Digital Governance and Innovation in Indonesia: Transformation Strategy Towards Governance Smart and Inclusive

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A R T I C L E   I N F O

A B S T R A C T

The development of digital technology has driven significant transformations in governance, demanding fast, transparent, participatory, and accountable public services. In Indonesia, the implementation of digital transformation faces challenges related to geography, infrastructure inequality, digital literacy of civil servants, and inter-agency system integration. This study aims to identify the dynamics of digital governance, examine the role of public innovation in strengthening its effectiveness, and formulate strategies for strengthening innovation-based digital governance. Using a descriptive qualitative approach, data were obtained through semi-structured interviews, digital observations, and policy document studies at the Ministry of Administrative and Bureaucratic Reform (PANRB), the Ministry of Communication and Informatics (Kominfo), local governments that are Smart City pioneers, and civil society organizations. The results show that the integration of public innovation technological, managerial, and social is a key driver of digital governance effectiveness. The success of digital transformation is determined not only by the availability of technology, but also by transformational leadership, an innovative organizational culture, digital literacy of civil servants, and multiactor collaboration. The findings emphasize the importance of a holistic strategy that combines technological, institutional, human, and collaborative aspects to build a smart, adaptive, inclusive, and equitable government. This study concludes that public innovation acts as a transformative medium that connects technological modernization with managerial reform for effective and responsive public services.

INTRODUCTION

The development of digital technology has significantly changed the pattern of interaction between government and society, both globally and nationally. The digital era demands that governments provide fast, transparent, and participatory public services, while maintaining bureaucratic accountability and efficiency. In Indonesia, these challenges are increasingly complex due to its vast geographic characteristics, development disparities between regions, and differences in the capacity of civil servants to adopt and utilize new technologies. This situation emphasizes that digital transformation is not merely about implementing technology; it also requires strengthening governance and managerial reforms that are responsive to public needs.

The need for digital transformation is increasingly pressing as public expectations for technology-based public services increase. Data from the Central Statistics Agency (BPS, 2024) shows that 72.78 % of Indonesia's population will have internet access by 2024, indicating that the foundation of digital infrastructure for public services is beginning to take shape significantly. A survey by the Indonesian Internet Service Providers Association (APJII, 2024) even recorded internet penetration reaching 79.5%. %, equivalent to approximately 221.5 million users out of the total population. In addition, mobile phone usage was recorded at 68.65 % of the total population, strengthening the community's capacity to access digital services widely (BPS, 2024).

In line with the increase in digital access, the evaluation of the Electronic-Based Government System (SPBE) by the Ministry of Administrative and Bureaucratic Reform (The National Agency for the Assessment and Application of Technology (PANRB, 2023) showed that the national SPBE index reached 2.79, with a "Good" rating. This finding indicates significant progress in the implementation of digital governance, both at the central and regional levels. Globally, the United Nations Department of Economic and Social Affairs (UN DESA, 2024) reported that Indonesia rose to 64th place out of 193 countries in its e-Government Index (EGDI) with a score of 0.7991, up from 77th in 2022. This improvement reflects the country's capacity to utilize information technology to improve the quality of public services and citizen engagement.

COVID pandemic-19 also plays a crucial role as an accelerator in accelerating the digitalization of public services, demonstrating that technology adoption alone is not enough. Digitalization demands managerial reform, continuous innovation, and effective governance. In Indonesia, formal policies related to government digitalization are outlined in Presidential Regulation Number 95 of 2018 concerning SPBE, which affirms the government's commitment to building data- and technology-driven governance. This policy is reinforced through strategic initiatives such as the Movement Towards 100 Smart Cities and One Data Indonesia, which aim to improve the quality of public services, strengthen public participation, and encourage innovation within the bureaucracy.

Despite progress, digital transformation in the public sector still faces several obstacles. The gap in infrastructure capacity between regions remains a major challenge, the integration of information systems between agencies is suboptimal, and

digital literacy among officials, particularly in the 3T (underdeveloped, frontier, and outermost) regions, remains limited. In this context, public innovation is a highly strategic instrument. Public innovation serves not only as a technological tool but also as a managerial approach capable of driving changes in work culture, bureaucratic mindsets, and government agencies' responsiveness to community needs in an adaptive and effective manner.

