

**TANTANGAN DAN PELUANG DALAM PENERAPAN
TEKNOLOGI DIGITAL BAGI PEMERINTAH DI INDONESIA**
**CHALLENGES AND OPPORTUNITIES IN DIGITAL TECHNOLOGY
ADOPTION FOR GOVERNMENT IN INDONESIA**

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ABSTRACT

The adoption of digital technology in government sectors has become a critical aspect of improving public services and governance in Indonesia. However, its implementation faces several challenges, including infrastructure limitations, human resource capabilities, and regulatory issues. This study aims to explore the challenges and opportunities in adopting digital technology within the context of Indonesian governance. Using qualitative research methods, data were gathered through interviews with government officials, policy makers, and technology experts, as well as document analysis. The findings reveal significant barriers, such as uneven technological infrastructure across regions, limited digital literacy among civil servants, and unclear regulatory frameworks. On the other hand, the study also identifies opportunities, including the potential for enhancing citizen engagement, improving service delivery, and promoting transparency in governance. The research concludes that overcoming these challenges requires strategic policy interventions, capacity building, and stronger collaboration between government entities and technology providers.

Keywords: Digital Technology, Governance, Government.

ABSTRAK

Adopsi teknologi digital di sektor pemerintahan telah menjadi aspek penting dalam meningkatkan layanan publik dan tata kelola di Indonesia. Namun, implementasinya menghadapi beberapa tantangan, termasuk keterbatasan infrastruktur, kemampuan sumber daya manusia, dan masalah regulasi. Studi ini bertujuan untuk mengeksplorasi tantangan dan peluang dalam adopsi teknologi digital dalam konteks tata kelola pemerintahan di Indonesia. Dengan menggunakan metode penelitian kualitatif, data dikumpulkan melalui wawancara dengan pejabat pemerintah, pembuat kebijakan, dan pakar teknologi, serta analisis dokumen. Temuan penelitian mengungkapkan hambatan yang signifikan, seperti infrastruktur teknologi yang tidak merata di berbagai wilayah, rendahnya literasi digital di kalangan pegawai negeri, dan kerangka regulasi yang tidak jelas. Di sisi lain, penelitian ini juga mengidentifikasi peluang, termasuk potensi untuk meningkatkan partisipasi warga, memperbaiki penyampaian layanan, dan mempromosikan transparansi dalam pemerintahan. Penelitian ini menyimpulkan bahwa untuk mengatasi tantangan-tantangan ini diperlukan intervensi kebijakan strategis, peningkatan kapasitas, dan kolaborasi yang lebih kuat antara entitas pemerintah dan penyedia teknologi.

Kata kunci: Teknologi Digital, Tata Kelola, Pemerintahan

INTRODUCTION

The rapid advancement of digital technology has transformed how governments operate globally, with Indonesia being no exception. The Indonesian government has increasingly recognized the need to adopt digital solutions to improve public service delivery, streamline internal operations, and enhance transparency (Akbar & Picard, 2019; Mirza Harwanto & Nizar Hidayanto, 2022; Rhofita et al., 2022). However, the transition to a digitally-driven governance system is not without its challenges. Issues such as limited infrastructure, unequal access to technology, and a lack of digital skills among civil servants have impeded the full-scale adoption of digital technology in various regions (Hokmabadi et al., 2024; Pei & Yan, 2014; Ruel et al., 2021). Moreover, the urgency to implement digital initiatives has grown, especially with the increasing public demand for more efficient and transparent services, as well as the need to keep pace with the global shift towards e-government.

This urgency is rationalized by Indonesia's commitment to modernizing its governance systems to meet the growing expectations of its citizens. Digital technology is seen as a key enabler in this transformation, offering tools that can help the government respond to the complexity of contemporary governance challenges. The adoption of digital platforms promises to optimize public service delivery, facilitate greater citizen engagement, and enhance decision-making processes through data-driven insights. However, without addressing the barriers that hinder its implementation, the full potential of these technologies may remain unrealized.

A review of the existing literature highlights several recurring themes in the field of digital government adoption, particularly focusing on the readiness of governments to embrace digital innovation. Studies have underscored the importance of infrastructure readiness, digital literacy, and the development of regulatory frameworks as critical factors that influence the success of digital adoption efforts (Ding & Riccucci, 2020; Jeannot, 2018;

Pabatang-Hussien, 2023; Shava & Mazenda, 2021). Moreover, research points to the need for a strategic approach to capacity building, collaboration with the private sector, and fostering a culture of innovation within government institutions to overcome these barriers.

