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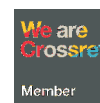
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Analysis of digital transformation of public administration in improving the effectiveness of government services in Indonesia

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ABSTRACT

Digital transformation has become a central pillar in reshaping public administration systems worldwide, including in Indonesia, where government institutions are increasingly adopting digital platforms to enhance service quality. Despite strong national policies such as the Electronic-Based Government System (SPBE), significant gaps remain between regulatory frameworks and practical implementation at central and local levels. This study aims to analyze how digital transformation has influenced the effectiveness of government services in Indonesia by examining implementation patterns, enabling factors, persistent barriers, and societal impacts. Using a qualitative literature review approach, the research synthesizes peer-reviewed studies, government documents, and international reports to identify trends in system integration, human resource capacity, technological infrastructure, and governance readiness. The findings reveal that digital transformation has improved service speed, transparency, and citizen experience, as demonstrated in systems such as OSS-RBA, SIPD, and Jakarta's JAKI application. However, these benefits are uneven due to interoperability issues, inadequate digital competencies among civil servants, fragmented infrastructure, cybersecurity vulnerabilities, and regional budget disparities. Case evidence shows that successful digitalization occurs when strong policy frameworks are supported by institutional commitment, aligned regulations, robust infrastructure, and user-centered service design. Conversely, misaligned legal procedures, partial system adoption, and organizational resistance hinder effectiveness. This study concludes that Indonesia's digital governance progress is promising yet incomplete, requiring stronger integration, capacity building, and equitable infrastructure development. The analysis contributes to a deeper understanding of how digital transformation can be strategically strengthened to support efficient, transparent, and citizen-centric public administration.

Keywords:

Digital transformation
Public administration
Government services

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Introduction

Digital transformation has become a fundamental element in modernizing public administration across many countries, including Indonesia, as societal demands for faster, more transparent, and more responsive services continue to grow (Mountasser & Abdellatif, 2023). The Indonesian government has accelerated digitalization through various policies, such as the implementation of the Electronic-Based Government System (SPBE), to improve bureaucratic quality. Technological

advancements enable governments to provide digital public services that are more efficient than conventional administrative mechanisms (Cordella & Tempini, 2015). However, implementing digital transformation still faces structural challenges, including technological readiness, human resource capacity, and data integration across agencies (Corydon et al., 2016).

In the context of public administration, digitalization is not merely the adoption of technology but also a paradigm shift in how governments design, manage, and evaluate public services (Chatfield & Reddick, 2016). Digital governance requires cross-sector collaboration and information openness to enhance service accountability (Gil-Garcia et al., 2016). Indonesia's geographical complexity and digital divide necessitate inclusive design of technology-based public services (Wahyunengseh et al., 2020). Therefore, an in-depth analysis of the effectiveness of digital transformation is essential to ensure that digitalization significantly impacts the quality of government services (UN DESA, 2022).

Although the development of e-government in Indonesia has progressed, challenges remain in system integration, data security, and digital infrastructure interoperability (Wirtz et al., 2019). Both central and local governments often display different degrees of digital readiness and commitment, resulting in unequal quality of public services across regions (Wagola et al., 2023). Moreover, hierarchical bureaucratic culture may hinder digital innovation due to organizational resistance to change (Danar, 2024). These factors emphasize the need for evaluating the extent to which digital transformation has genuinely improved the effectiveness of public service delivery.

Digital transformation also aims to enhance citizen satisfaction, reduce operational costs, and accelerate administrative processes within government institutions (Cullen, 2015; Srivastava et al., 2025). The success of digital services is strongly influenced by user experience, accessibility, and clarity of procedures within government digital platforms (Anderson et al., 2015). Furthermore, the COVID-19 pandemic accelerated the widespread adoption of digital public services, providing real-world evidence of the urgency and potential of public sector digitalization in Indonesia. This situation further reinforces the need for empirical analysis regarding the effectiveness of digital transformation in improving government service delivery (Criado & Gil-Garcia, 2019).

The urgency of this research arises from the necessity to understand the extent to which digital transformation enhances government service effectiveness amid rapidly evolving technologies and changing public expectations (Janssen & van der Voort, 2020). Limited studies that comprehensively explore the relationship between digital innovation, bureaucratic performance, and public service quality in Indonesia reveal significant gaps in the existing literature (Nugroho & Purbokusumo, 2020; Sabani et al., 2019). Thus, this research is essential to provide insights that can serve as an evaluative basis for Indonesia's digital government policies (Hermana & Silfianti, 2011).

