Catalyzing digital transformation through Smart Cities initiatives in Indonesian local government

Rio Yusri MAULANA,
Department of Government, Universitas Jambi, Indonesia
rioyusrimaulana@unja.ac.id

Usman MARJAMAT,
Faculty of Law, Universitas Jambi, Indonesia.
usman.marjamat@unja.ac.id

Dimas SUBEKTI,
Department of Government, Universitas Jambi, Indonesia
dimassubekti05@unja.ac.id

Agung WICAKSONO,
School of International Relations and Political Science, Corvinus University, Budapest, Hungary
agung.wicaksono@stud.uni-corvinus.hu

Abstract

In the domain of public service delivery, our research provides crucial guidance towards enhancing collaboration and achieving digital transformation. This study, focusing on Indonesian local government, uncovers insights that can reshape the smart governance dimension in the era of smart cities initiatives. Qualitative methods were used, conducting in-depth interviews with public officials, advanced observations, and detailed data collection from government agencies, NGOs, and citizens of Jambi, Indonesia. We identify significant challenges such as leadership commitment, digital talent resources, silos, and data integration deficiencies, emphasizing the need for sincere collaboration and advancing data interoperability. Addressing leadership awareness and the digital talent gap is essential for successful implementation, alongside improving cyber management and data security. Building on these challenges, the research highlights potential development areas including collaboration enhancement, prioritization of interoperability, robust data center development focusing on cyber management and data security, and targeted digital talent cultivation. Through research collaborations, this reseach aims to provide actionable insights and practical recommendations, contributing to effective governance. Tangible outcomes include a conceptual model, practical framework, and policy brief, empowering stakeholders. Ultimately, this research aspires to catalyze positive transformation, shaping a future of inclusive, innovative, and meaningful smart cities.

Keywords: smart cities, collaborative governance, digital transformation, Iinteroperability, policy innovation, digital talent.

1. Introduction

The global shift towards smart cities marks a significant transformation in urban development, integrating advanced technologies to improve the efficiency, sustainability, and livability of urban areas. This change is driven by the need to address urgent urban issues such as traffic congestion, pollution, resource management, and public safety. Many innovative approaches to enhancing urban services have focused on leveraging technology, particularly information and communication technology (ICT), which has been pivotal in developing what are now known as *smart cities*. Nam & Pardo [1] have examined the differences between smart cities and related concepts like digital, intelligent, or ubiquitous cities, identifying three primary distinctions: technology, people, and community.

Technologically, a smart cities is characterized by the extensive integration of ICT into its essential infrastructure and services [2]. In Indonesia, a nation undergoing rapid urbanization, adopting smart cities initiatives is essential for managing the complexities of contemporary urban life effectively. Smart cities in Indonesia utilize ICT to enhance citizens' quality of life, improve urban services, and foster sustainable economic growth. However, the implementation of smart cities projects in Indonesia faces unique challenges that necessitate thorough examination and tailored strategies.

Despite the enthusiasm surrounding smart cities projects, Indonesian local governments face substantial hurdles in implementing these initiatives. The challenges are multifaceted, encompassing issues such as inadequate leadership commitment, a shortage of digital talent, and significant deficiencies in data integration and interoperability [3]. Leadership in local government often lacks the strategic vision and commitment to drive digital transformation initiatives effectively. This gap in leadership commitment results in fragmented efforts and insufficient prioritization of smart cities projects. The leadership vacuum can be attributed to several factors, including political instability, bureaucratic inertia, and limited awareness of the benefits and requirements of digital transformation [4].

Moreover, the scarcity of digital talent is a critical barrier. Local governments struggle to attract, develop, and retain skilled professionals who can design, implement, and maintain smart cities technologies. The digital talent gap hinders the ability to innovate and adapt to new technological advancements, further complicating the execution of smart cities initiatives [5]. This shortage is exacerbated by the limited availability of specialized education and training programs in digital technologies, as well as competitive private sector opportunities that draw talent away from public service. Without a robust pipeline of digital professionals, local governments find it challenging to keep pace with the rapid evolution of smart cities technologies and methodologies. Another significant challenge is the existence of data silos and the lack of integrated data systems. Data is often fragmented across various departments and agencies, leading to inefficiencies and a lack of cohesive strategy [6]. This fragmentation impedes the ability to make data-driven decisions and limits the potential for developing comprehensive smart cities solutions. Effective data integration requires interoperable systems, standardized data formats, and secure data-sharing protocols. However, many local governments lack the technical infrastructure and expertise to implement these solutions, resulting in isolated data pools that cannot be leveraged for holistic urban management.