Based on this background, this study has three main objectives. First, to identify the development and dynamics of digital governance implementation in Indonesia. Second, to examine the role of innovation in strengthening the effectiveness of digital governance. Third, to formulate a strategy for strengthening innovation-based digital governance that supports the achievement of intelligent, adaptive, and inclusive governance, in line with the principles of equitable digital development that does not leave out certain groups in society.

LITERATURE REVIEW
Digital Governance

Digital governance is the primary foundation for realizing an open, adaptive, and efficient public service-oriented government, where innovation and technology act as catalysts for sustainable bureaucratic reform. Digital governance is the application of good governance principles in the digital space, where values such as transparency, accountability, public participation, and administrative effectiveness are implemented through the support of information and communication technology (UN DESA, 2022).

Digital governance is not merely about technology adoption, but also involves reconfiguring organizational structures, adapting regulations, increasing human resource capacity, and establishing an innovative and change-responsive bureaucratic culture (Wicaksono et al., 2024). In Indonesia, the formal policy direction regarding digital governance is stipulated through Presidential Regulation Number 95 of 2018 concerning Electronic-Based Government Systems (SPBE).

The regulation affirms the government's commitment to utilizing technology as a tool to improve performance, transparency, and public accountability. The success of digital governance implementation is measured through several indicators, including the level of integration of information systems between agencies, the effectiveness of digital public services, citizen participation in government processes, and the ability to use data for evidence-based policymaking.

Public Innovation

Public innovation serves as a driving force for government transformation, where the integration of technological, managerial, and social dimensions is key to building smarter, more inclusive, and citizen-oriented governance. Public innovation, in the context of modern governance, is a planned and systematic process of introducing new approaches, technologies, or working mechanisms aimed at improving the quality, effectiveness, and efficiency of public services (OECD, 2020).

In contemporary public administration literature, public innovation can be divided into three main dimensions: technological innovation, managerial innovation,

and social innovation. A study by Afrilia et al. (2024) shows that various local governments in Indonesia have initiated digital innovation as part of their public administration modernization strategies. These efforts have proven effective in accelerating service delivery, increasing transparency, and expanding public access to public information.

However, the effectiveness of digital innovation implementation is greatly influenced by the quality of leadership, the readiness of human resources, and the availability of adequate digital infrastructure. This demonstrates that the success of public innovation depends not only on the technological aspects, but also on institutional commitment and the bureaucracy's adaptive capacity to manage change.

The Relationship Between Digital Governance and Public Innovation

A growing body of literature confirms that public innovation plays a strategic role as a key driver in realizing effective and sustainable digital governance. Innovation is understood not merely as the adoption of new technologies, but as a more fundamental process of change in organizational culture, leadership patterns, and the mechanisms of interaction between government and society (Tan & Taeihagh, 2020). In this context, digital transformation is not merely a technological agenda but also an institutional one that demands a shift in the way bureaucrats think and work.

As Novianto (2025) points out, the effectiveness of digital governance is largely determined by the government's ability to integrate innovation into its managerial and operational systems. This includes developing collaborative work models, continuous organizational learning, and adapting to the increasingly complex dynamics of public needs in the digital era. In other words, public innovation serves as a transformative medium connecting technological modernization and managerial reform within the bureaucracy.

Furthermore, Tan and Taeihagh (2020) emphasize that without the support of social and institutional innovation, government digitalization risks producing only a technically efficient system that is unresponsive to the values of democracy, participation, and public accountability. Therefore, striking a balance between the technological and institutional dimensions is a key prerequisite for the success of inclusive digital governance.

Public innovation can be understood not only as a complementary element of digital governance, but as a conceptual and practical pillar that determines the direction of successful digital transformation in government. The integration of innovation and digital governance enables the creation of a government system that is not only efficient but also adaptive, participatory, and oriented toward the values of public service.