Previous studies have revealed varied findings regarding the impact of digital transformation on public administration, including improvements in efficiency, transparency, and citizen satisfaction (Wirtz et al., 2021). International studies highlight that the success of digital government is influenced by institutional factors, technical preparedness, and citizen participation (Anthopoulos, 2017). Meanwhile, studies in Indonesia emphasize issues related to system fragmentation, low digital literacy among civil servants, and unequal digital infrastructure across regions (Sundari & Sartika, 2025). However, previous research has rarely provided comprehensive analyses of the effectiveness of digital transformation in Indonesia's public service delivery, leaving room for further study (Kusmiarto et al., 2021).

This study aims to analyze digital transformation in Indonesian public administration and evaluate its effectiveness in enhancing government service quality by examining the implementation processes, supporting factors, barriers, and its broader impact on society. Additionally, this research seeks to identify gaps between digital government policies and actual implementation in the field to develop strategic recommendations for strengthening digital governance in Indonesia.

Methods

This study employs a qualitative research approach with a literature study design, which focuses on collecting, reviewing, and interpreting academic sources related to digital transformation in public

administration in Indonesia. A literature study is appropriate for understanding conceptual developments, policy frameworks, implementation challenges, and empirical findings through a systematic review of previously published works (Snyder, 2019). This type of research is suitable for examining complex social and administrative phenomena such as digitalization in the public sector, which require thematic and conceptual insights derived from multiple scholarly sources (Xiao & Watson, 2019).

Data Sources

The research relies on secondary data, including peer-reviewed journal articles, academic books, government policy documents, official reports, and publications from international institutions such as UN DESA. The use of secondary data enables the researcher to gain a comprehensive understanding of the dynamics, challenges, and effectiveness of digital public service implementation in Indonesia and other comparative contexts (Bowen, 2009). All sources were selected based on their relevance, credibility, and recency to ensure the validity and quality of the data analyzed.

Data Collection Technique

Data were collected using the documentary technique, which involved gathering and organizing written materials from academic databases such as Google Scholar, Scopus, and national journal portals, as well as reviewing official government documents related to the Electronic-Based Government System (SPBE). Documentary analysis is considered an appropriate qualitative technique, as it allows researchers to systematically extract information from textual materials that contain rich descriptions and conceptual discussions (Bowen, 2009).

Data Analysis Technique

The data obtained were analyzed using content analysis and thematic analysis to identify key patterns, themes, and relationships related to digital transformation in public administration and the effectiveness of government services. Content analysis was applied to examine trends in concepts, implementation approaches, and the impacts of digitalization reported in the literature. Meanwhile, thematic analysis was used to categorize findings into specific themes, such as digital innovation, bureaucratic barriers, technological readiness, and public service quality (Clarke & Braun, 2017). The analysis process followed the qualitative research stages of data reduction, data display, and conclusion drawing, consistent with the interpretative nature of qualitative inquiry (Miles et al., 2020).

Results and Discussion

Implementation of Digital Transformation in Indonesian Public Administration

Policy architecture and institutional actors

Indonesia's digital transformation in public administration is guided by a clear policy architecture and several institutional actors that together define objectives, standards, and implementation channels. The legal cornerstone is Presidential Regulation No. 95/2018 on the Electronic-Based Government System (SPBE), which mandates that public institutions adopt interoperable electronic systems, standardize data and services, and coordinate implementation across levels of government. The regulation establishes architecture, governance responsibilities, and monitoring mechanisms that aim to transform siloed e-government initiatives into a coherent national SPBE ecosystem.

Key central actors include the Ministry of Communication and Informatics (Kominfo), the Ministry for State Apparatus Empowerment and Bureaucratic Reform (PANRB), the National Development Planning Agency (Bappenas), and the Finance/Local Government agencies that manage regional funding and technical assistance. In practice, central agencies provide regulatory frameworks, platform standards, and shared services (e.g., national data centers and APIs), while regional governments (provincial/city/district) remain responsible for deploying front-end services and integrating legacy systems into the SPBE architecture. Several studies note this two-tier division as a structural enabler but also a source of coordination stress when capacities diverge between central and regional actors.