The argument for this research is rooted in the urgent need to address these challenges. By focusing on the city of Jambi as a case study, this research seeks to provide actionable insights and practical recommendations that can guide local governments in Indonesia. Jambi, with its unique socio-economic and cultural context, serves as an ideal microcosm for examining the broader issues faced by Indonesian municipalities in their quest for digital transformation. The study aims to bridge the gap between theory and practice, offering solutions that are grounded in empirical evidence and tailored to the specific context of Indonesian local governance [7]. To achieve its objectives, this research will

undertake several key activities. Firstly, it will assess the level of leadership commitment to digital transformation within local governments. This involves evaluating the strategic initiatives, policy frameworks, budget allocations, and the presence of dedicated digital transformation offices or teams. Secondly, the research will evaluate the availability, development, and retention of digital talent within local governments, analyzing the skills and competencies of the workforce as well as the effectiveness of recruitment and training programs. Thirdly, it will identify and address data integration issues, proposing strategies to improve data interoperability. This requires a thorough review of existing data management practices, including data collection, storage, analysis, and sharing. Lastly, the research aims to enhance collaboration among various stakeholders, including government agencies, non-governmental organizations (NGOs), and citizens. By fostering partnerships and promoting inclusive engagement, the study seeks to ensure a cohesive and comprehensive approach to smart cities development.

The paper is structured as follows: The introduction sets the stage by providing background information, outlining the research problems, rationale, and objectives, and offering an overview of the paper's structure. Following the introduction, the literature review delves into existing research on smart cities, digital transformation, and collaborative governance, with a particular focus on the Indonesian context. This section synthesizes key findings from previous studies and highlights gaps in the current knowledge that this research aims to fill. The methodology section describes the qualitative research methods employed, including in-depth interviews, observations, and data collection techniques. This section outlines the research design, sampling strategies, and data analysis procedures, ensuring the rigor and reliability of the study. The use of qualitative methods allows for a rich and nuanced understanding of the complex challenges faced by local governments in implementing smart cities initiatives. The findings and discussion section presents the research results, highlighting key challenges and potential solutions. This section provides a detailed analysis of issues related to leadership commitment, digital talent, data integration, and collaboration. Practical examples and case studies from Jambi illustrate the challenges and proposed solutions, providing concrete evidence to support the research recommendations. Based on these findings, the recommendations section offers practical suggestions to enhance digital transformation in local governments, tailored to the specific needs and constraints of Indonesian municipalities. The conclusion summarizes the research, reiterates its significance, and outlines potential areas for future research, aiming to catalyze positive transformation in Indonesian local governments through inclusive, innovative, and meaningful smart cities.

2. Methods

The empirical research utilized qualitative methodologies, incorporating in-depth interviews, detailed observations, and extensive data collection from local government agencies in Jambi City, Jambi Province, Indonesia. Key informants for the study were identified using a combination of purposeful and snowball sampling techniques [8]. Snowball sampling involved obtaining referrals from each interviewee to identify additional relevant informants [9]. The process began with the dispatch of official letters and direct outreach to individuals in public management roles or heads of specific

administrative units responsible for digital transformation. All interviews were conducted by researchers, digitally recorded, transcribed, and coded for consistency. The coding phase employed key concepts as foundational elements [10], [11], [12], [13], [14], [15]. This initial coding strategy facilitated data analysis through open coding, generating sub-codes to capture specific nuances observed in the cases [16]. Subsequent individual coding of the interviews produced findings that were extensively deliberated upon in multiple data analysis sessions involving the entire research team. These discussions focused on interpreting the significance of additional codes, their relationship to existing literature, and their alignment with other empirical categories under scrutiny [17], [18], [19], [20]

3. Results

The study on smart cities implementation in Jambi, Indonesia, yielded several critical findings related to leadership commitment, digital talent, data integration, and stakeholder collaboration.