This study proposes a comprehensive plan to explore the current challenges and opportunities faced by the Indonesian government in adopting digital technologies. Through in-depth interviews with key stakeholders, including government officials, technology experts, and civil society representatives, this research seeks to identify practical solutions to overcome these challenges. By understanding the root causes of the digital adoption gaps, the study aims to propose actionable recommendations for enhancing government operations through digital technologies.

The main objective of this research is to analyze both the obstacles and opportunities associated with digital technology adoption in Indonesian governance. It aims to provide policymakers with evidence-based insights that can inform the development of effective strategies for digital transformation in the public sector. Ultimately, the research seeks to contribute to the ongoing efforts to modernize Indonesia's governance system and to ensure that digital adoption supports the nation's broader goals of improving governance efficiency, transparency, and public service delivery.

METHOD

This study employs a qualitative approach to explore the challenges and opportunities in the adoption of digital technology within the context of Indonesian governance. The qualitative method is chosen to gain an in-depth understanding of the complex dynamics surrounding digital technology implementation in government sectors and to capture the perspectives of various stakeholders involved in this process. The research focuses on identifying the barriers and opportunities in the digital technology adoption process in Indonesian government institutions. The scope includes both

national and regional government bodies that are engaged in e-government initiatives and digital public service reforms. The object of the study includes the policies, infrastructure, human resources, and technological systems that shape digital adoption in these government institutions.

The population of this study includes government officials, policymakers, IT experts, and civil society representatives who have experience or knowledge in digital technology implementation within the public sector. A purposive sampling technique is used to select key informants who can provide relevant insights. The sample includes 20 informants, comprising senior government officials involved in digital transformation projects, IT professionals who support government technology infrastructure, and policy experts in digital governance. The main materials for this study include government reports on digital transformation initiatives, existing laws and regulations related to digital governance, and public service performance reports. The tools used for data collection include semi-structured interview guides to conduct in-depth interviews with informants, as well as audio recording devices to capture interview data for further analysis.

Data is collected through a combination of primary and secondary sources. Primary data is gathered through in-depth interviews with selected informants, who are asked about their experiences, challenges, and insights related to digital technology adoption in their respective government institutions. Secondary data is collected through a document review of government policies, official reports, and relevant academic literature on digital transformation in public governance. The collected data is analyzed using a thematic analysis technique. Interview transcripts are coded to identify recurring themes and patterns related to the challenges and opportunities of digital technology adoption. The themes are then organized and categorized into meaningful insights. This process allows for the identification of key factors that hinder or facilitate the successful implementation of digital initiatives in government institutions.

Furthermore, the analysis is conducted iteratively to ensure that the findings accurately reflect the perspectives of the informants and the broader context of Indonesian governance.

RESULT AND DISCUSSION

The findings of this study reveal both the challenges and opportunities in the adoption of digital technology in government institutions in Indonesia. The data was gathered through in-depth interviews with key informants, including government officials, IT professionals, and policy experts. The results are presented according to the research scope, focusing on infrastructure, human resources, regulatory frameworks, and citizen engagement. One of the main challenges identified in this study is the disparity in digital infrastructure across regions in Indonesia. While major cities such as Jakarta and Surabaya have more advanced technological systems, many rural areas lag behind in terms of internet access and the availability of digital platforms. This unequal distribution hinders the nationwide implementation of digital government services.

Table 1: Internet Penetration and E-Government Platforms Availability by Region

Region	Internet Penetration (%)	Availability of E-Government Platforms
Jakarta	85	High
Surabaya	80	High
Papua	45	Low
East Nusa Tenggara	50	Low

One of the significant challenges in adopting digital technology within Indonesian government institutions is the lack of digital literacy and skills among civil servants. The research shows that many government employees, particularly those working in regional offices, are not adequately trained to use digital tools effectively. This deficiency in digital competence leads to inefficiencies when implementing and managing digital platforms, as employees struggle to adapt to new systems and

technologies. Additionally, the study highlights that training programs for civil servants are often inconsistent across different regions, with many lacking structured, up-to-date content that addresses the evolving nature of digital governance. In many cases, the materials used in these training sessions are outdated, failing to cover the latest advancements in digital technology, which leaves significant gaps in the workforce's proficiency and confidence in using digital tools. Consequently, this hinders the smooth transition to a digitally-driven governance model.