Technical implementation patterns, architectures, and persistent fragmentation

At the technical level, the Indonesian public sector has adopted a mix of approaches: (1) Central/shared platforms for certain cross-cutting functions (e.g., national data centers, SPBE backbone, standard APIs); (2) Sectoral/agency systems (ministries, agencies) where many units build or procure their own applications for case management, licensing, social assistance, or financial management; (3) Regional/local deployments using both nationally mandated systems (such as SIPD for regional development planning) and locally developed apps (city portals, Smart City dashboards).

This mixed architecture produces two contrasting outcomes. Where agencies fully align to SPBE standards and use shared services, integration and reuse are high and citizen experience improves. Where agencies keep standalone legacy systems without common data standards, fragmentation persists: duplicate data entry, inconsistent citizen identifiers, and patchwork workflows that reduce automation gains. The maturity of cross-organizational interoperability has been empirically measured as low-to-moderate in recent studies, indicating an urgent need for stronger technical governance and standardized data schemas.

Human, organizational and financial implementation realities

Implementation is not purely technical. Three realistic constraints recur across case studies: (1) Human capacity gaps – many local governments lack staff trained in system integration, API management, data governance and cybersecurity; training programs are unevenly distributed; (2) Organizational inertia and incentives – some agencies resist central standards because local leaders prefer control over procurement, budgets, or legacy workflows; incentives for data sharing are weak; (3) Fiscal disparities – wealthier provinces and major municipalities (e.g., Jakarta, Bandung, Surabaya) can afford cloud services, skilled teams, and rapid procurement cycles; smaller districts struggle to fund infrastructure or long-term maintenance.

These organizational realities explain why progress is geographically uneven and why some national initiatives remain under-utilized in practice.

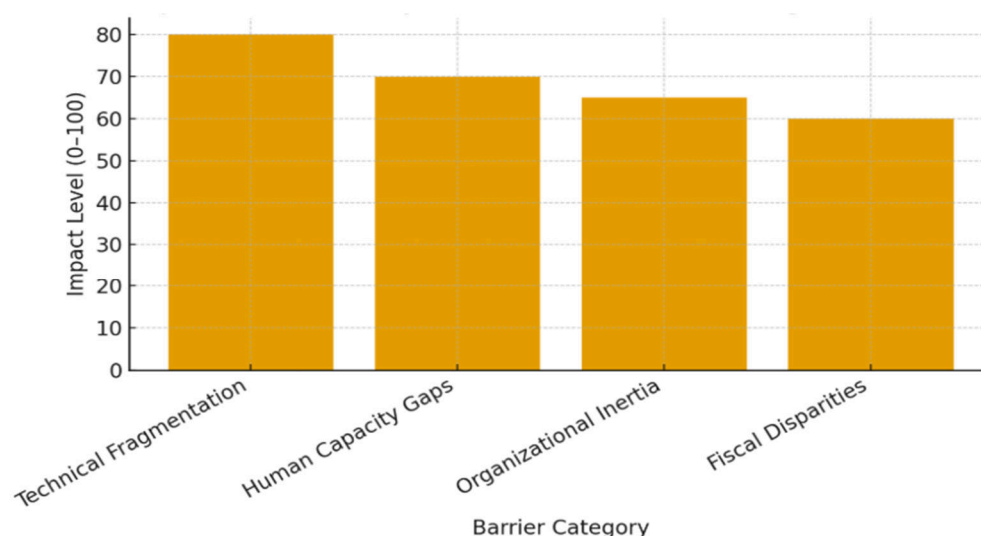


Figure 1 Illustrative Impact Levels of Key Barriers in Indonesia Digital Public Administration

The implementation of digital transformation in Indonesia's public administration demonstrates notable progress, although significant structural and technical challenges remain. National policies such as the Electronic-Based Government System (SPBE), the OSS-RBA licensing platform, the SIPD regional planning system, and the INA Digital initiative provide a strong institutional framework aimed at accelerating the digitalization of government services. However, the actual conditions in the field reveal persistent gaps between policy design and implementation realities.

In the area of business licensing, the OSS-RBA platform was introduced to simplify and accelerate licensing procedures through a risk-based approach. Conceptually, the system has the potential to reduce processing time and minimize face-to-face interactions. Yet, empirical studies indicate that

its implementation is not fully effective due to incomplete integration between the central system and local government databases, inconsistencies between legal regulations and the automated business rules embedded in the platform, and unclear accountability for positive licensing mechanisms. These shortcomings create legal uncertainty and lead some businesses to revert to manual procedures or rely on intermediaries (Zahara et al., 2023).