3.1. Leadership commitment

The study's findings underscore the critical role of leadership commitment in the successful implementation of smart cities projects in Jambi. This aligns with the observations of Colldahl et al. [4] and Margariti et al. [3], who emphasize that effective leadership is essential for driving digital transformation. The lack of strategic vision and commitment among Jambi's local government leaders results in fragmented efforts and insufficient prioritization of digital initiatives, reflecting a significant barrier to progress. This issue is compounded by political instability and bureaucratic inertia, which further obstruct the consistent and effective implementation of smart cities projects. Despite these challenges, the Jambi City Government's acknowledgment of the importance of incorporating digital technology and information systems into governance is a positive sign. The city's Mission for the 2018-2023 period emphasizes strengthening the bureaucracy and improving community services through information technology. The commitment to digital transformation is codified in Regional Regulation Number 1 of 2019 on the Implementation of Smart cities, reflecting a formal dedication to advancing smart cities initiatives [21], [22]

3.2. Political instability & bureaucratic inertia

Political instability and bureaucratic inertia are significant impediments to the successful execution of digital initiatives. These findings are consistent with Colldahl et al. [4], who argue that political and bureaucratic factors heavily influence the prioritization and execution of digital projects. In Jambi, political instability and bureaucratic inertia contribute to a leadership vacuum, preventing the consistent and effective implementation of smart cities projects. This situation necessitates a stable political environment and streamlined bureaucratic processes to foster effective digital transformation.

3.3. Lack of awareness among leaders

The study also identifies a significant gap in awareness among local government leaders regarding the benefits and requirements of digital transformation. This aligns with Margariti et al. [3], who stress the need for educational programs to build understanding

and strategic vision among leadership. Limited awareness hinders leaders from prioritizing and effectively supporting digital transformation efforts. Enhancing leaders' understanding through targeted educational initiatives is crucial for fostering a supportive environment for digital initiatives.

Table 2. Key findings, Theoretical support, cross analysis, and a potential research agenda

Key Findings	Description	Theoretical Support	Cross Analysis	Potential Research Agenda
Leadership Commitment	Lack of strategic vision and commitment from local government leaders, resulting in fragmented efforts and insufficient prioritization of initiatives.	[4], [13], [23], [24], [25]	Leadership commitment is crucial for digital transformation. The absence of dedicated offices and teams highlights a gap in strategic planning and structural support necessary for success.	Develop frameworks for enhancing strategic vision and commitment among local leaders. Explore case studies of successful leadership in digital transformation.
Political Instability & Bureaucratic Inertia	Political instability and bureaucratic inertia hinder leadership commitment.	[26], [27]	Aligns with the theory that political stability and streamlined bureaucracy are essential for sustained digital transformation efforts.	Investigate the impact of political stability on digital transformation success. Examine methods to overcome bureaucratic inertia in digital projects.
Lack of Awareness Among Leaders	Limited awareness of the benefits and requirements of digital transformation further hinders progress.	[3], [15], [28]	Supports the need for targeted awareness and education programs for leaders to understand the value and processes involved in digital transformation.	Assess the effectiveness of educational programs for leaders in digital transformation. Develop strategies to increase leader awareness and engagement.
Digital Talent	Shortage of skilled professionals to design, implement, and maintain smart cities technologies.	[5], [29], [30]	The lack of digital talent is a common barrier in smart cities initiatives, requiring investment in education, training, and retention strategies.	Study best practices for developing digital talent pipelines. Explore incentives and career paths to retain digital professionals in public sector.
Education and Training Programs	Insufficient specialized education and training programs for digital technologies.	[5], [29], [31]	Highlights the need for partnerships with educational institutions to develop a robust pipeline of digital professionals.	Evaluate the effectiveness of current education and training programs. Formulate partnerships with educational institutions

