

Formation of Public Policy in The Digital Era: Implications for Public Administration

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Abstract

This study explores the dynamic of digital transformation in public service delivery, focusing on how technological advancements reshape public policy formulation. The objectives are to analyse the challenges and opportunities presented by the integration of digital technologies such as big data, artificial intelligent, and electronic based government system in fostering more inclusive, efficient, and responsive public services. Using a qualitative descriptive approach based on secondary data, the research examines the shift from a traditional bureaucratic model to a participatory and citizen-centred public service paradigm aligned with the principles of the new public services. The findings indicate that digital platforms empower citizens to engage in policy discourse, while big data analytics offer valuable insights into public needs and behaviours. However, this study highlights critical challenges, including privacy concerns, misinformation, and digital inequality. The implementation of SPBE demonstrates the potential for real-time, location-independent service delivery, yet requires adequate infrastructure and data governance frameworks. The research recommends that policymakers invest in robust digital ecosystems, enhancing data security, and promote digital literacy to maximize the benefits of transformation. Overall, the study concludes that digital innovation, if managed inclusively and ethically, can significantly enhance the effectiveness of public service and governance in the digital era.

Keywords: Digital Transformation, Electronic Based Public Service, Participatory Public Policy.

INTRODUCTION

The rapid advancement of digital technologies in the Fourth Industrial Revolution has brought about transformative changes in public governance, especially in the

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formulation and implementation of public policies (Araujo et al., 2021). Information and communication technology (ICT) developments, such as the Internet of Things (IoT), Artificial Intelligence (AI), Cloud Computing, and Big Data, have reshaped how governments interact with citizens and deliver public services. These changes challenge traditional bureaucratic structures by demanding more flexible, transparent, and citizen-centered governance (Cholik, 2021). In this context, the digital era is no longer merely about adopting new tools but about reshaping institutional norms, behaviors, and policy-making frameworks to better reflect the needs of an increasingly connected society. As such, public institutions must adapt not only their technological infrastructure but also their governance philosophy.

One of the most significant impacts of digital transformation is the increased ability of citizens to participate in public affairs through digital platforms (Convery & Kerr, 2007). The widespread use of social media, online petitions, government apps, and open data platforms has enabled the public to express their opinions, access relevant information, and become co-creators in policy development. This shift from a top-down to a more horizontal and participatory model marks a transition toward what is widely known as the New Public Service (NPS) paradigm. The NPS model emphasizes service over control, collaboration over command, and democratic engagement over centralized decision-making (Schulze-Gabrechten, 2019). Governments are increasingly expected to act as facilitators and partners, rather than authoritative rulers, in shaping public services and policies.

Indonesia has responded to these changes by implementing the Electronic-Based Government System (SPBE), or Electronic-Based Government System, as part of its broader digital governance strategy (Amri et al., 2022). SPBE seeks to integrate ICT into public administration to improve service quality, efficiency, and citizen access. By minimizing the need for face-to-face interaction, the system promises time-saving, cost-efficiency, and a higher standard of responsiveness. However, the implementation of SPBE also exposes several challenges, including digital literacy gaps, infrastructural inequality between regions, and concerns regarding data protection and cyber security. Therefore, while digital governance initiatives are promising, they must be accompanied by inclusive strategies that account for diverse socio-economic contexts.

This article aims to offer a critical analysis of how digital transformation influences public policy and governance in Indonesia, with special attention to participatory mechanisms and the normative values of the New Public Service. By examining the evolution of public service delivery under the digital transformation agenda, this study seeks to understand the extent to which technological innovation aligns with citizen-centric governance. Moreover, this article engages with current debates surrounding e-government, algorithmic decision-making, and digital inclusion. In doing so, it offers a comprehensive perspective that bridges technological trends with governance theories, particularly in the context of developing countries. The Indonesian experience is used as a case study to demonstrate both opportunities and tensions inherent in digital public service reform.

