

Public Service Innovation in the Era of Society 5.0: Data Protection, Governance, and Regulation in Indonesia

Inovasi Layanan Publik di Era Society 5.0: Perlindungan Data, Tata Kelola dan Regulasi di Indonesia

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ARTICLE INFO

Article history:

Received: September 25, 2025

Revised: October 23, 2025

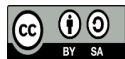
Accepted: November 25, 2025

Kata Kunci:

Layanan Publik; Inovasi; Society 5.0;
Perlindungan Data; Tata Kelola;
Regulasi Digital.

Keywords:

Public Service; Innovation; Society 5.0;
Data Protection; Governance; Digital
Regulation



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ABSTRAK

Adopsi teknologi yang berorientasi Society 5.0 dalam sektor publik di Indonesia menghasilkan peluang sekaligus kontroversi. Inovasi digital memang menjanjikan efisiensi dan layanan yang lebih personal, tetapi pada saat yang sama menimbulkan kekhawatiran serius terkait perlindungan data, akuntabilitas birokrasi, dan kecukupan regulasi. Studi ini berangkat dari argumen bahwa inovasi layanan publik tidak dapat dipisahkan dari kapasitas tata kelola dan kerangka regulasi yang memastikan inklusivitas serta standar etika. Dengan menggunakan analisis konten kualitatif terhadap pemberitaan media daring, penelitian ini mengidentifikasi tiga temuan utama. Pertama, kontroversi layanan publik cerdas terutama terkait dengan lemahnya mekanisme perlindungan data, transparansi, dan tanggung jawab birokrasi. Kedua, tata kelola yang adaptif dan kolaboratif muncul sebagai prasyarat penting untuk mengelola peluang dan risiko Society 5.0, yang memperlihatkan potensi peningkatan efisiensi namun sekaligus menunjukkan kesenjangan digital yang tetap

bertahan. Ketiga, kerangka regulasi Indonesia masih bersifat reaktif dan terfragmentasi dibandingkan negara maju, dengan kesenjangan signifikan dalam kapasitas institusional, penegakan hukum, dan standar etika kecerdasan buatan. Temuan ini memberikan kontribusi bagi literatur tentang tata kelola digital dengan menekankan keterkaitan antara inovasi, regulasi, dan tata kelola di negara berkembang. Studi ini menegaskan bahwa efektivitas inovasi layanan publik di era digital tidak hanya bergantung pada kesiapan teknologi, tetapi juga pada kemauan politik, ketahanan institusi, dan tata kelola partisipatif. Implikasi praktisnya adalah perlunya mengintegrasikan tata kelola adaptif dengan regulasi proaktif serta urgensi memperkuat perlindungan data dan membangun infrastruktur digital yang inklusif. Tanpa upaya tersebut, janji Society 5.0 berisiko memperkuat ketimpangan alih-alih mendorong keadilan sosial.

ABSTRACT

The rapid adoption of Society 5.0-oriented smart technologies in Indonesia's public sector has generated both opportunities and controversies. While digital innovation promises efficiency and personalized services, it simultaneously raises pressing concerns about data protection, bureaucratic accountability, and regulatory adequacy. This study is based on the argument that innovation in public services cannot be separated from governance capacity and regulatory frameworks that safeguard inclusivity and ethical standards. Using a qualitative content analysis of online news coverage, the study identifies three major findings. First, controversies surrounding smart public services are primarily linked to weak mechanisms of data protection, transparency, and bureaucratic responsibility. Second, adaptive and collaborative governance emerges as a crucial prerequisite for managing the opportunities and risks of Society 5.0, highlighting both efficiency gains and persistent digital divides. Third, Indonesia's regulatory framework remains reactive and fragmented compared to advanced countries, with

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significant gaps in institutional capacity, law enforcement, and ethical AI standards. The findings contribute to the growing body of literature on digital governance by emphasizing the interplay between innovation, regulation, and governance in emerging economies. The study underscores that the effectiveness of public service innovation in the digital era depends not only on technological readiness but also on political will, institutional resilience, and participatory governance. The need to integrate adaptive governance with proactive regulation; and practically, the urgency of strengthening data protection and fostering inclusive digital infrastructures. Without such efforts, the promise of Society 5.0 risks reinforcing inequalities rather than advancing social justice.