				to enhance digital skills training.
Brain Drain	Competitive private sector opportunities drawing talent away from public service.	[5]	Indicates the necessity for competitive incentives and career advancement opportunities in the public sector to retain digital talent.	Identify successful retention strategies in public sector digital talent. Analyze the impact of competitive incentives on reducing brain drain.
Data Integration	Fragmented data across departments leading to inefficiencies and poor data-driven decision-making.	[6], [32], [33]	Fragmentation aligns with the theory that data integration is critical for effective smart cities solutions. A unified data strategy is essential.	Research the benefits of integrated data systems in smart cities. Develop models for unified data strategies and their implementation.
Lack of Interoperable Systems	Absence of interoperable systems and standardized data protocols.	[3], [32], [34]	Consistent with the need for investment in technical infrastructure and expertise to develop integrated data systems.	Study the impact of interoperability on smart cities initiatives. Design technical solutions for standardizing data protocols.
Inconsistent Data Quality	Duplicated efforts and inconsistent data quality due to siloed data collection.	[35], [36]	Supports the requirement for coordinated data collection and improved data management practices to enhance data quality and utility.	Investigate methods for improving data quality in government data collection. Develop best practices for coordinated data management.
Stakeholder Collaboration	Inadequate collaboration among government agencies, NGOs, and citizens.	[23], [37]	Collaboration is often superficial, lacking sustained engagement, highlighting the need for stronger partnerships and inclusive stakeholder engagement.	Examine barriers to effective stakeholder collaboration. Develop frameworks for improving inter-agency and public-private partnerships.
Limited Citizen Engagement	Minimal engagement with citizens and low public awareness of	[11], [38]	Reinforces the importance of public consultations, surveys, and participatory planning processes to	Study the impact of citizen engagement on the success of smart cities initiatives. Create strategies for

| smart cities initiatives. | ensure initiatives address community needs. | enhancing public awareness and participation. |

3.4. Digital talent

The shortage of digital talent poses a major challenge to the implementation of smart cities projects. The study's findings are in line with Davenport & Redman [5], who highlight the importance of investing in education, training, and retention strategies to build a capable workforce for smart cities initiatives. Jambi's local government struggles to attract, develop, and retain skilled professionals necessary for these projects. The scarcity of specialized education and training programs in digital technologies, coupled with competitive private sector opportunities, exacerbates this issue. Addressing this talent gap is essential for fostering innovation and effectively adopting new technologies in smart cities initiatives.

3.5. Data integration

Data integration issues, such as the fragmentation of data across various departments and the lack of interoperable systems, are significant barriers to effective smart cities management. These findings are consistent with Scott & Gong [6], who emphasize the critical role of data integration in smart cities initiatives. In Jambi, data is often siloed, leading to inefficiencies and impeding data-driven decision-making. The absence of a unified data strategy and limited investment in data analytics capabilities further hinder the development of holistic smart cities solutions. Addressing these data integration challenges requires a comprehensive approach to unify data strategies and invest in necessary data infrastructure.

3.6. Stakeholder collaboration

The study reveals inadequate collaboration among stakeholders, including government agencies, non-governmental organizations (NGOs), and citizens, highlighting the need for stronger partnerships and inclusive processes. This aligns with general principles of collaborative governance and participatory planning, although not directly supported by a specific theory in the literature review. Effective stakeholder collaboration is crucial for the successful implementation of smart cities initiatives, as it fosters innovation, ensures diverse perspectives are considered, and enhances the overall impact of these projects [23], [24]. Strengthening partnerships and promoting inclusive engagement are essential steps towards achieving cohesive and comprehensive smart cities development.

3.7. Integration with Jambi's Smart cities initiatives

Jambi City's proactive stance on digital transformation is evident through several strategic initiatives. The Mayor of Jambi Regulation Number 89 of 2018 outlines the Jambi Smart cities Masterplan for 2018-2028, providing a clear vision and mission for the city's digital transformation efforts. The SIKOJA (Sistem Informasi Kota Jambi) application, launched in July 2019, serves as the central hub for an integrated information system, consolidating various e-government services. This initiative highlights the city's commitment to

improving the efficiency, transparency, and accessibility of government services through digital technology [39].

The implementation of the Smart cities concept in Jambi City demonstrates a collaborative commitment from various Local Government Agencies (OPDs) within the city administration. The statement by the City Secretary of Jambi affirms that the journey towards a smart cities is not the sole responsibility of a single OPD but rather a collective effort of all involved OPDs. This indicates an awareness of the importance of synergy among units in designing, implementing, and overseeing smart cities programs. This collaborative concept aligns with the approach advocated by Ansell and Gash (2008), emphasizing the significance of cooperation among stakeholders in achieving the goals of urban development.

The development strategy of smart cities in Jambi City proposed by the Deputy Mayor of Jambi, Maulana, emphasizes the importance of enhancing the Electronic-Based Government System (SPBE) as an integral part of realizing a smart cities. In this context,

> *"The advancement of information and communication technology is a necessity in the current digital era. He also observes the disparity that still exists between the expectations of the community and the services provided, highlighting the importance of aligning services to reach all segments of society"*[39].