Digital Transformation Strategy in Indonesia

Indonesia's digital transformation strategy emphasizes a balance between technology, institutions, people, and cross-sector collaboration, creating adaptive, inclusive governance that is oriented toward quality public services. To achieve an effective digital transformation strategy, numerous efforts are being made to address existing challenges. For example, the government's digital transformation faces

several structural and institutional challenges that impact the speed and effectiveness of its implementation.

These challenges, such as the disparity in digital infrastructure, pose significant obstacles, with network quality, access to technological devices, and data center capacity differing significantly across regions, particularly between urban and remote areas (Murdhani, 2025). Furthermore, digital literacy among both government officials and rural communities limits their ability to adapt to new digital systems, hindering the optimization of technology-based public services (Samudra et al., 2024). Furthermore, bureaucratic cultural resistance also acts as an inhibiting factor, where traditional work patterns and rigid hierarchical structures often slow down the adoption of innovation in governance (Alfayn, 2022).

Therefore, to address these challenges, the Indonesian government has formulated a number of holistic and integrative national digital transformation strategies. First, the establishment of adaptive policies and regulations, such as the SPBE (Smart City Governance Program), serves as a legal umbrella that provides direction for the implementation of digital governance across all government agencies. Second, the implementation of national strategic programs, including the Movement Towards 100 Smart Cities and One Data Indonesia, aims to strengthen the integration of digital services, accelerate innovation, and improve the quality of public services at the regional and national levels.

Furthermore, the digital transformation strategy emphasizes the importance of multi-actor collaboration, or a penta-helix approach, involving government, the private sector, academia, the public, and the media in the innovation process. This approach not only encourages the development of relevant digital solutions but also helps reduce disparities in access and capacity between regions (Maulana, 2025). Finally, strengthening human resource capacity and digital literacy are crucial pillars to enable government officials to effectively manage digital systems, innovate sustainably, and respond quickly to the dynamics of community needs.

METHODOLOGY

This research uses a descriptive qualitative approach, with the aim of gaining an in-depth understanding of the practices, dynamics, and strategies for implementing digital governance and public innovation in Indonesia. This approach was chosen because it comprehensively explains the social, institutional, and policy contexts. The research locations include several government entities representing varying levels of digital governance implementation in Indonesia, particularly the Ministry of Administrative and Bureaucratic Reform (PANRB) and the Ministry of Communication and Informatics (Kominfo), which play a role in the SPBE policy; regions pioneering the Smart City program; and academics and civil society organizations involved in developing the digital governance ecosystem.

Data were obtained from two main sources: primary data: the results of semi-structured interviews with government officials, IT staff, and public policy analysts. Primary data were obtained through semi-structured interviews and digital observations. Secondary data consisted of policy documents (the Presidential

Regulation on Electronic Government System (SPBE), Smart City guidelines, and the 2023 National SPBE report), as well as academic literature and reports from international institutions (OECD, UNDESA). The research focused on several central and regional government agencies in Indonesia that have implemented the Electronic-Based Government System (SPBE) policy and the Smart City program.

The location was selected purposively based on the relatively high level of SPBE implementation; the existence of digital innovation in public services; the availability of data access and key informants. Data collection techniques were carried out using semi-structured interviews and field observations conducted on digital public service portals, local government data centers, and digital innovation implementation activities. The analysis was carried out by covering three stages, namely, data reduction, namely selecting information relevant to the research focus; data presentation with thematic categorization into dimensions of governance, innovation, and challenges; drawing conclusions and verification with conceptual interpretation to understand the relationship between innovation and the effectiveness of digital governance in the context of Indonesian public policy.

RESULTS AND DISCUSSION
Results

This research identifies several significant challenges impacting the effectiveness of digital governance in Indonesia. First, systems and data fragmentation across agencies hampers interoperability and information integration across government units. This situation creates difficulties in data synchronization, slows down decision-making, and reduces the efficiency of public services.

