and depth of analysis compared to quantitative methods. Furthermore, the study acknowledges regulatory barriers and resource constraints as challenges but may not fully explore their nuanced impacts on smart cities initiatives. Finally, while the research identifies opportunities for success through stakeholder

collaboration and public-private partnerships, it may not fully address the potential risks and limitations associated with these approaches. Overall, these limitations highlight areas for further research and consideration in future studies on the intersection of technology and government in developing nations.

5 Conclusion

This research illuminates the ongoing evolution of smart governance in Jambi City, driven by the national Electronic-Based Government System (SPBE). This transformative initiative not only supports local governance but also aligns with the broader Smart Cities Movement, positioning Jambi City as a participant in this nationwide endeavor. SPBE, by harnessing Information and Communication Technologies (ICTs), elevates data processing efficiency and decision-making capabilities, embodying the principles of the Smart City concept, particularly in the provision of public services. This technology-driven approach, embodied by SPBE, contributes significantly to the development of intelligent and sustainable urban environments. The system integrates data and technology, providing valuable insights to address urban challenges and enhance residents' quality of life. By facilitating effective data collection across various city facets, SPBE enables targeted strategies for resource optimization and sustainability, aligning seamlessly with the Smart City framework and fostering comprehensive urban transformation. Jambi City exemplifies its commitment to this digital journey through initiatives like the SIKOJA Application and the City Operation Center (JCOC), showcasing technological advancements aimed at efficient governance and improved public services. While centralistic strategies continue to demonstrate effectiveness, persistent challenges, such as the digital divide and difficulties in data integration due to a lack of interoperability and single data integration, highlight the need for sustainable solutions. Jambi City's dedication to digital transformation is commendable; however, addressing unique socio-cultural landscapes is imperative. Challenges related to infrastructure and human resources underscore the complexity of this journey. The city emerges as a representative case, emphasizing the necessity for inclusive approaches and comprehensive strategies in diverse societies pursuing digital transformation. As Jambi City navigates through these challenges, its experiences serve as valuable lessons for other regions undertaking similar transformative endeavors.

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