However, there are challenges that need to be addressed in the implementation of SPBE and efforts towards a comprehensive smart cities. One of them is the lack of integration among systems, which poses a barrier to effective and efficient public services. This is reflected in the statement by Abu Bakar, the Head of the Jambi City Communication and Informatics Office,

> *"The importance of coordinated services and collaboration among government agencies in the implementation of SPBE, although the SPBE index in Jambi City has increased, there are still gaps that need to be addressed, especially in the domain of Governance and SPBE Services. This evaluation provides a more comprehensive overview of the condition of SPBE and reinforces the urgency of future improvements".*

Table 3. Smart cities Initiative in Jambi City.

No.	Field of Smart cities Implementation	Quick Win Program in 2022
1	Smart Governance	Jambi City Public Service Mall (MPP)
2	Smart Branding	Sipin Lake Tourism Area
3	Smart Economy	Pakar Kasih Innovation Program
4	Smart Living	Bantar Village Innovation Program
5	Smart Society	Community Library
6	Smart Environment	Utilization of Methane Gas at Talang Gulo Landfill

Source: Authors elaboration (2024)

Furthermore, Abu Bakar emphasizes that the smart cities concept is not just about the use of technology but also about innovation in response to existing limitations. This reflects an understanding that smart cities development is not solely focused on technological aspects

but also on creative solutions to address the challenges faced by the city. Thus, the implementation of the smart cities concept in Jambi City demonstrates a holistic approach that considers technological aspects, innovation, and collaboration among government units in efforts to improve the quality of life for residents.

However, the successful realization of these initiatives requires addressing the identified challenges. Enhancing leadership commitment, ensuring political stability and streamlined bureaucracy, raising awareness among leaders, investing in digital talent, improving data integration, and fostering stakeholder collaboration are crucial steps towards achieving the goals outlined in the Jambi Smart cities Masterplan [7]

4. Discussion

The challenges faced by local governments in Jambi in implementing smart cities initiatives underscore the critical importance of strong leadership commitment. Without dedicated support from government leaders, initiatives to harness digital technologies for urban development are at risk of faltering. Political instability and bureaucratic inertia further exacerbate these challenges, making it difficult for leaders to prioritize and sustain digital transformation efforts amidst administrative hurdles and uncertain political environments. To address these issues, systemic reforms and institutional changes are necessary to create an enabling environment for innovation and change, as emphasized by Colldahl et al., & Torfing [4], [37].

Moreover, the limited awareness among leaders about the benefits and requirements of digital transformation compounds the challenge. [3] stress the significance of education and training programs to enhance leaders' understanding of digital technologies and their implications for governance. Equipping leaders with the necessary knowledge and skills is essential to overcoming resistance to innovation and fostering a culture of digital readiness within government institutions. By investing in leadership development initiatives, local governments can empower leaders to drive meaningful change and navigate the complexities of smart cities initiatives effectively.

However, the shortage of digital talent presents another significant obstacle. Davenport & Redman [5] highlight the growing demand for skilled professionals in areas such as data analytics and cybersecurity. Without access to a qualified workforce, local governments may struggle to implement and maintain complex technology solutions necessary for smart cities projects. To address this challenge, collaborative partnerships between government, academia, and the private sector are essential to bridge the skills gap and build a sustainable talent pipeline. By investing in education, training, and workforce development programs, local governments can cultivate a pool of digital talent capable of driving innovation and excellence in smart cities management.

Furthermore, data integration emerges as a fundamental requirement for effective smart cities management. Scott & Gong [6] emphasize the importance of interoperable systems and standardized data protocols to enable seamless data sharing and analysis across different departments and agencies. In the absence of integrated data systems, local governments risk creating data silos that hinder collaboration and decision-making. To

overcome this challenge, investments in data infrastructure, governance frameworks, and technical expertise are necessary. By developing comprehensive data integration strategies, local governments can unlock the full potential of their data assets and drive innovation in service delivery.

Lastly, collaboration among various stakeholders is paramount for the success of smart cities initiatives. While the findings highlight inadequate collaboration among government agencies, NGOs, and citizens, collaborative governance models offer a promising framework for fostering inclusive decision-making processes and leveraging diverse expertise. Ansell & Gash [23] discuss the importance of engaging stakeholders. As co-creators of smart cities solutions, building trust, fostering innovation, and ensuring initiatives reflect the needs and priorities of the community. By adopting a partnership-based approach to urban governance, local governments can harness the collective wisdom and resources of stakeholders to address complex urban challenges and drive sustainable urban development.