This study makes three major scientific contributions. First, it contributes to the theoretical discourse by connecting digital transformation with New Public Service values, which is often overlooked in literature that treats technology as a neutral tool. Second, it proposes a conceptual understanding of SPBE not only as a digital tool but also as a mechanism for democratic engagement and improved accountability. Third, the study presents a policy-oriented analysis relevant for practitioners and decision-makers, offering guidance on how to operationalize digital transformation in a way that supports inclusive governance and long-term sustainability. These contributions position the study as both academically relevant and practically useful in enhancing public policy formulation in the digital era.

The novelty of this research lies in its integrated approach, which brings together the domains of digital governance, participatory policy-making, and New Public Service within a developing country context. While most existing studies treat digital transformation as a technical challenge, this research treats it as a normative and institutional issue. It provides a unique lens by situating Indonesia's SPBE policy as both a product and a driver of governance reform. Furthermore, this study highlights the socio-political consequences of digital public service initiatives, emphasizing that technological solutions must be designed with democratic values in mind. By offering this holistic and contextual analysis, the study contributes original insights to the evolving field of digital public policy.

The main objective of this research is to critically analyze the extent to which digital transformation, particularly through SPBE, supports participatory, accountable, and citizen-oriented governance in Indonesia. To achieve this, the paper is structured into four main sections: the Introduction, which outlines the background, research gap, contributions, and novelty; the Research Methods, which details the qualitative descriptive approach and data sources; the Results and Discussion, which interprets key findings and their implications; and the Conclusion and Recommendations, which summarize the insights and propose directions for policy and future research.

LITERATURE REVIEW

Public service is a core function of the state, aimed at fulfilling citizens' needs. Moenir (1998) defines it as a series of ongoing activities carried out by public organizations for society. In recent decades, efforts to improve public service delivery have increasingly embraced innovation. Denhardt and Denhardt (2015), in *The New Public Service*, highlight a shift from traditional bureaucratic models, where institutions wielded full control, toward service models that prioritize citizen needs, transparency, and collaboration. This evolution calls for a rethinking of public management using tools from the private sector, such as customer-focused strategies and performance metrics.

Digitalization has made public services more agile and data-driven. Big data, artificial intelligence, and online platforms allow governments to streamline processes, anticipate needs, and make more informed decisions. For example, big data provides insights that can help tailor services and policies based on real-time public feedback and regional conditions (Bannister, 2014). However, as Kinra et al. (2020) and Martins (2018) note, the practical use of big data in public policymaking remains limited, often confined to early development phases. Research by Concilio et al. (2019), Guenduez et al. (2020), and Taylor & Schroeder (2015) suggests a need for broader and more structured applications of data-driven policymaking across the public sector.

Despite these advances, several barriers hinder the digital transformation of public services. Riley (2012) identifies three levels of challenges: tangible (e.g., poor internet infrastructure in rural areas), intangible (e.g., economic and skill disparities), and highly intangible (e.g., resistance from government officials). Tiffany (2020) and Muluk (in Tiffany,

2011) argue that successful implementation requires not just infrastructure but also commitment from public servants to embrace change and foster a knowledge-driven bureaucracy.

In Indonesia, these barriers are further compounded by limited human resources and digital literacy, as well as fragmented service systems (Apolinário-Hagen et al., 2020; Li et al., 2022; Umbach & Tkalec, 2022). Many citizens still lack internet access or the skills to use digital services effectively (Araujo et al., 2021; Boellstorff, 2019; Mansir & Karim, 2020; Rahmatullah et al., 2020). Yet, the digital era also opens up opportunities for innovation. Technologies such as AI, cloud computing, and big data offer tools to increase transparency, responsiveness, and public participation (Hassan et al., 2022; Dong, 2015). As Denhardt & Denhardt (2015) emphasize, these innovations should be used not to control but to serve the public.

To meet these challenges, the government must invest in reliable digital infrastructure and build a digitally skilled workforce (Kollmann et al., 2019). This includes training programs, partnerships with universities, and the recruitment of IT professionals. Additionally, fostering an innovation-friendly environment through support and incentives, such as pilot funding and recognition programs, can help public institutions adapt and evolve. By aligning technology with inclusive governance and service-oriented values, public administration in the digital age can become more efficient, equitable, and citizen-focused.