INTRODUCTION

The enormous potential for innovation in public services in Society 5.0 presents new challenges in terms of governance and regulation. Technology-based services promise increased efficiency and inclusiveness, but at the same time raise serious concerns about accountability, transparency, and the protection of citizens' privacy. Experience from various countries shows that without clear regulations, the use of technology risks triggering data misuse, digital discrimination, and access inequality (Mayasari et al., 2025; Sung & Park, 2021). For example, the implementation of a digital identity system can increase public trust and government accountability, but it still faces privacy and scalability issues. This complexity emphasizes that governance must shift from merely a control mechanism to an instrument that facilitates equitable innovation (Deng, 2023). Therefore, policymakers need to build an adaptive governance structure so that digital innovation is not only effective but also inclusive and protects citizens' human rights (Muñoz et al., 2025).

In developing countries such as Indonesia, the implementation of Society 5.0 faces a number of serious systemic obstacles. The main challenges include limited digital infrastructure in remote areas, low public digital literacy, and rigid bureaucracy that hinders the adoption of innovation. Government efforts such as the enactment of the Personal Data Protection Law (PDP Law) and the promotion of the Electronic-Based Government System (SPBE) are steps forward, but their implementation is still limited due to weak institutional capacity and suboptimal inter-agency coordination (Supartoyo, 2022). Digital literacy is a crucial factor in overcoming these obstacles. Studies show that improving public digital literacy is essential for effective governance and the successful implementation of digital policies (Isabella et al., 2024; Williams et al., 2022). With most of the population still lacking basic digital skills, the potential for innovation in public services is limited, and there is even a risk of exacerbating inequality of access and digital discrimination (Amalia & Sary, 2024). Therefore, initiatives to improve digital literacy need to be prioritized, as they not only promote inclusiveness but also equip citizens to actively participate in the use of new technologies for the provision of public services (Daherman & Wulandari, 2024).

The concept of Society 5.0 was first formulated by Japanese Prime Minister Shinzo Abe in 2019 as a vision to integrate digital technology into social life (Sarfraz et al., 2021). Unlike previous industrial revolutions that emphasized efficiency and productivity, Society 5.0 focuses on solving social problems through a human-centered and inclusive approach. This paradigm aims to ensure that all citizens can reap the benefits of technological advances, while addressing important issues such as equitable access to healthcare and environmental sustainability (Inomata et al., 2021). The application of cutting-edge technology is the main foundation of Society 5.0. The use of artificial intelligence (AI), big data, and integrated digital systems enables governments to provide public services that are not only efficient but also proactive and personalized (Guo et al., 2020). For example, AI in public healthcare

services can offer solutions tailored to individual needs, while data analytics helps governments anticipate demand and adjust policies dynamically (Olorunsogo et al., 2024; Sarfraz et al., 2021). In this way, public services can transform into systems that are responsive, adaptive, and closer to the real needs of the community.

The integration of this technology also requires governance that is capable of maintaining public trust. Issues of privacy, data security, and the ethics of AI use must be anticipated to ensure transparency and accountability in public administration (Zhu et al., 2024). Society 5.0 is not only intended to simplify services, but also to create participatory and fair governance. By combining technology and social values, this paradigm builds a society that is both smarter and more empathetic, where digital innovation does not replace human interaction, but rather strengthens it (Inomata & Sung, 2022; Tække, 2025).