5. Conclusion

In conclusion, the journey towards smart cities implementation in Jambi illuminates the pivotal role of effective public administration in navigating the complexities of digital transformation. Drawing from contemporary insights in public administration, it is evident that robust leadership commitment, talent development, data integration, and stakeholder collaboration are paramount for success. Leadership commitment serves as the cornerstone, guiding strategic vision and resource allocation to propel smart cities initiatives forward. By embracing political stability and fostering bureaucratic agility, local governments can cultivate an environment conducive to innovation and change, aligning with the findings of Colldahl et al. [4]. Additionally, investing in digital talent through education, training, and strategic partnerships with the private sector is crucial for building a skilled workforce capable of driving smart cities innovation.

Furthermore, prioritizing data integration and fostering stakeholder collaboration are essential for harnessing the full potential of smart cities initiatives. By investing in technical infrastructure and data governance frameworks, governments can unlock valuable insights from data assets and enhance evidence-based decision-making. Moreover, embracing collaborative governance models empowers citizens, NGOs, and the private sector to contribute their expertise and resources towards co-creating sustainable urban solutions, as advocated by Ansell and Gash (2008). Through strategic alignment with the state of the art in public administration, local governments in Jambi and beyond can chart a course towards inclusive, resilient, and digitally enabled cities that prioritize the well-being and prosperity of their citizens.

References

[1] N. Taewoo and P. Theresa, "Conceptualizing smart city with dimensions of technology, people, and institutions," *ACM Digital Library,* pp. 282-291, 2011.

[2] R. Sanchez-Corcuera, "Smart cities survey: Technologies, application domains and challenges for the cities of the future," *International Journal of Distributed Sensor Networks,* vol. 5, 2019.

[3] V. Margariti, T. Stamati, D. Anagnostopoulos, M. Nikolaidou and A. Papastilianou, "A holistic model for assessing organizational interoperability in public administration," *Research Gate ,* vol. 39, 2022.

[4] C. Colldahl, S. Frey and J. E. Kelemen, "Smart cities: Strategic sustainable development for an urban world.," 2013.

[5] T. H. Davenport and T. C. Redman, "Digital Transformation Comes Down to Talent in 4 Key Areas," *Harvard Business Review,* 2020.

[6] I. Scott and T. Gong, "Coordinating government silos: challenges and opportunities," *Research Gate ,* vol. 1, no. 1, pp. 20-38, 2021.

[7] R. Y. Maulana, O. Yanti and N. Sukmawati, "Overview Of Smart City Policy Implementation: A New Approach To Jambi City Government Administration In The Industry 4.0 Era.," *JISIP,* vol. 4, no. 4, 2020.

[8] J. W. Creswell, Qualitative Inquiry and Research Design: Choosing Among Five Approaches., SAGE Publications, 2013.

[9] W. C. Brayda and T. D. Boyce, "So you really want to interview me?: Navigating 'sensitive' qualitative research interviewing," *International Journal Of Qualitative Methods,* vol. 13, no. 1, pp. 318-334, 2014.

[10] G. V. Alexopoulos, G. V. Pereira, Y. Charalambidis and L. Madrid, "A Taxonomy of Smart Cities Initiatives," *ACM Digital Library,* pp. 281-290, 2019.

[11] M. P. R. Bolivar and L. A. Munoz, E-Participation in Smart Cities: Technologies and Models of Governance for Citizen Engagement., Springer International Publishing, 2018.

[12] A. Meijer, "Datapolis: A Public Governance Perspective on 'Smart Cities," *Perspectives on Public Management and Governance ,* vol. 1, no. 3, pp. 195-206, 2018.

[13] A. Meijer and M. P. R. Bolivar, "Governing the smart city: a review of the literature on smart urban governance," *International Review of the literature on smart urban governance ,* vol. 82, no. 2, pp. 392-408, 2016.

[14] I. Mergel, "Open innovation in the public sector: drivers and barriers for the adoption of Challenge.gov," *Public Management Review,* vol. 20, no. 5, pp. 726-745, 2017.