RESEARCH METHOD

This study adopts a qualitative descriptive approach using secondary data sources, primarily through a structured literature review. This method is suitable for analyzing conceptual and empirical developments related to digital transformation in public services and governance. The literature review was conducted in four systematic stages: (1) problem formulation, (2) literature identification and selection, (3) data evaluation, and (4) analytical synthesis and interpretation. These stages were implemented to ensure the rigor and relevance of the data used in understanding the dynamics of digital transformation, especially the implementation of big data and SPBE (Electronic-Based Government System), in the Indonesian public sector.

In the problem formulation stage, the core issue identified was the transformation of public governance mechanisms in response to technological advances in the digital era, particularly the integration of big data and citizen-centered service delivery under the New Public Service paradigm. The research aims to assess how these developments influence service quality, efficiency, and public engagement in policymaking. During the literature identification stage, academic sources were gathered using keyword searches such as *"Public Policy in the Digital Era"*, *"Big Data for Public Services"*, and *"Digitalization Implementation in Public Administration"*. Searches were conducted through reputable academic Scopus databases. Additional materials such as official government reports, policy briefs, and white papers related to SPBE implementation in Indonesia were also included. From this process, 1421 scopus sources were selected based on their relevance, credibility, and thematic alignment with the research focus, which include 722 articles, 408 conference papers, 179 book chapters, and 112 other resources.

In the data evaluation stage, all selected documents were assessed based on criteria such as the year of publication (most from 2015 onward to ensure relevance), the context of the study (preferably Southeast Asia or developing countries), and conceptual clarity regarding digital transformation, big data, and participatory governance. Articles that focused exclusively on technical aspects without governance context were excluded. The final set of sources reflects diverse perspectives on public sector innovation, digital inclusion, and the evolution of service delivery models. Detail of identification and evaluation stages captured in Figure 1.

For the data analysis and interpretation stage, a thematic analysis was applied. This involved categorizing data into major themes such as (1) technological drivers of public sector transformation, (2) digital citizen participation mechanisms, (3) the adoption of SPBE and e-government frameworks, and (4) alignment with New Public Service principles. Patterns, contradictions, and conceptual gaps were identified across the literature to generate a critical synthesis. The goal was not only to describe developments

in digital governance but also to evaluate their implications for accountability, transparency, and public value creation in Indonesia.