In line with the development of Society 5.0, changes in public services require new governance that is flexible, collaborative, and network-based. The complexity of the digital era cannot be overcome by the government alone, so adaptive governance is needed so that the bureaucracy can quickly adjust policies to the dynamics of technology and community needs (Castro & Lopes, 2021). Within a collaborative framework, the synergy between the government, the private sector, and civil society strengthens the joint production capacity of public services through the sharing of resources, knowledge, and expertise (Emmanuel et al., 2023). Evidence from Indonesia shows that this approach encourages service innovation and higher citizen engagement (Arifianti & Sakapurnama, 2024; Lyu et al., 2024). Furthermore, network-based governance emphasizes connectivity between actors in the public service ecosystem, enabling the exchange of information and best practices across sectors (Pratama, 2019). This approach results in more holistic and innovative problem-solving strategies. Thus, open, adaptive, and inclusive governance is an important foundation for public service innovation in the Society 5.0 era. These principles ensure accountability, transparency, and fair access for all citizens, including marginalized groups (Norris & Reddick, 2012; Tomić-Pupek et al., 2019).

The above study shows that research on public service innovation is still dominated by a focus on digital government or e-government, with an emphasis on improving bureaucratic efficiency through the digitization of administrative processes. However, these studies tend to stop at the technical aspects of digitization without highlighting the complexity of governance and regulation, which are key elements in the context of Society 5.0. Most of the literature discusses the digitization of administrative services or the implementation of electronic systems, but relatively few discuss how personal data regulations are integrated into the design of public services or how adaptive governance models are needed to respond to rapid technological changes. This research gap becomes even more apparent when we realize that Society 5.0 not only emphasizes digital transformation, but also redesigns the relationship between the state, technology, and society within a more inclusive, adaptive, and responsive governance framework.

This study is based on the argument that the success of public service innovation in Society 5.0 cannot be measured solely by the extent to which digitization improves bureaucratic efficiency, but also by the ability of governance and regulation to ensure transparency, accountability, and protection of citizens' rights amid the use of smart technology. This research aims to fill this gap by offering a governance-regulation framework perspective in analysing Society 5.0-based public service transformation. Theoretically, this research seeks to broaden the academic discourse by enriching the study

of public service innovation through the integration of adaptive, collaborative, and network-based governance aspects with regulatory mechanisms that emphasize the protection of citizens' rights while encouraging innovation. This research is expected to provide strategic recommendations for policy makers in Indonesia in developing public service models that are not only administratively efficient, but also inclusive, equitable, and capable of responding to the ethical and social challenges arising from the use of smart technology.

METHOD

This research was conducted in the context of the transformation towards Society 5.0, which increasingly emphasizes the use of smart technology in the delivery of public services in Indonesia. The main focus of this research is to explain and evaluate the controversies surrounding smart technology-based public service innovations, as produced and disseminated through online media reports. As emphasized by (Dama et al., 2025), the discourse developing in digital media not only represents factual changes in public service governance but also illustrates the ongoing construction of power relations and regulations. This research was conducted based on three main considerations. First, public service innovation in the Society 5.0 era is a highly debated strategic policy issue, particularly regarding the implications for accountability, transparency, and data protection. Second, the controversies that have arisen show how digital policy is not only oriented towards bureaucratic efficiency but also becomes an arena of tension between technological interests, regulation, and public interests. Third, the pros and cons narratives developing through online media can reflect the readiness of the bureaucracy, the effectiveness of regulations, and the relationship between the state and society in managing public service innovation.

This study uses a qualitative-descriptive approach with data collection conducted through intensive review of online media reports relevant to the issue of public service innovation in the context of Society 5.0. Data was searched using Google search engine with keywords such as: "Society 5.0 Indonesia", "digital public service innovation", "Personal Data Protection Law", 'SPBE', and "digital regulation controversy". The search and data collection process was carried out between January and May 2025 to capture the dynamics of the discourse that developed during the initial implementation period of the new regulations in Indonesia, particularly after the enactment of the PDP Law and the implementation of the SPBE policy. To filter the data, researchers used a skimming method on the titles and content of news articles that contained controversial narratives related to Society 5.0-based public service issues, such as debates on data protection, the effectiveness of SPBE, the limitations of digital infrastructure, and civil society's response to the application of smart technology in public services. The search results yielded a number of online news articles that were categorized into two major themes, namely narratives supporting public service innovation as a form of bureaucratic modernization, and critical narratives highlighting regulatory risks, governance limitations, and technological ethics issues.