Second, the digital literacy gap among civil servants, particularly in the 3T (underdeveloped, frontier, and outermost) regions, is a serious obstacle. Officials in these areas often face limited access to technology and understanding of digital systems, potentially slowing the implementation of SPBE and public innovation.

Third, a hierarchical and rigid bureaucratic culture also acts as a hindering factor. A less flexible organizational structure and the dominance of formal procedures limit the space for creativity and innovation in public service management, making it difficult to implement digital transformation optimally.

Fourth, this study also found limited regulations regarding cybersecurity and personal data protection, potentially posing risks to the integrity of digital systems and public trust. These regulatory deficiencies require strengthening the legal framework and oversight mechanisms to ensure safe, reliable, and sustainable government digitalization.

Since the implementation of the Electronic-Based Government System (SPBE), the Indonesian government has shown significant progress in the digitalization of public services. According to the 2023 National SPBE Index released by the Ministry of Administrative and Bureaucratic Reform (KemenPANRB), the average national achievement score reached 2.25, categorized as "Good," up from 1.98 in 2021. This increase reflects progress in policy, governance, and implementation of digital systems across various government agencies, both at the central and regional levels.

These improvements were driven by various strategic digital initiatives that strengthened the efficiency and transparency of public services. One example is the digitization of the licensing process through the Online Single Submission (OSS) system, which simplifies business licensing procedures and improves data integration across ministries and agencies. Furthermore, online population administration services through the Dukcapil Go Digital program have made it easier for the public to access population documents without having to visit service offices in person. At the regional level, the implementation of e-budgeting and e-planning systems has also strengthened the integration of regional planning and budgeting in a transparent and accountable manner, while simultaneously reducing the potential for irregularities in public financial management.

Several major cities in Indonesia have even pioneered the implementation of the Smart City concept, which integrates information technology into government management and public services. Surabaya, with its Surabaya Wani Lapor application, has developed a digital-based public complaints system that is responsive to citizen complaints. Jakarta, through its Jakarta Kini (JAKI) platform, provides integrated digital services that connect the public with various public services. Meanwhile, Bandung operates the Bandung Command Center, which functions as a real-time data-driven control center to support rapid, evidence-based decision-making.

These developments demonstrate that digitalization not only strengthens administrative efficiency but also enhances accountability, transparency, and public participation in governance. Thus, the SPBE policy serves as a crucial foundation for building an inclusive digital governance ecosystem that adapts to technological changes and the needs of modern society.

Furthermore, interview results indicate that public innovation plays a strategic role in determining the success of digital governance implementation. At the local level, innovation emerges not only as the application of technology, but also as a mechanism to improve the quality of public services and strengthen data-driven decision-making. For example, the Surabaya City Government is leveraging big data analytics to manage waste management and transportation systems more efficiently, while the Jakarta Provincial Government is developing an AI dashboard to monitor and manage traffic congestion in real time.

However, the successful implementation of this innovation does not solely depend on the availability of technology. Visionary and digitally oriented leadership from regional heads, along with the support of an organizational culture that is open to change, are key determinants of innovation's effectiveness in improving government performance. In line with the findings of Tan and Taeihagh (2020), successful digital transformation requires the integration of technology, process management, and adaptation of bureaucratic culture, so that public innovation can become a driving force for responsive, adaptive, and community-oriented governance. Public innovation is not merely a technical tool, but a strategic instrument that connects technological capabilities with strengthening governance and bureaucratic culture that supports inclusive and sustainable digital governance.

Discussion

Research findings indicate that public innovation plays a crucial role in accelerating the effectiveness of digital governance. Public innovation is not limited to the implementation of new applications or technologies, but also encompasses a paradigm shift in government management, including planning, decision-making, and public service delivery. Governments that successfully foster a culture of digital innovation, for example by providing space for policy experimentation, supporting pilot projects, and cross-sector collaboration, tend to be more adaptive and prepared to face the complexities of digital transformation.