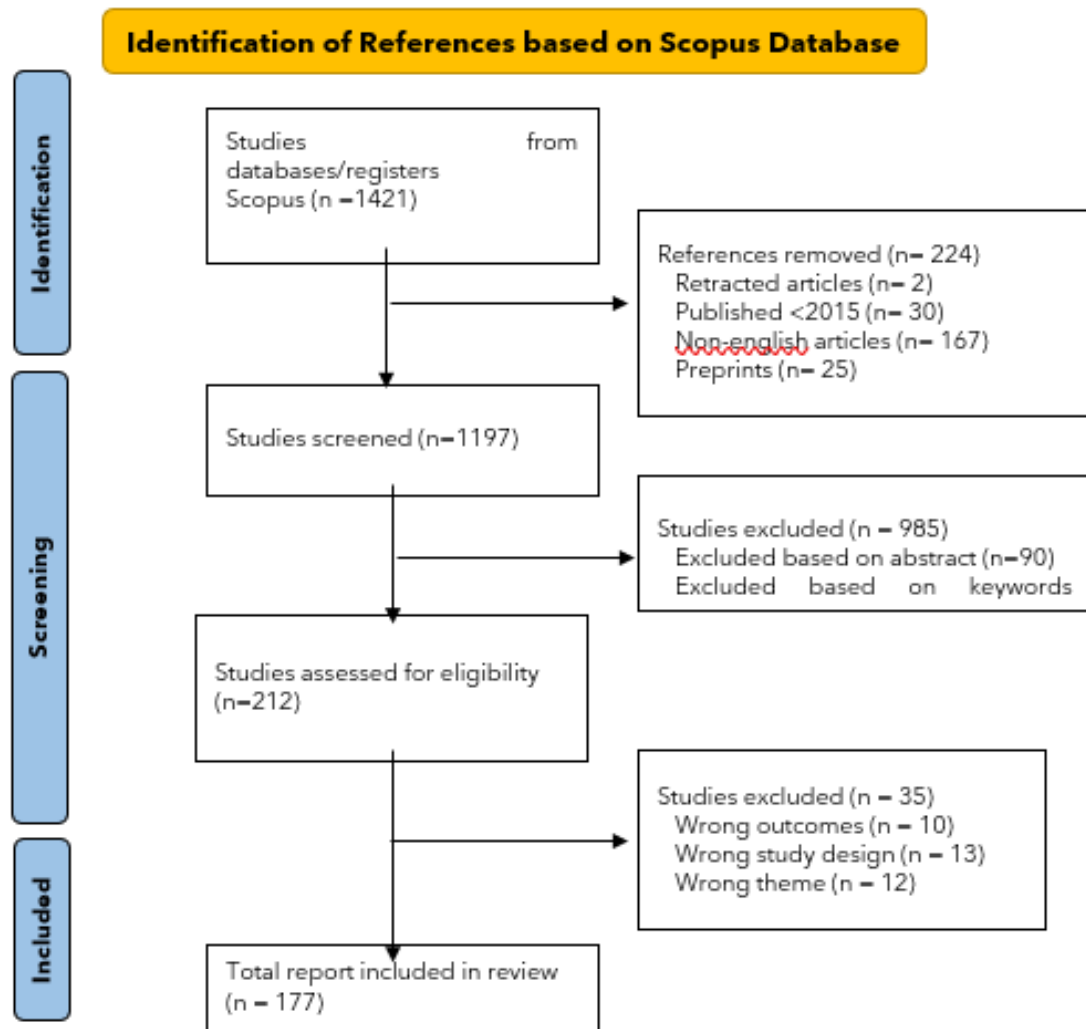


Figure 1. PRISMA Process, 2006-2025

In summary, this qualitative literature review approach allows for a contextual and integrative understanding of how digital transformation, particularly through big data and SPBE, is reshaping public service delivery. The use of scholarly sources combined with policy documents ensures both theoretical depth and practical relevance. This methodological strategy supports the study's objective to offer actionable insights for policymakers, academics, and public administrators striving for more inclusive and effective governance in the digital era.

RESULT AND DISCUSSION**Technological Drivers of Public Sector Transformation****Table 1. Thematic Analysis: Technological Drivers of Public Sector Transformation**

Theme	Description	Keywords
Digital Infrastructure	Foundational systems such as internet networks, cloud servers, and digital connectivity are essential to support digital public services.	broadband, connectivity, cloud, digital networks
Automation and Efficiency	Technology is used to automate bureaucratic processes to speed up services, reduce costs, and improve accuracy.	automation, red tape, efficiency, digital workflow
Data-Driven Governance	Decision-making and public policies are increasingly guided by real-time data through the use of big data, AI, and performance dashboards.	big data, analytics, dashboard, real-time data
System Fragmentation	The existence of many disconnected systems and apps creates integration and interoperability challenges across government institutions.	silo system, integration, interoperability, SPBE
Digital Literacy Gaps	Low levels of digital skills among civil servants and citizens hinder the adoption and effectiveness of public sector digital technologies.	digital literacy, training, human resource capacity
Ethical and Inclusive Tech Use	Emphasizing the importance of ethical technology practices that protect personal data and ensure inclusivity for vulnerable populations.	data protection, digital inclusion, technology ethics

Table 1 provides the information of technology which has become a key driver in transforming how the public sector delivers services and interacts with citizens. Innovations such as Artificial Intelligence (AI), cloud computing, Big Data analytics, and mobile platforms have enabled governments to operate more efficiently, automate bureaucratic tasks, and offer faster, more responsive public services. In Indonesia, this transformation is institutionalized through the Electronic-Based Government System (SPBE), which mandates digitalization across ministries and local governments. The adoption of digital infrastructure, such as broadband connectivity, cloud systems, and online platforms, has enabled innovations like e-taxation, digital licensing, and mobile health services, reflecting a significant shift from reactive to proactive governance. These services increasingly rely on real-time data and predictive analytics, showcasing the

emergence of data-driven governance as a key transformation tool. Nevertheless, the effectiveness of these technologies depends on their integration into existing systems, which remains limited due to system fragmentation and a lack of interoperability among platforms.

