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Analysis of the Development and Implementation of Regulations Related to the Implementation of Electronic-Based Government Systems in Indonesia to Improve Public Services

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ABSTRACT

The implementation of the Electronic-Based Government System (EGO) in Indonesia is a critical step to improve the efficiency and quality of public services. The regulations underlying the implementation of EGO, such as Presidential Regulation No. 95 of 2018 concerning the Electronic-Based Government System, aim to encourage digital transformation in government bureaucracy. However, even though these regulations already exist, challenges in their implementation still arise, both in terms of infrastructure, human resources, and system integration between government agencies. This study aims to analyze the development of regulations that support the implementation of EGO and evaluate their implementation in the context of improving the quality of public services in Indonesia. By understanding the challenges and potential of EGO, it is expected that more effective policies can be created to accelerate digital transformation and increase government transparency and accountability in serving the public.

Introduction

The *Industrial Revolution 4.0* has brought major changes to our lives (Asnawi, 2022). The way humans communicate, work, and access information is now increasingly influenced by technological advances such as *artificial intelligence (AI)*, the *Internet of Things (IoT)*, *big data*, and *cloud computing* (Suryadi, 2023). Amid these rapid changes, the government must also adapt to remain relevant and capable of serving the community optimally (Zein, 2024). Digital transformation within the bureaucracy is a crucial step in building a more agile, modern, and responsive governmental system.

Nowadays, people are becoming increasingly aware and have high expectations for public services (Utami, 2023). They demand not only fast and accessible services but also those that are transparent and trustworthy. This is where information technology plays a pivotal role (Alim, 2022). With the help of technology, service processes can be streamlined, physical

contact minimized, and government performance more openly monitored by the public. Unfortunately, bureaucracies that still rely on manual processes are often plagued by classic issues such as slow service, convoluted procedures, and opportunities for corruption, primarily due to the lack of an open monitoring system. A closed and less adaptive system creates distance between the government and its citizens, ultimately hindering the delivery of fair and efficient public services (Mulhayat, 2023).

Legally, the *Electronic-Based Government System (Sistem Pemerintahan Berbasis Elektronik / SPBE)* is defined in Article 1, number 1 of Presidential Regulation Number 95 of 2018 concerning the *Sistem Pemerintahan Berbasis Elektronik* (hereinafter referred to as the SPBE Presidential Regulation) as the implementation of governance that utilizes information and communication technology to deliver services to its users (Fitri, 2024). However, beyond being a legal framework, SPBE is conceptually a transformative step toward transitioning government operations from manual and fragmented systems to digital, integrated, and transparent ones. The ultimate goal is to create public services that are faster, more efficient, and more accountable. Thus, SPBE is not only about the use of technology but also about fostering a bureaucratic culture that is open and responsive to the demands of the digital era (Alfarisi, 2024).

SPBE emerges as a solution to classic problems in public services—complexity, sluggishness, and lack of clarity. With the aid of technology, various bureaucratic processes can be simplified and expedited (Gumolung, 2023). Beyond that, SPBE strengthens inter-agency cooperation, as emphasized in Article 2, paragraph (1), letter *b* of the SPBE Presidential Regulation, which underscores the importance of interconnected and interoperable systems. When data and systems across institutions are integrated, decisions can be made more swiftly and accurately, based on real-time and reliable information (Sudipa, 2023).

SPBE is a concrete manifestation of *e-government* implementation, referring to the use of digital technologies in government operations to improve service delivery to the public (Kapitan, 2024). This transformation not only encompasses external services but also affects internal processes such as administrative management and budget planning (Zulvi, 2025). Through SPBE, the government is steered toward working more effectively, efficiently, sustainably, and responsibly in line with the ideals of a trusted modern state.

The tangible outcomes of SPBE can be seen in various public services now accessible online (Rusdy, 2023). Examples include business licensing through the *Online Single Submission (OSS)* system, population administration via *Dukcapil Online*, and regional budget planning through *e-*

budgeting. These innovations result in faster services, cost efficiency, and minimized risks of power abuse. The public enjoys easier access to services anytime and anywhere, with transparent and streamlined procedures that mark a significant leap forward in bureaucratic quality.

Despite SPBE's solid legal foundation, as provided by Presidential Regulation Number 95 of 2018 and supported by several implementing regulations, its field implementation remains uneven. Many institutions and regions continue to face barriers to optimal adoption. Key challenges include limited technological infrastructure, insufficiently skilled human resources to manage digital systems, and suboptimal system integration across government agencies. These barriers have hindered the achievement of SPBE's core objective: the provision of faster, more transparent, and more accountable public services (Candra, 2024).