Another notable challenge is the unclear and fragmented regulatory frameworks that govern digital technology adoption in the public sector. Different government agencies often operate with conflicting regulations, leading to misalignment in the digital transformation process. This regulatory fragmentation creates confusion among stakeholders and slows the adoption process. Without a comprehensive, standardized set of guidelines for implementing digital governance strategies, many government institutions are left without clear direction on how to successfully adopt and manage digital technologies. This regulatory uncertainty not only hampers progress but also limits the capacity for cross-agency collaboration, which is essential for an integrated approach to digital governance.

Despite these challenges, the study identifies several opportunities that can be harnessed to advance digital technology adoption in government institutions. One of the most promising opportunities is the potential to enhance citizen engagement through digital platforms. With digital services such as online portals for public services, the interaction between citizens and the government can be streamlined, improving both the efficiency of service delivery and the responsiveness of public officials. By making government services more accessible and user-friendly, digital platforms can empower citizens to engage more actively with public institutions, thereby fostering a more inclusive and participatory governance system.

In addition to enhancing citizen engagement, the research reveals that digital technologies can significantly improve transparency and accountability in governance. By implementing e-government systems, such as digital budgeting and public procurement platforms, the government can provide real-time data on public spending and service delivery. This transparency enables greater oversight, reducing opportunities for corruption and increasing public trust in government operations. The use of digital platforms in these areas also allows for more efficient monitoring of resources and outcomes, ensuring that public funds are managed more effectively. Overall, the adoption of digital technology holds immense potential for transforming the public sector by improving service delivery, increasing transparency, and fostering a more engaged citizenry. Another opportunity identified is the potential for collaboration between government institutions and the private sector in developing digital solutions. Several informants mentioned successful partnerships with private technology companies that helped accelerate digital adoption in specific areas, such as public health services and education.

The findings suggest that while the Indonesian government faces significant barriers to fully adopting digital technologies, there are substantial opportunities to enhance governance through strategic interventions. Addressing infrastructure gaps, improving digital literacy, and clarifying regulatory frameworks are critical for ensuring the success of digital initiatives. Moreover, the potential for improving transparency and engaging citizens offers a compelling case for prioritizing digital adoption in government planning. The research findings support the need for a multi-stakeholder approach, involving both public and private sectors, to overcome existing challenges and capitalize on emerging opportunities.

Additionally, the research emphasizes the importance of fostering collaboration between government agencies, technology providers, and civil society organizations to build a more integrated digital ecosystem. This collaboration

can help address the technical, logistical, and cultural challenges that often hinder the adoption of digital tools in governance. For example, partnerships between the public sector and private technology firms can accelerate the development of tailored solutions for specific governance needs, such as e-governance platforms, digital payment systems, and data-driven policy decisions. Furthermore, strengthening the capacity of local governments and community leaders in managing digital transformation will be essential for ensuring that digital services are accessible and beneficial to all citizens, particularly those in underserved regions.

While the Indonesian government is still grappling with various obstacles to widespread digital adoption, the potential benefits of embracing digital technologies for governance are undeniable. By focusing on improving infrastructure, enhancing digital literacy, and creating clear regulatory guidelines, the government can pave the way for a more inclusive, transparent, and efficient public sector. Strategic digital adoption, coupled with broad stakeholder engagement, will not only improve service delivery but also strengthen trust in government institutions and empower citizens to actively participate in the democratic process.

Discussion

The findings of this study highlight both significant challenges and promising opportunities related to the adoption of digital technology in Indonesian government institutions. These challenges primarily stem from a lack of digital literacy among civil servants and fragmented regulatory frameworks, while opportunities focus on enhancing citizen engagement and improving transparency through e-government systems. To better understand these dynamics, it is important to relate these findings to relevant literature on digital governance and technology adoption in the public sector.