In the context of regional development planning, the SIPD system aims to unify planning, budgeting, and reporting across Indonesia's local governments. In some regions, such as Donggala, the system has improved transparency and program coordination. However, districts with limited human resource capacity experience challenges such as data inconsistencies, lack of integration with local financial systems, and limited ongoing technical support from central agencies. These issues indicate that successful implementation depends not only on the availability of the system but also on sustained investments in data governance and user capacity (Karundeng et al., 2021).

Meanwhile, Jakarta's experience with Jakarta Smart City and the JAKI application illustrates how integrated digital platforms can enhance public service delivery. Studies show increased citizen satisfaction when service requests, reporting, and information access are consolidated into a single digital channel. Nonetheless, the effectiveness of such platforms still depends heavily on the government's ability to ensure timely backend follow-up and integrate internal workflows to respond efficiently to citizen reports (Maktub et al., 2025).

Across these cases, it becomes evident that Indonesia's digital transformation progresses unevenly. Although national policies and platforms are well-established, technological fragmentation, disparities in regional capacity, and regulatory misalignment hinder full implementation. Evaluations of data interoperability maturity also reveal that many institutions remain unprepared to integrate their systems, limiting seamless data exchange across agencies. Some local governments, such as Sukabumi, have shown improvement in their SPBE index through strong political commitment and adequate resourcing, yet numerous regions continue to lag due to limited human and financial capacity (Bahagia et al., 2025).

These findings highlight that digital transformation cannot rely solely on technological deployment. It requires interoperability from the outset, alignment between legal frameworks and digital workflows, continuous investment in human resource capacity, and prioritization of high-value service integrations such as digital identity, licensing, and electronic payments. Without strengthening these elements, technological innovations may fail to produce meaningful improvements in public service quality.

Supporting Factors of Digital Government Implementation

Strong policy framework

A comprehensive and authoritative policy framework has become a primary enabler of digital transformation in Indonesia's public administration. Presidential Regulation No. 95/2018 on the Electronic-Based Government System (SPBE) establishes national standards for architecture, interoperability, data management, and digital service obligations. The regulation provides a uniform blueprint that ministries and local governments must follow (Government of Indonesia, 2018).

Case evidence, Empirical evaluation in Sukabumi Regency demonstrates that SPBE index scores increased significantly after the regional government aligned its systems with the SPBE architecture, conducted data standardization, and implemented cross-agency process mapping. This suggests that a strong legal framework contributes meaningfully to improved digital service performance (Bahagia et al., 2025).

Implication, Robust regulation must be supported by monitoring, enforcement, and technical assistance—policy alone is insufficient if not translated into operational compliance (Government of Indonesia, 2018).

Institutional commitment and coordination

Institutional leadership, particularly among Kominfo, PANRB, and Bappenas, plays a central role in driving SPBE adoption. These institutions coordinate standards, guide agencies in system integration,

and manage national shared services, thereby reducing fragmentation and duplication across digital platforms (Ministry of State Apparatus and Bureaucratic Reform, 2024).

Case evidence, Studies examining SIPD (Regional Development Information System) implementation show that regions receiving intensive technical support from central agencies achieved higher integration and system utilization than regions with minimal follow-up assistance. This indicates that central local coordination substantially influences the success of digital systems. Implication, Institutional commitment must be continuous. Short-term programs without sustained interagency cooperation often lead to partial or failed implementation.

Technological advancement and infrastructure readiness

Indonesia's expanding digital infrastructure including broadband penetration, cloud adoption, and government data centers provides a strong foundation for digital governance. According to APJII (2024), internet penetration reached 79.5% in 2024, supporting the feasibility of mobile-based government services. The government's development of the National Data Center (PDN) further enables more efficient and secure hosting of public-sector systems (Ma'ruf, 2024).

Case evidence, The operational disruptions and recovery processes associated with PDN services highlight the importance of infrastructure resiliency and data protection mechanisms. While investment in data centers enables scalability, outages reveal gaps in disaster recovery and cybersecurity protocols that must be addressed to maintain public trust (Ma'ruf, 2024). Implication, Infrastructure expansion must be accompanied by operational security, redundancy, and governance frameworks to ensure reliable digital services (APJII, 2024).