Furthermore, the implementation of the digital governance concept in Indonesia is increasingly moving toward a collaborative governance model, where the development of public digital solutions is no longer solely top-down, but involves synergy between government actors, the private sector, academia, and civil society. This collaborative approach enables the development of more responsive, inclusive, and needs-based public services. Thus, the integration of public innovation and digital governance not only improves administrative efficiency but also strengthens public participation and accountability in modern governance systems (Tan & Taeihagh, 2020; Novianto, 2025).

Transformational leadership has proven to be a key factor in the success of government digitalization. Visionary and proactive leaders are able to foster an innovative organizational culture, including by providing space for policy experimentation, encouraging controlled trial-and-error practices, and internalizing continuous organizational learning. This leadership approach enables bureaucracies not only to adopt technology but also to adapt to the dynamics of digitalization with greater flexibility and responsiveness.

Next, strengthening the digital literacy of state civil servants (ASN) is a crucial prerequisite for supporting changes in bureaucratic behavior. Digital training and capacity building programs help ASN understand, manage, and utilize information technology effectively in carrying out government duties. This aligns with the principles of a digital-ready organization, where human capacity is a key determinant of the success of digital transformation, along with the readiness of available infrastructure and technology systems (OECD, 2020; Tan & Taeihagh, 2020). The combination of transformational leadership and increased digital literacy empowers the bureaucracy to implement sustainable public innovation, strengthen digital governance, and create more responsive, efficient, and participatory public services.

The integration of digital governance and public innovation is a strategic foundation for Indonesia in building a data-driven, transparent, and participatory smart governance model. This approach emphasizes not only increasing the efficiency and accountability of public administration but also encouraging active public involvement in policy formulation and monitoring of public services.

Nevertheless, the development of smart governance must continue to prioritize the principle of inclusivity, so that all levels of society, including residents in disadvantaged, frontier, and outermost (3T) areas, can access digital services and obtain their benefits equally. This principle aligns with the philosophy of "leaving no

one behind," which emphasizes that digital transformation must not create new gaps, whether in terms of access, service quality, or community participation capacity. Every public innovation policy and initiative needs to be designed with consideration of the dimensions of ethics, justice, and sustainability, so that digital governance in Indonesia is not only technically intelligent but also responsive to social needs and able to strengthen the integrity and legitimacy of government in the eyes of the public (OECD, 2020; Tan & Taeihagh, 2020).

CONCLUSION

This study confirms that the integration of digital governance and public innovation is a strategic element in building a smart, adaptive, and inclusive government in Indonesia. The digital transformation of public services through the implementation of SPBE and Smart City initiatives has been proven to improve administrative efficiency, transparency, accountability, and public participation. Public innovation plays a key role in this transformation, not only through the adoption of new technologies, but also through shifts in managerial paradigms, strengthening transformational leadership, and establishing an organizational culture that is responsive to the dynamics of change. The research findings indicate that the success of digital governance depends heavily on the harmonious synergy between technology, human resources, institutions, and cross-sector collaboration.

However, this study has limitations that should be considered. The focus of the study was limited to a number of central and regional government agencies that are relatively advanced in implementing digital governance, so the findings may not fully reflect conditions across Indonesia, particularly those with limited digital infrastructure. Furthermore, the use of a descriptive qualitative approach, while providing in-depth understanding of the social and institutional context, is contextual and does not yield quantitative generalizations. Therefore, further study through comparative or quantitative research is needed to strengthen external validity.

Based on these findings, this study offers several practical recommendations. First, for policymakers and government agency leaders, it is crucial to strengthen the capacity of civil servants through digital literacy training, providing space for policy experimentation, and fostering a culture of innovation within the bureaucracy. Second, for the private sector and academics involved in digital ecosystem development, it is recommended to expand collaboration with local governments in designing inclusive, community-driven technology solutions. Third, for regulators, it is necessary to strengthen the legal framework related to cybersecurity and personal data protection to ensure safe, reliable, and sustainable digital governance.

By implementing these strategies, it is hoped that digital transformation in Indonesia will not only improve the efficiency and quality of public services, but will also build adaptive, participatory, and inclusive governance, in line with the principle of "leaving no one behind" in digital development.

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