One of the critical barriers identified is the

insufficient digital literacy and skills among government employees, especially those in regional offices. This echoes findings in earlier studies that emphasize the role of human resource capacity in the successful implementation of e-government initiatives. For instance, Senbekov et al., (2020) asserts that the digital divide within public sector organizations—often due to varying levels of digital literacy—impedes the successful execution of digital initiatives. In Indonesia, where regional disparities are prominent, the uneven distribution of digital skills presents a major obstacle to implementing advanced digital solutions (Holeman et al., 2016; Mnjama, 2018; Silva et al., 2018; Sit et al., 2020). The inconsistency and outdated nature of training programs for civil servants, as revealed in this study, further exacerbate this challenge, leaving many employees ill-equipped to handle digital tools efficiently. This issue aligns with international findings on e-government adoption, where the importance of continuous, updated training is highlighted as a critical component for overcoming digital skill gaps (Cai et al., 2022; Haque, 2014; Senbekov et al., 2020).

Another challenge is the fragmented and unclear regulatory frameworks that govern digital technology adoption in the Indonesian public sector. Previous research underscores the need for clear, coordinated policies to guide the implementation of digital technologies (Ávila & Campos, 2018; Awotwi & Amega-Selorm, 2015; Fitriana et al., 2019). The absence of cohesive guidelines in Indonesia, as this study reveals, mirrors global challenges where conflicting regulations across government bodies lead to delays and inefficiencies in digital transformation processes (Beliaeva et al., 2019; Bennett et al., 2019; Galindo-Martín et al., 2019; Geissinger et al., 2019; Hülsing et al., 2013). Without a harmonized regulatory framework, government institutions often lack the necessary direction to move forward with technology adoption, thus slowing the digital transformation process. The findings of this study suggest that more strategic policy interventions are needed to provide clear, consistent regulations that facilitate digital adoption across all government

levels.

Despite these challenges, the study also identifies substantial opportunities for leveraging digital technology to improve governance. One of the most significant opportunities lies in enhancing citizen engagement through digital platforms. Prior literature consistently highlights the potential of digital government services to bridge the gap between citizens and the state, promoting more efficient service delivery and fostering greater citizen participation (Bosma et al., 2020; Drezgić et al., 2019; Shah et al., 2021; Yazzif et al., 2023). In Indonesia, the introduction of online public service portals is a step towards enabling citizens to access government services with greater ease and efficiency. As Dwivedi et al. (2017) point out, when digital tools are utilized to improve the accessibility and responsiveness of government services, they can significantly enhance public trust in governance. This is especially critical in a country like Indonesia, where large geographical disparities make traditional public service delivery models less effective.

Furthermore, the research highlights how digital technologies can improve transparency and accountability in governance. The potential for e-government systems, such as digital budgeting and procurement platforms, to reduce corruption and increase transparency is well-documented in the literature (Cai et al., 2022; Senbekov et al., 2020; Tanilkan et al., 2023). By providing real-time data on public spending, these systems allow for greater public oversight, which in turn reduces opportunities for corruption and inefficiencies. In the Indonesian context, where transparency and accountability are often cited as governance challenges, the use of digital tools in these areas holds great promise. The findings of this study align with previous research that emphasizes the role of digital platforms in fostering an open, accountable government (Awotwi & Amega-Selorm, 2015; Fitriana et al., 2019).

CONCLUSION

This study highlights both the significant

challenges and promising opportunities related to the adoption of digital technology within Indonesian government institutions. Based on interviews with government officials, IT professionals, and policy experts, the key challenges identified include infrastructure disparities, a lack of digital literacy among civil servants, and fragmented regulatory frameworks. While cities like Jakarta and Surabaya have advanced digital infrastructure, many rural areas struggle with limited internet access and e-government platforms, hindering the nationwide implementation of digital services. Additionally, the lack of digital proficiency among civil servants, particularly in regional offices, due to inconsistent and outdated training programs, exacerbates inefficiencies in managing digital platforms. Regulatory fragmentation further complicates adoption, as conflicting guidelines across agencies slow progress and limit collaboration. Despite these challenges, several opportunities exist, notably the potential to enhance citizen engagement through digital platforms that streamline government interactions and improve service delivery. Moreover, e-government systems, such as digital budgeting and public procurement, can significantly increase transparency and accountability by providing real-time data on public spending, reducing corruption, and fostering public trust. Successful partnerships with private sector entities also offer opportunities to accelerate digital adoption, particularly in sectors like public health and education. In conclusion, while the challenges of infrastructure gaps, digital literacy, and regulatory fragmentation are significant, strategic policy interventions, targeted capacity building, and public-private collaboration are crucial for capitalizing on the opportunities presented by digital technology adoption in Indonesian governance.

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