Public demand, digital literacy, and user adoption

The rapid increase in digital literacy and public expectations for efficient services has pressured the government to modernize its service delivery. Findings from a study on Jakarta's JAKI super-app show that user satisfaction correlates strongly with ease of use, interface integration, and service responsiveness (Maktub et al., 2025).

Case evidence, Business actors using the OSS-RBA licensing system reported switching back to manual channels when the platform presented regulatory ambiguities or inconsistent system performance. This demonstrates that user demand alone does not ensure successful adoption systems must also deliver reliability and legal clarity (Zahara, 2023).

Implication, Digital transformation requires not only accessible platforms but also UX design improvements, legal harmonization, support channels, and citizen outreach programs to ensure broad and sustained public acceptance (Maktub et al., 2025).

Cross-factor synergy

The success of Indonesia's digital governance depends on synergy across policy, institutional capacity, infrastructure readiness, and public acceptance. Case examples including SPBE improvements in Sukabumi, SIPD implementation patterns, JAKI adoption outcomes, and OSS-RBA challenges demonstrate that strong performance emerges where all four factors align simultaneously. Fragmentation typically appears in regions with weak institutional coordination or insufficient infrastructure, even when policies are strong (Bahagia et al., 2025; Zahara, 2023).

National SPBE evaluations consistently reveal that system fragmentation remains a major barrier in Indonesia's digital governance ecosystem. Many ministries and regional governments still operate isolated legacy systems with incompatible data formats, preventing seamless information exchange and forcing citizens to repeatedly submit the same data. This fragmentation slows the development of fully integrated digital public services and reduces the overall impact of digital transformation.

Human resource limitations further constrain implementation. Numerous assessments show that many civil servants—especially at provincial and district levels—lack essential digital competencies such as data management, cybersecurity, cloud operations, and system integration. Although training exists, distribution is uneven, creating regional disparities that lead to delays in system adoption, weak platform maintenance, and underutilization of digital tools.

Table 1. Key Barriers and Challenges in Indonesia's Digital Public Administration Transformation

Category	Description (Concise Narrative)
Fragmentation & Interoperability Issues	Many ministries and local governments still use siloed legacy systems with different data standards, creating inefficiencies and preventing integrated digital services.
Limited Human Resource Capacity	Civil servants often lack digital competencies such as data literacy, cybersecurity, cloud management, and system integration, slowing digital adoption.
Budget Disparities Across Regions	Unequal fiscal capacity between provinces/regencies results in uneven digital infrastructure and service availability. Wealthier regions progress faster than rural or remote areas.
Data Security & Privacy Vulnerabilities	Weak cybersecurity governance, insufficient protection standards, and recurring breaches reduce public trust and increase institutional risk.
Resistance to Organizational Change	Bureaucratic culture, rigid procedures, and fear of new responsibilities lead to slow adoption of digital workflows.

Budget inequality also contributes to uneven digitalization. Wealthier regions can invest in modern ICT infrastructure and skilled personnel, while rural or remote areas struggle to fund basic digital systems. This results in varying SPBE scores and inconsistent uptake of national platforms such as SIPD, OSS-RBA, and integrated service portals.

Data security vulnerabilities remain a serious concern, highlighted by incidents of system disruptions and data leaks in public institutions. Weak cybersecurity standards, inconsistent implementation, and limited incident-response capabilities undermine public trust and expose institutional risks, as illustrated by disruptions at the National Data Center (PDN).

Finally, organizational resistance to change continues to hamper digital adoption. Bureaucratic routines, a preference for manual processes, and fear of increased transparency lead some agencies to retain parallel offline procedures. This resistance demonstrates that successful digital transformation requires not only technology and regulations but also strong leadership, cultural change, and incentives for adopting digital practices.

Effectiveness of Digital Transformation in Enhancing Public Service Quality

Overall, Indonesia's digital transformation has delivered measurable gains in public service effectiveness—particularly in terms of processing speed, transparency, citizen experience, and data-informed decision-making—but these gains are uneven across sectors and geographies. The subsections below unpack each dimension, present concrete case evidence, and highlight limitations that temper the observed improvements.