Despite the potential of technology to revolutionize public service delivery, several critical challenges hinder its success. Many regions, particularly rural and remote areas, suffer from poor internet access, which limits the reach and effectiveness of digital platforms (Araujo et al., 2021). Moreover, digital literacy gaps among both civil servants and citizens restrict meaningful engagement with new technologies. Capacity-building efforts are often insufficient, and public agencies still operate in silos, preventing data sharing and integrated service delivery (Cholik, 2021). These institutional barriers reduce the transformative potential of automation and digital tools. Furthermore, as public services become more digitized, concerns over privacy, data security, and inclusivity emerge. Ethical use of technology is essential to prevent the marginalization of vulnerable populations and ensure that innovation serves all citizens equitably (Schulze-Gabrechten, 2019). This calls for a broader shift in mindset, beyond digitizing paper-based processes toward embracing values of openness, collaboration, and institutional reform. A sustainable transformation requires building inclusive digital infrastructure, establishing strong digital governance frameworks, and ensuring responsible and ethical technology use. Ultimately, while technology offers powerful solutions, its success depends on how well it is integrated into a broader agenda of public sector reform, equity, and democratic accountability.

Digital Citizen Participation Mechanisms

Table 2. Thematic Analysis: Digital Citizen Participation Mechanisms

Theme	Description	Keywords
Expansion of Participation	Digital platforms enable broader civic engagement, allowing citizens to voice opinions, provide feedback, and co-design public services.	e-participation, digital inclusion, online forums
Interactive Governance	Government agencies use social media, apps, and e-platforms to communicate and gather citizen input for decision-making and policy design.	interactive governance, citizen input

Barriers to Equitable Access	Disparities in digital skills and internet access limit participation for certain demographic groups, particularly in rural and marginalized areas.	digital divide, inequality, participation gaps
Transparency and Trust Building	Open digital dialogue fosters trust, but concerns over surveillance and lack of response from government can reduce citizen motivation.	transparency, trust, responsiveness
Institutional Readiness and Culture	Resistance within bureaucracy and lack of standardized frameworks hinder the effective use of digital tools for participatory governance.	bureaucratic inertia, institutional readiness

Table 2 shows that digital transformation has reshaped how governments interact with citizens, offering innovative ways to promote participation in public decision-making. Several countries use digital tools such as website, social media platforms, mobile apps, and participatory planning portals have enabled broader e-participation across multiple sectors. These platforms allow citizens to report issues, propose solutions, and engage in feedback loops with public institutions. The result is a more interactive model of governance, where citizen voices can influence policy design and implementation in real-time. Unlike traditional participation mechanisms, often constrained by time, location, or bureaucracy, digital platforms can be accessed more easily and frequently, expanding democratic space in the case of developed countries such as Singapore, and the UK (Convery & Kerr, 2007). This shift aligns with global trends emphasizing citizen-centric governance, where public services are co-created rather than merely delivered (Schulze-Gabrechten, 2019). However, successful implementation requires not only technological infrastructure but also a responsive institutional mindset that values transparency and public dialogue.

Despite their potential, digital participation tools face several barriers in practice. A key issue is the digital divide, where unequal access to the internet and variations in digital literacy prevent equitable participation. Rural communities, low-income households, and older populations often lack the resources or knowledge to fully engage with digital platforms. Even when access is available, institutional culture poses challenges: many government agencies are not equipped, either technologically or culturally, to respond adequately to citizen input (Araujo et al., 2021; Boellstorff, 2019; Mansir & Karim, 2020; Rahmatullah et al., 2020). There's a risk of tokenistic engagement,

where platforms collect feedback but lack follow-up or response mechanisms. This undermines trust and discourages further participation. Furthermore, data privacy concerns and the potential misuse of digital surveillance tools may discourage open civic expression (Schulze-Gabrechten, 2019). To address these issues, governments must invest in inclusive digital literacy programs, create clear participation protocols, and embed digital feedback systems into policymaking processes. Ultimately, technology can democratize governance, but only if institutions are prepared to listen, respond, and act on what citizens say.