Data analysis was conducted by following the steps outlined by (Miles et al., 2014), namely data reduction to compile and filter information based on predetermined thematic categories; presentation of data in the form of narrative excerpts from online media reports relevant to the research focus; and inductive drawing and verification of conclusions by considering the social, political, and regulatory contexts surrounding the issue. To deepen

the meaning, critical discourse analysis was also used to reveal how narratives about governance and regulation in Society 5.0 are framed, and how these constructions influence the direction of public service innovation in Indonesia.

RESULT

Controversy over personal data protection and bureaucratic accountability

Indonesia Controversy surrounding smart technology-based public service innovations mainly arises around issues of personal data protection and bureaucratic accountability. Various cases of repeated public data leaks demonstrate the weakness of digital security systems and the low capacity of the bureaucracy to protect sensitive public information. This phenomenon indicates a gap between the speed of technology adoption and the ability of regulations and governance to ensure security and public trust.

The government's reactive response, such as handling cases after leaks occur, shows that there is no comprehensive prevention strategy in place. In fact, data leaks also originate from state institutions themselves, indicating that threats come not only from outside, but also from internal weaknesses. This situation reinforces the view that the data protection system in Indonesia is still fragile and lagging behind the dynamics of digital innovation.

Table 1: Controversies over Personal Data Protection and Accountability

No	Form	Actor	Analysis	Source
1.	Public data leaks (Civil Registry, bank customers, etc.)	Government, digital service providers, affected communities	Demonstrates the weakness of the national data security system and the lack of bureaucratic accountability in protecting data.	Tempo.com
2.	Data on 4.6 million residents allegedly leaked and sold online	West Java Provincial Government, hackers/data sellers, residents	Illustrates the local government's failure to supervise data and poses a serious threat to residents' privacy.	BandungBergerak.id
3.	The issue of data leaks went viral on social media	West Java Provincial Government, X users	This shows that the issue of personal data quickly became a public concern, prompting demands for transparency.	Metrotvnews
4.	Blocking links that disseminate personal data	Ministry of Communication and Information Technology, internet users	Demonstrates the government's response, but it is reactive rather than preventive.	Kominfo
5.	Alleged internal data leak by employees	Ministry of Communication and Information Technology,	Proves that the threat of leaks is not only external, but also	Kominfo

		government employees	internal to the bureaucracy.	
6.	A series of data breaches across various sectors	Central government, digital companies, society	Illustrates the recurring trend of data breaches and weak regulations that are supposed to guarantee digital security.	<i>Detik.com</i>

Source: Elaborated research data

Based on Table 1, there are several important points to note. First, weaknesses in the public data protection system are a recurring issue. Although digital technology is increasingly being used in the provision of public services, the lack of robust cybersecurity has created new vulnerabilities in the relationship between citizens and the state. This threatens public trust in the bureaucracy, which is supposed to guarantee the security of public data. Second, there is a clear gap between the pace of technological development and the available regulatory framework. Existing regulations are more reactive to data breach cases rather than preventive in nature, capable of anticipating long-term risks. This condition indicates that digital governance in Indonesia is still lagging behind and has not been able to provide certainty in facing the acceleration of smart technology innovation.

Third, weak bureaucratic accountability is also an important finding. The fact that data leaks have occurred in various public institutions shows that the problem stems not only from external attacks, but also from internal weaknesses within the bureaucracy itself. This situation underscores the need for more serious institutional reform, including increasing the capacity of officials to manage digital systems with principles of transparency and accountability.

Adaptive and collaborative governance; bureaucratic unpreparedness & SPBE integration

Adaptive and collaborative governance is a key requirement in facing the challenges of Society 5.0. Supportive narratives in the media emphasize opportunities for increased efficiency and personalization of public services, but critical narratives highlight bureaucratic unpreparedness, digital infrastructure inequality, and weak inter-agency coordination. This study shows that responsive and network-based governance is an important prerequisite for effective public innovation.