Efficiency and speed of services

Digital platforms have reduced procedural steps and shortened processing times for many administrative services. For example, municipal and provincial e-service portals and national platforms such as OSS-RBA (Online Single Submission Risk Based Approach) and SIPD (Regional Development Information System) have automated elements of licensing, planning, and reporting workflows that previously required multiple in-person visits and paper forms. Empirical studies report significant reductions in processing time where systems are fully implemented and integrated (Bahagia, Pratama, & Yusuf, 2025; Duri, 2024). In Palembang and several other cities where OSS-RBA modules were implemented and linked to local processes, researchers observed faster license issuance for low-risk activities when local offices followed the platform's workflows (Duri et al., 2024).

Nevertheless, such efficiency gains are conditional. Where central platforms are only partially integrated with local databases or where hybrid workflows require manual verification, time savings are limited and customers often revert to offline channels. Case studies from Lubuk Linggau and other districts show that implementation gaps and local procedural mismatches can negate the theoretical time advantages of digital platforms (Gunawan et al., 2025). Thus, efficiency gains are real but depend on end-to-end digitalization and alignment of legal and operational rules.

Transparency and accountability

Digitization increases the visibility of administrative actions through automated logs, auditable records, and the potential for public access to service statuses and aggregated performance indicators. Research on e-government implementation in Indonesia suggests that online services can reduce discretionary opportunities and information asymmetries that historically enabled corrupt practices (Ismail et al., 2020). For instance, OSS-RBA's digital trail can document who approved or delayed a licensing action, and SIPD's consolidated planning dashboards make budget proposals and program linkages more visible to oversight bodies.

However, the corruption-reduction effect is mediated by complementary reforms: transparent code does not eliminate corrupt incentives if offline parallel processes persist or if enforcement remains weak (Ismail et al., 2020). Several local evaluations find that while e-systems improve auditability, persistent manual interventions and weak penalty mechanisms limit the realignment of incentives necessary to sustain reductions in corrupt behaviour (Maria & Halim, 2021).

Citizen-centered service experience

From the citizen's perspective, well-designed digital services offer convenience (24/7 access), clearer procedural guidance, and reduction of intermediaries. The Jakarta Kini (JAKI) application is a practical example: studies of JAKI report higher user satisfaction when the app consolidates complaint reporting, permit information, and status tracking in a single mobile interface (Riani et al., 2024). Users praise ease of reporting and the ability to monitor responses, which strengthens perceived responsiveness.

Nevertheless, user experience depends on backend responsiveness. Evidence from Jakarta shows that front-end adoption spikes only translate into improved satisfaction when agencies act promptly on reports; otherwise, the app's promise is frustrated by slow or manual internal processes (Maktub et al., 2025). Moreover, digital divides (connectivity, device access, and digital literacy) mean that rural and low-income populations are less likely to benefit from app-based services, creating uneven citizen experiences (APJII, 2024).

Integration and decision-making (data for policy)

Digital systems generate structured administrative data that can support evidence-based policymaking, real-time monitoring, and performance management. SIPD's consolidation of regional program information has enabled some local governments to detect overlapping programs and reallocate resources more efficiently (Bahagia et al., 2025). Similarly, during the COVID-19 crisis, Indonesia's use of digital reporting and information systems (health apps, dashboards, and tracing support systems) illustrated how digital data streams can guide resource allocation and public communication in emergencies (Afrizal et al., 2023).

However, data integration is still incomplete: many agencies retain siloed datasets, master-data mismatches (e.g., inconsistent citizen identifiers) complicate cross-program analyses, and local capacity to analyse and act on data is uneven. Researchers warn that without standardization, data quality assurance, and investment in analytics skills, the transformational potential of administrative data will remain underexploited.

In sum, digital transformation in Indonesia has produced demonstrable improvements in speed, transparency, citizen experience, and data availability in contexts where platforms are fully integrated, legally aligned, and supported by local capacity. Cases such as Sukabumi's SPBE progress, Jakarta's JAKI, and OSS-RBA implementations in selected cities show the potential for meaningful service improvement (Bahagia et al., 2025; Maktub et al., 2025; Duri, 2024). Yet these successes coexist with numerous partial implementations, hybrid workflows, data silos, infrastructure gaps, and limited human capital that reduce overall effectiveness, especially in remote or under-resourced regions (Gunawan, 2025). Policy efforts should therefore prioritize end-to-end integration, legal harmonization, capacity building, and targeted investments to extend realized benefits more evenly across the country.