Therefore, this study aims to explore the progress of SPBE policy development in Indonesia. It also seeks to identify the real challenges encountered during implementation and evaluate the extent to which SPBE has influenced improvements in public service quality. This will help determine whether digital transformation in government truly brings direct benefits to society.

The *Fourth Industrial Revolution* has significantly transformed how governments deliver services, particularly through the integration of technologies such as *AI*, *IoT*, and *big data* into public administration (Asnawi, 2022; Suryadi, 2023). In this digital era, citizens not only expect faster services but also demand transparency, reliability, and accountability (Utami, 2023). In response, governments worldwide have adopted *Electronic-Based Government Systems (SPBE)* as transformative tools to modernize bureaucracy and enhance service delivery (Zein, 2024).

Several studies have analyzed common SPBE implementation challenges. Fitri (2024) highlights issues related to legal compliance at the provincial level, while Candra (2024) draws attention to disparities in infrastructure development across municipalities. Gumolung (2023) observes that improvements in public services vary significantly, depending on each local government's digital preparedness. However, many of these studies remain descriptive, often limited to individual case studies, and lack a broader analysis of regulatory coherence and policy evolution at the national level.

This study addresses that gap by offering an integrated analysis of the regulatory evolution and implementation effectiveness of Indonesia's SPBE policy. It critically examines the alignment between Presidential Regulation No. 95 of 2018, subsequent ministerial regulations, and the actual challenges faced during implementation across central and regional levels.

The novelty of this research lies in its dual focus: (1) mapping the regulatory framework that governs SPBE, and (2) assessing its impact on improving public service quality in Indonesia through a qualitative-normative approach. Unlike previous studies, this paper presents a policy-level synthesis that connects regulatory analysis with practical field challenges, offering strategic insights for future digital governance reforms.

Research Method

This research was conducted using a normative and qualitative descriptive legal approach to comprehensively examine the development and implementation of regulations related to the *Sistem Pemerintahan Berbasis Elektronik* (*SPBE* or Electronic-Based Government System) in Indonesia. Several methodological approaches were applied, including a legislative approach to trace the legal basis of *SPBE*, a conceptual approach to understand the underlying ideas and principles of the policy, and, when necessary, a comparative approach to observe differences in *SPBE* implementation across various regions.

Data collection was carried out through a literature study, involving the review of official regulations, policy documents, government reports, and other relevant secondary sources. All data obtained were analyzed qualitatively to assess both the progression of *SPBE* regulations and the effectiveness of their implementation in improving public service quality in Indonesia.

Three analytical approaches were applied:

1. *Statutory Approach* – to trace the evolution and legal legitimacy of *SPBE* regulations.
2. *Conceptual Approach* – to explore the foundational principles and normative objectives underlying *SPBE*.
3. *Comparative Approach* – to identify variations in *SPBE* implementation across different regions in Indonesia.

Data collection involved a structured literature review of government publications, legal databases, academic journals, and evaluation reports from institutions such as the Ministry of *PANRB*, *BSSN*, and *Kominfo*.

To ensure validity, a triangulation strategy was employed by cross-referencing legal texts with government reports and expert analyses. The data analysis followed three main steps:

• *Thematic analysis* to identify recurring legal and policy issues.
• *Content analysis* to assess the normative coherence of the regulatory framework.
• *Gap analysis* to evaluate discrepancies between regulatory expectations and actual field implementation.

To minimize selection bias in the literature, sources were chosen based on their relevance, recency (primarily from 2018–2025), and institutional credibility. This structured and analytical approach ensures a balanced interpretation of the regulatory environment while also capturing the practical challenges encountered in implementation.

Result and Discussion

Development of Electronic-Based Government System Regulations

The industrial revolution 4.0 that is currently sweeping the world has encouraged many countries to improve and start implementing digitalization in their government systems. The goal is clear so that public services can be faster, more transparent, and responsive to the community's demand. Digitalization of government, also known as e-government, is now something that cannot be avoided, especially amidst the rapid development of information and communication technology (Helmi, 2023). Developed countries have even implemented this system to make it easier for people to access services, speed up administrative processes, and increase government accountability (Setiawan, 2024). Not only that, the success of implementing digital government is now also one of the benchmarks of a country's progress and competitiveness in the global arena.