SPBE and e-government frameworks

Table 3. Thematic Analysis: SPBE and e-government frameworks

Theme	Description	Keywords
Policy-Driven Digitalization	SPBE serves as a formal policy instrument that mandates digital transformation across ministries and local governments.	SPBE, regulation, digital mandate
Interoperability and Integration	E-government systems aim to integrate services across agencies through interoperable platforms and shared data ecosystems.	interoperability, integration, data architecture
Service Efficiency and Automation	Digitization under SPBE enables automation of public services (e.g., licensing, taxation, healthcare) to increase responsiveness and reduce bureaucracy.	automation, efficiency, digital public services
Institutional Fragmentation	Legacy systems and siloed practices across agencies hinder full-scale integration and reduce the effectiveness of SPBE implementation.	fragmentation, silos, legacy systems
Standardization and Governance	The need for unified standards and digital governance frameworks is emphasized to ensure consistency and accountability in service delivery.	governance, standards, digital maturity

Table 3 provides information on the implementation and basic frameworks of e-government Indonesia's digital transformation in public administration is strongly influenced by the Electronic-Based Government System (SPBE), a strategic government initiative designed to standardize and accelerate digitalization across national and local levels. SPBE functions not only as a technical initiative but also as a policy instrument, guiding how ministries, agencies, and regional governments adopt digital tools. The

framework emphasizes integrated service delivery, efficiency, and institutional collaboration (Amri et al., 2022). For example, online licensing systems, electronic tax submissions, and digital procurement platforms have become more common under SPBE. These digital services help automate previously manual processes, reducing processing time, minimizing human error, and increasing public access, especially in urban areas. This reflects broader global trends in e-government, where the focus has shifted from merely putting information online to reengineering entire service delivery systems for better efficiency, transparency, and user orientation (Amri et al., 2022).

However, SPBE implementation in Indonesia is still facing significant structural and institutional challenges. One critical issue is the lack of interoperability between systems, where different ministries or local governments develop their own platforms without standardized protocols for data exchange. This institutional fragmentation creates bottlenecks in information flow and makes it difficult to achieve seamless public services. For instance, integrating digital identity verification across health, education, and social protection systems remains incomplete, often requiring citizens to resubmit similar data across different portals. Moreover, many agencies still operate in silos, relying on legacy systems and resistant organizational cultures that prioritize departmental autonomy over cross-sectoral collaboration (Amri et al., 2022). Without strong governance mechanisms, such as digital maturity assessments, centralized standards, and shared accountability frameworks, SPBE's intended integration goals risk becoming superficial.

To overcome these barriers, the government must strengthen the governance architecture of SPBE by investing in digital leadership, enhancing technical capabilities, and enforcing consistent standards for service interoperability. Capacity-building programs are needed not only for IT personnel but also for top-level bureaucrats to internalize the principles of open, efficient, and data-driven governance (Gracia & Casaló Ariño, 2015). Additionally, adopting international benchmarks, such as those from the OECD or UNDESA (Hassan et al., 2022; Dong, 2015). As Denhardt & Denhardt (2015) on digital government, could help Indonesia position its SPBE efforts within a global best-practice framework. In essence, the SPBE initiative represents a significant step forward in modernizing Indonesia's public sector, but its transformative potential will only be

realized if supported by institutional alignment, sustained political will, and inclusive governance design.