Broader Societal Impact of Digital Governance

Digital transformation has had broader positive effects on Indonesian society, including: (1) Enhanced Participation and Inclusivity. Digital platforms enable broader public involvement through online

consultations, feedback systems, and social media engagement with government institutions; (2) Economic Enablers. Online licensing and digital marketplaces foster investment, support MSMEs, and accelerate economic resilience; (3) Digital Equality Challenges. Despite progress, digital divides persist in rural areas, low-income communities, and marginalized groups, limiting the inclusivity of digital public services.

These societal impacts illustrate both the transformative potential and the need for equitable access to digital governance.

Implementation Gaps in Digital Government

The findings indicate a noticeable gap between policy ambition and field implementation: (1) Overly Ambitious Plans vs Limited Execution. Although national policies outline strong visions for integrated digital government, actual implementation remains fragmented due to institutional silos and uneven regional capabilities; (2) Standardization vs Local Autonomy. Centralized policies require strict standardization, but regional governments often prioritize local needs, leading to inconsistent adoption and system incompatibility; (3) Infrastructure Goals vs Reality. Infrastructure expansion plans are not fully realized in outer islands, hindering equal access to digital public services; (4) Data Governance Policies vs Practice. Mandated data integration and interoperability are weakened by reluctance to share data between agencies.

These gaps reflect systemic constraints that require strategic intervention to strengthen digital governance.

Strategic Recommendations for Strengthening Digital Governance in Indonesia

Based on the findings, several recommendations arise: (1) Strengthen Interoperability and System Integration. Implement national data standards, expand the national data center, and require agencies to migrate from standalone systems to integrated digital platforms; (2) Enhance Human Resource Competency. Provide continuous digital training for civil servants, focusing on data literacy, cybersecurity, and digital service management; (3) Improve Cybersecurity and Data Protection. Strengthen cybersecurity protocols, enforce data protection regulations, and increase investment in secure digital infrastructure; (4) Reduce Regional Digital Inequality. Provide targeted funding and technical assistance for less developed regions to achieve minimum digital service standards; (5) Promote Cultural Change Within Bureaucracy. Encourage leadership-driven reforms, incentive structures, and performance-based digital innovation initiatives; (6) Strengthen Public Engagement. Develop user-centered platforms, incorporate citizen feedback into policy improvements, and increase transparency through open data initiatives; (7) These strategies aim to close the policy implementation gap and build a more integrated, inclusive, and resilient digital governance ecosystem.

The analysis demonstrates that while Indonesia has made notable progress in digitizing public administration, full transformation requires addressing fragmentation, improving human resource capacity, strengthening data governance, and reducing regional inequalities. Effective digital transformation will depend on aligning national policies with on-the-ground realities to create an integrated, citizen-centric public service system capable of supporting long-term administrative innovation and societal well-being.

Conclusion

The study concludes that Indonesia has made substantial progress in digitizing public administration through national initiatives such as SPBE, OSS-RBA, SIPD, and city-level super-apps. Digital transformation has demonstrably improved administrative efficiency, transparency, and the overall user experience. Nevertheless, these advancements remain uneven across regions due to fragmentation, inconsistent interoperability, limited human resource capacity, and infrastructural disparities. The analysis shows that successful implementation requires alignment between policy ambition and operational realities, including legal harmonization, cross-agency coordination, and sustained investments in technology and people. Without addressing these structural challenges, digital transformation will continue to deliver partial outcomes and widen regional inequalities in public service quality.

Practical Implications

There are several implications: (1) Strengthening interoperability: Agencies must adopt standardized data schemas, shared platforms, and integrated workflows to eliminate duplication and improve service coherence; (2) Investing in digital competencies: Continuous training in data governance, cybersecurity, and system integration is essential for civil servants at all levels; (3) Enhancing cybersecurity resilience: Government institutions should implement robust protection standards, disaster-recovery mechanisms, and routine security audits; (4) Reducing regional disparities: Targeted funding and technical assistance should be prioritized for under-resourced local governments to achieve minimum digital service standards; (5) Improving user-centered service design: Government applications must focus on reliability, legal clarity, and backend responsiveness to ensure user trust and sustained adoption.

Suggestions for Future Research

Future studies should incorporate empirical investigations through case studies, interviews, and surveys to capture on-the-ground implementation challenges more accurately. Comparative studies across provinces, ministries, or international contexts could reveal best practices for overcoming fragmentation and enhancing interoperability. Further research on digital identity, data governance maturity, and cybersecurity readiness in the public sector would also provide strategic insights for strengthening Indonesia's digital transformation agenda.

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