In Indonesia, the enthusiasm for digitizing bureaucracy has become stronger since the reform era, along with the increasing the community's expectations for public services that are practical, open, and free from bureaucratic complications. So far, slow, overlapping, and abuse-prone bureaucracy has been the main obstacle to creating good governance (Hermawan, 2024). Therefore, bureaucratic reform is an important step that must continue to be implemented and one way is to implement SPBE. The presence of regulations on SPBE is a real form of the government's commitment to building a more modern, efficient, and interconnected public service system between agencies, of course with the support of qualified digital technology.

Furthermore, the SPBE Presidential Regulation is the main regulation that is the legal basis for implementing the digitalization of governance in Indonesia. This regulation was drafted in response to the need for a more effective, efficient, and adaptive government facing the dynamics of the digital era. SPBE is normatively defined as the implementation of government that utilizes information and communication technology to provide services to users, including the community, business actors, and government officials (Rahman, 2021). This Presidential Regulation provides a comprehensive framework for the preparation, development, and implementation of digital systems in public services across sectors and

regions. Through systematic arrangements, this regulation provides clear guidelines for government agencies in building an integrated and sustainable government system.

Article 2 of the SPBE Presidential Regulation stipulates seven basic principles in the implementation of SPBE, namely effectiveness, integration, continuity, efficiency, accountability, interoperability, and security. The principle of effectiveness emphasizes the optimization of resource use according to service needs, while integration emphasizes integration between systems and institutions to create synergy. Continuity reflects the need for continuous and gradual SPBE development. The principle of efficiency refers to utilizing resources appropriately, while accountability and interoperability are the basis for transparency and the ability of systems to be interconnected (Sedana, 2025). The security aspect plays an important role in maintaining the confidentiality, integrity, and reliability of government data. In addition to regulating the basic principles, this Presidential Regulation also encourages the acceleration of SPBE implementation through national strategies. Some of these strategies include the preparation of the SPBE Master Plan as the main guide, shared facilities such as data centers and government communication networks, and the strengthening of the information security system. This approach strives to encourage system integration, save budgets, and improve coordination between government institutions.

The scope of SPBE regulations in this Presidential Regulation covers six main components, namely SPBE governance which regulates policy direction, coordination, and quality assurance, SPBE management which includes planning, budgeting, and system management, Information and Communication Technology Audit as a mechanism for supervision and accountability, SPBE Organizers consisting of ministries, institutions, and local governments, SPBE implementation acceleration strategies and monitoring and evaluation mechanisms for SPBE implementation. With the scope of these regulations, the SPBE Presidential Regulation acts as a normative basis in realizing a modern, integrated digital government that is oriented towards improving the quality of public services. As a concrete form of the implementation of the SPBE Presidential Regulation, the government has prepared several derivative regulations and supporting policies to strengthen the implementation of SPBE at all levels of government, both central and regional. One important regulation in this regard is the Regulation of the Minister of State Apparatus Empowerment and Bureaucratic Reform Regulation of the Minister of State Apparatus Empowerment and Bureaucratic Reform Number 59 of 2020 concerning SPBE Monitoring and Evaluation (hereinafter referred to as the PAN-RB

Ministerial Regulation). This regulation is an important instrument in measuring the extent to which the implementation of SPBE has been running optimally in each government agency.

Monitoring and evaluation are carried out using systematic and gradual methods, starting from self-assessment, and document assessment, to interviews. Under certain conditions, evaluation can also be continued through field visitation activities. The self-assessment itself is carried out by the Internal Assessor Team formed by the leadership of the agency, and coordinated by the SPBE Coordinator, both in the ministry and in the regional government. With this mechanism, the government encourages the active participation of each agency in evaluating and improving the quality of its digital governance.

The cybersecurity system is a primary concern in the digital era complexity. For this reason, the National Cyber and Crypto Agency (BSSN) has issued various technical regulations that set information security standards, cyber-attack risk mitigation measures, and digital data protection. These efforts are made to ensure that the government system that is built is not only fast and integrated but also safe from potential disruptions that can endanger data and public trust.

As part of the framework for developing a national digital ecosystem, the government has also established the National SPBE Architecture Policy and National Digital Services. This policy serves as a guideline for government agencies in building information systems that do not run independently, but are interconnected and focused on excellent public services (Hendrayady, 2023). One of the strategies is to encourage the use of common applications and shared facilities, such as national data centers and government communication networks, to increase efficiency and integration between institutions. The implementation of SPBE is strengthened by supportive regulations, such as Law Number 11 of 2008 concerning Information and Electronic Transactions (UU ITE) and its amendments, and Government Regulation Number 71 of 2019 concerning the Implementation of Electronic Systems and Transactions (PSTE). These two regulations provide a strong legal basis for electronic systems implementation, personal data protection, and the validity of electronic transactions in government services. These regulations demonstrate the government's seriousness in building safe, inclusive, and sustainable digital governance.