Alignment with New Public Service (NPS) Principles

Table 4. Thematic Analysis: Alignment with New Public Service (NPS) Principles

Theme	Description	Keywords
Citizen-Centered Governance	Emphasizes the shift from seeing citizens as customers to co-creators in public value, aligned with NPS ideals.	public interest, citizen engagement, co-creation
Participatory Policy Making	Digital platforms are increasingly used to collect input from citizens in planning, budgeting, and monitoring public services.	participation, e-participation, civic dialogue
Transparency and Trust	NPS highlights the importance of openness, and digital tools are enabling greater transparency and accountability in service delivery.	trust, transparency, accountability
Ethical and Responsive Public Service	NPS encourages ethical behavior and responsiveness to citizens' needs, which aligns with digital mechanisms for grievance redressal and feedback.	responsiveness, ethics, feedback loop
Institutional Capacity Building	NPS calls for strengthening government capacity to serve citizens better, which intersects with digital skills training and inclusive design.	capacity, inclusion, empowerment

The digital transformation of public governance in Indonesia reflects a growing alignment with the New Public Service (NPS) paradigm, which emphasizes citizens not as customers, but as active participants in democratic governance. This paradigm marks a normative shift away from New Public Management's market-oriented focus, instead prioritizing public interest, ethical governance, and participatory processes. Through digital platforms like e-consultation, participatory budgeting websites, and online complaint handling systems (e.g., LAPOR!), citizens are gradually being included in policy formulation and service evaluation. These mechanisms allow the state to listen and respond to citizen voices, thus fostering mutual accountability and co-creating solutions to public problems. This interaction also builds trust, an essential foundation of the NPS framework, especially in a context where institutional legitimacy may have been historically challenged.

Digital governance tools further reinforce NPS values by enabling greater transparency, openness, and responsiveness. The publication of real-time government data on procurement, spending, and performance allows citizens and civil society to monitor the use of public resources and evaluate the effectiveness of government programs. At the same time, platforms for public feedback help establish a continuous dialogue between citizens and institutions, strengthening ethical responsibility and ensuring that government action remains grounded in community needs. These feedback loops serve as both diagnostic and accountability mechanisms. However, the degree to which these tools fulfill NPS ideals depends largely on the inclusiveness of design and implementation. For instance, limited digital literacy, unequal access to internet infrastructure, and low institutional responsiveness can hinder the ability of marginalized populations to meaningfully engage in these processes.

To better align with NPS principles, Indonesia's digital governance agenda must focus on building inclusive institutional capacity. This includes not only improving digital infrastructure and e-literacy across rural and underserved communities, but also fostering an internal cultural shift within government agencies (Williams, 2014). Bureaucrats must be equipped with not only technical competencies but also civic values, understanding the ethical dimensions of public service and embracing a long-term commitment to democratic engagement. Furthermore, digital platforms should be intentionally designed to encourage deliberation, representation, and pluralism, rather than merely aggregating feedback for performance metrics. In doing so, Indonesia can move beyond a transactional model of e-government toward a more transformative, values-driven model of governance that genuinely reflects the aspirations of the New Public Service such as has been done in Germany (Kollmann et al., 2019).

CONCLUSION

This study has explored the digital transformation of public governance in Indonesia by analyzing literature through four interrelated themes: technological drivers, mechanisms of digital citizen participation, the adoption of SPBE and e-government frameworks, and alignment with New Public Service (NPS) principles. The findings reveal that Indonesia's digital transformation is not solely driven by technological advancement,

but also by a broader sociopolitical context demanding efficiency, transparency, and citizen empowerment. Emerging technologies such as big data analytics, cloud computing, and AI are being used to streamline bureaucracy, automate services, and improve responsiveness. However, the effectiveness of these technologies' hinges on institutional readiness, legal certainty, and digital literacy, indicating that digital transformation is as much about governance reform as it is about infrastructure.

The integration of digital platforms to enhance citizen participation and accountability further reflects a gradual shift toward democratic values espoused by the NPS model. Yet, challenges remain in ensuring inclusive participation, especially for marginalized groups, due to disparities in access, skills, and institutional openness. Similarly, the adoption of SPBE and e-government frameworks is central to achieving interoperability and efficiency, but the success of such frameworks depends on multi-level coordination and long-term commitment. Ultimately, the transformation of Indonesia's public governance is most impactful when it aligns with the ethical and participatory ideals of NPS. This alignment reinforces the idea that digital tools should not only improve service delivery but also strengthen democratic engagement, responsiveness, and public trust. Future research should consider more empirical fieldwork or comparative case studies to validate these findings and further assess how digital transformation can sustain democratic governance in practice.

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