[15] C. Vrabie, "Smart leadership–examples of best practices in governing smart cities," *Strategica,* p. 579, 2020.

[16] A. Strauss and J. Corbin, "Basics of qualitative research: Techniques and procedures for developing grounded theory, 2nd ed.," *Sage Publications, Inc.,* 1998.

[17] J. W. Creswell and D. J. Creswell, Research Design: Qualitative, Quantitative, and Mixed Methods Approaches, Sage Publications, 2018.

[18] K. M. Einsehardt, "Building Theories from Case Study Research," *The Academy of Management Review,* vol. 14, no. 4, pp. 532-550, 1989.

[19] D. R. Hancock, B. Algozzine and J. H. Lim, Doing case study research: A practical guide for beginning researchers, Teachers, 2021.

[20] R. K. Yin, Case Study Research and Applications (International Student Edition): Design and Methods, SAGE Publications, 2017.

[21] H. Hartati and M. Wahid, "Development Policy Kampung Bantar in Realizing Smart City in Jambi City, Indonesia," 2019.

[22] V. &. M. K. Jambi.

[23] C. Ansell and A. Gash, "Collaborative Governance in Theory and Practice," *Journal of Public Administration Research and Theory,* vol. 18, no. 4, pp. 543-571, 2008.

[24] K. Emerson, T. Nabatchi and S. Balogh, "An Integrative Framework for Collaborative Governance," *Journal of Public Administration Research and Theory ,* vol. 22, no. 1, pp. 1-19, 2012.

[25] E. Sorensen and J. Torfing, "Enhancing Public Innovation through Collaboration, Leadership and New Public Governance," *New Frontiers in Social Innovation Research ,* pp. 145-169, 2015.

[26] A. Agger and E. Sorensen, "Managing collaborative innovation in public bureaucracies," *Planning Theory ,* vol. 17, no. 1, pp. 53-73, 2018.

[27] L. Hrustek, M. T. Furjan and P. Igor, "Political Participation in the Information Society and Impact of Open Data on It," *Conference: IEEE Technology & Engineering Management Conference-Europe ,* pp. 1-6, 2021.

[28] T. N. Hai, Q. N. Van and M. N. T. T. Tuyet, "Digital Transformation: Opportunities and Challenges for Leaders in the Emerging Countries in Response to Covid-19 Pandemic," *Emerging Science Journal,* vol. 5, no. 0, 2021.

[29] J. Becker, "City 5.0: Citizen involvement in the design of future cities," *Electronic Markets,* vol. 33, no. 1, p. 10, 2023.

[30] F. Berkes and H. Ross, "Community Resilience: Toward an Integrated Approach," *Society and Natural Resources,* vol. 26, no. 1, pp. 5-20, 2013.

[31] R. Y. Maulana, M. Durnik and M. Decman, "Collaborative Approach on Digital Government Transformation: In-Depth Analysis from Expert Interview," *NSIPAcee Journal of Public Administration and Policy ,* vol. 17, no. 1, pp. 94-119, 2024.

[32] D.-Y. Kim and G. Grant , "E-government maturity model using the capability maturity model integration," *Journal of Systems and Information Technology,* vol. 12, no. 3, pp. 230-244, 2010.

[33] H. J. Scholl and R. Klischewski, "E-Government Integration and Interoperability: Framing the Research Agenda," *International Journal of Public Administration,* vol. 30, no. 8-9, p. 889–920, 2007.

[34] P. Gottschalk, "Maturity levels for interoperability in digital government," *Government Information Quarterly ,* vol. 26, no. 1, pp. 75-81, 2009.

[35] Z. Korachi and B. Bounabat, "Data Driven Maturity Model for Assessing Smart Cities," *Proceedings of the 2nd International Conference on Smart Digital Environment,* pp. 140-147, 2018.

[36] P. Kostakis and A. Kargas , "Big-Data Management: A Driver for Digital Transformation?," *Information,* vol. 12, no. 10, 2021.

[37] J. Torfing, "Collaborative innovation in the public sector," p. 353, 2016.

[38] D. Anderson, R. Wu, J.-S. Cho and K. Schroeder, E-Government Strategy, ICT and Innovation for Citizen Engagement, New York : Springer , 2015.

[39] infojambi.com, Pemkot Jambi Gelar Bimtek Penyusunan Master Plan Smart City.