Table 2. Adaptive and collaborative governance, bureaucratic unpreparedness & inequality

No.	Challenges/ Issues	Actor	Form of Collaboration	Source
1.	Risks of bureaucratic unpreparedness, inter-agency connectivity	Ministry of Communication and Information Technology, Indonesian National Police	Data integration & identity verification	Tribatanews (Polri)

2.	Integration imbalances	9 ministries/institutions	SPBE application interoperability	Data.go.id
3.	Regulatory readiness & coordination	Deputy Minister of Communication and Information Technology, stakeholders	Cross-sector collaborative work	Kominfo
4.	Ecosystem sustainability challenges	Government, industry, academia	Collaboration-based AI innovation	Kemenpan RB
5.	Ethical & security issues	Komdigi, 40 ministries/institutions	Joint regulation drafting	Antara
6.	Differences in standards & national adaptation	Government, industry, academia, CSO	Policy dialogue internasional	Komdigi Portal

Source: Elaborated research data

Based on the data presented, there are two important points that should be highlighted. First, there is a need for adaptive and collaborative governance in the application of smart technology in public services. Various actors, ranging from ministries, state institutions, to international partners, appear to be trying to establish cross-sectoral cooperation. However, this pattern of collaboration still faces serious obstacles, especially in terms of data integration and inter-institutional coordination. This shows that Indonesia's bureaucracy is not yet fully prepared to keep up with the pace of digital transformation, resulting in a gap between the innovation agenda and the readiness of institutional structures.

Second, regulatory and ethical issues are another prominent dimension. Regulations currently being drafted and international policy dialogues show an awareness of the importance of legal frameworks and norms in regulating the use of AI. However, these regulations are still reactive and have not been able to fully address complex challenges, such as personal data protection and bureaucratic accountability. Thus, this data confirms the urgent need to develop a proactive regulatory system while strengthening the capacity of the bureaucracy to manage digital innovation in a sustainable and equitable manner.

AI regulation & fragmented regulatory framework

The regulatory framework in Indonesia is still reactive and fragmented compared to practices in developed countries. Although there is already a Personal Data Protection Law and SPBE policy, reports confirm that there are gaps in implementation, particularly in terms of institutional capacity, law enforcement, and AI ethics standardization. This study emphasizes the need for a more holistic governance-regulation framework so that public service innovation in the Society 5.0 era is not only administratively efficient, but also inclusive, fair, and ethical.

Table. 3 Regulatory Dynamics and AI Governance Issues in Public Services

No.	Issue	Actors	Form of Regulation	Challenges	Source
1	Development of ethics-based AI regulations	Ministry of Communication and Digital Affairs	The buku putih on the National Artificial Intelligence Roadmap and Ethical Guidelines for Artificial Intelligence	Regulations are still conceptual, not yet comprehensive.	Antara.com
2	Legal vacuum & regulatory benchmarking	Ministry of Communication and Digital Affairs, government	AI roadmap (referring to other countries)	Regulations are not yet original; adaptation depends on external best practices.	Hukumonline
3	AI regulations for six sectors	Indonesia–United Kingdom (partnership)	Formulation of sectoral regulations	Does not yet cover all sectors; regulatory fragmentation.	Tempo
4	AI policy dialogue	Government of Indonesia–United Kingdom, public	International policy dialogue	Regulations are not yet final; still reactive and open.	Komdigi Portal
5	Personal data protection (leakage cases)	Ministry of Communication and Digital Affairs	Blocking of leaked data links	Case-responsive, not comprehensive preventive regulations.	Kominfo
6	National AI	Ministry of Communication and Digital Affairs	Readiness for AI integration	National AI integration.	Komdigi

Source: Elaborated research data

From the data presented in Table 3, it can be observed that the AI regulatory framework in Indonesia is still partial and not yet fully integrated. Regulations that have emerged are mostly driven by specific cases, such as personal data leaks, rather than by a comprehensive vision that anticipates long-term challenges. This shows that the regulatory response pattern is more reactive than preventive. In addition, the government's efforts through the preparation of white papers, roadmaps, and sectoral regulations have not been strong enough to address the increasingly complex issues of AI ethics, security, and standardization. Another interesting pattern is the tendency to adapt international practices, such as benchmarking against regulations in other countries or through bilateral cooperation, which confirms the limitations of domestic capacity in independently developing an AI regulatory framework.

DISCUSSION

Controversy surrounding smart technology-based public service innovations mainly revolves around issues of personal data protection, bureaucratic accountability, and weak regulations on the ethical use of AI. On the other hand, there are demands for more adaptive, collaborative, and network-based governance to respond to the challenges of Society 5.0. However, the regulatory framework in Indonesia is still reactive and fragmented, despite the existence of instruments such as the Personal Data Protection Law and the SPBE policy. These findings emphasize the need for a more holistic governance-regulation framework so that public innovation can be inclusive, fair, and ethical.

This study complements the discussion on digital government and e-government. As the study (Mergel et al., 2019) emphasizes the importance of bureaucratic adaptation to digital technology in the framework of digital era governance, it does not specifically discuss the integration of data regulation and AI ethics. Similarly, (Ongaro et al., 2021) found that e-government contributes to increased administrative efficiency but faces obstacles in terms of data protection. Thus, this study adds a new dimension by emphasizing the importance of simultaneously integrating governance and regulation within the framework of Society 5.0. There is a noticeable trend that public service innovation tends to develop faster than the readiness of regulations and governance. Online media not only depicts euphoria about the potential for efficiency, but also highlights the risk of digital exclusion due to infrastructure gaps and community literacy. This trend means that without adaptive governance and proactive regulation, Society 5.0 has the potential to deepen social injustice. This is in line with the views of (Janssen & Helbig, 2018), who emphasize that digital innovation without an inclusive regulatory framework can lead to bias in the delivery of public services.

Strengthening the governance-regulation framework in Indonesia has the potential to make public innovation an instrument for democratizing services and increasing public trust in the bureaucracy. Conversely, regulatory fragmentation will give rise to risks of data misuse, algorithmic discrimination, and weak bureaucratic accountability. A comparison with practices in the European Union through the implementation of the GDPR (Commission, 2018) shows that more comprehensive regulations allow innovation to proceed without sacrificing individual rights, an important lesson for the Indonesian context systems.

CONCLUSION

This study found that Society 5.0-based public service innovations in Indonesia face serious challenges in the form of regulatory gaps, weak data governance, and limited digital literacy among the public. Online media reports reveal tensions between the push for accelerated digitization and the need for public protection, emphasizing that the speed of innovation is not always in line with the readiness of the bureaucracy and legal framework. These findings highlight the urgency of strengthening a governance-regulation framework that can maintain a balance between service efficiency and social justice. By combining secondary data from online media with a theoretical framework, this study enriches the literature, which previously emphasized the technical aspects of digitization without delving deeply into the implications of governance and regulation. This is in line with the initial objective of the study, which is to explore the dynamics and identify gaps in the regulation of smart technology-based public innovation.

This study argues that if governance and regulation do not transform as quickly as technology, Society 5.0 risks deepening social injustice rather than becoming a solution for civilization. Without appropriate regulatory intervention, algorithms and smart platforms could become new instruments of inequality, strengthening bureaucratic control while weakening the position of citizens. The future of public services in Indonesia is not only determined by technological innovation, but also by the political courage to establish fair, inclusive, and visionary regulations.

The limitations of this study are mainly related to the nature of the data sourced from online media, which is subject to framing bias and does not fully represent the perspectives of non-state actors. Therefore, further research needs to involve primary data through interviews, surveys, and participant observation in order to produce a more complete picture. The theoretical implication of this study is the need to develop a new analytical model that links adaptive governance with proactive regulation in the context of Society 5.0, while the practical implication is the importance of encouraging civil society participation and increasing the capacity of digital bureaucracy in Indonesia.

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