The development of SPBE policies and strategies in Indonesia shows an increasingly structured and integrated direction, especially through the preparation of the National SPBE Strategy and the government digitalization roadmap. This strategy contains a vision to realize clean, effective, transparent, and accountable governance through digital technology

optimization. It also regulates the stages of digital transformation in the public sector, starting from the development of basic digital infrastructure, and strengthening system interoperability, to the provision of digital public services that are oriented to the needs of the community. The roadmap is a reference for all central and regional government agencies in designing and implementing SPBE policies in a focused and sustainable manner.

In its implementation, the role of ministries and institutions is very crucial. The Ministry of Communication and Informatics (Kominfo) is responsible for the development of technological infrastructure and the provision of government communication networks. The Ministry of PANRB plays a role in formulating SPBE governance and management policies, as well as in implementing SPBE evaluations nationally. Meanwhile, BSSN ensures the security of government information systems by strengthening cybersecurity regulations and monitoring the vulnerabilities of government digital systems. This cross-sector collaboration is the main foundation for the successful implementation of SPBE, especially in creating a standardized, secure digital ecosystem that can respond the needs of fast and efficient public services.

3.2 Challenges and Constraints in the Implementation of Electronic-Based Government Systems

Limited technological infrastructure in several regions is one of the main challenges in implementing SPBE. There is still a significant gap between urban and rural areas, especially in the quality and availability of internet networks. Many regions do not yet have adequate connectivity, which can hinders their ability to access and utilize electronic-based government systems. Besides, many government agencies do not yet have data centers with sufficient capacity or adequate technological devices, which makes the implementation of electronic systems slower than expected.

Limited human resources technological skills and competencies are also a major challenge. Many government officials, both at the central and regional levels, do not yet have sufficient knowledge and skills to manage technology-based systems. It includes data management and the application of important cybersecurity principles. The mismatch between the required skill needs and the available training further exacerbates the unpreparedness of human resources in running electronic-based government systems effectively.

Another problem that must be faced is the difficulty in integrating systems between government agencies. Each agency often uses different systems and manages data separately. It certainly hampers coordination and data sharing between institutions, which ultimately leads to inefficiencies,

such as data duplication, misinformation, and obstructed processes. In fact, with good integration, the entire system can run faster and more efficiently.

Cybersecurity is also a very important issue in the implementation of SPBE. Given the large amount of sensitive data managed by the government, threats to personal data or sensitive information, such as data leaks or cyber-attacks, may damage public trust and disrupt government stability. Therefore, adequate protection of data and information is very important, because deficiencies in this aspect can cause major losses, both materially and in terms of reputation.

Resistance to change, both from government employees and the public, is also one of the key obstacles to SPBE utilization. Many government employees are accustomed to manual systems and find it difficult or worry about changing to electronic systems. On the other hand, some people still feel doubtful and distrustful of new technology, which can hinder the adoption of electronic-based public services.

Challenges related to regulations and policies are also often obstacles to the implementation of SPBE. Some existing policies may not fully support the transition to e-government, or there may be overlaps between various policies governing the technology sector. Misalignment and delays in adjusting regulations to support this digital shift can slow down what should be a smoother transition. Funding issues are often another major obstacle. Limited or inadequate budget allocation for the development of digital infrastructure and systems often hampers the progress of SPBE. Lack of funds for purchasing hardware and software, as well as for strengthening IT infrastructure and training employees, can slow down or even delay the implementation of SPBE at various levels of government.

3.3 Position of Electronic-Based Government Systems in Improving the Quality of Public Services

The implementation of SPBE plays an important role in improving the efficiency and effectiveness of public services by utilizing technology to accelerate administrative processes. Electronic systems reduce many time-consuming manual stages, accelerate data processing, and reduce lengthy bureaucracy. By using a digital platform, services become faster and easier to access and reduce the potential for errors that often occur in manual processes. This has a direct impact on response time to community needs and accelerates the provision of services to the public.

SPBE also helps improve the accessibility of public services by providing a digital platform that can be accessed anytime and anywhere, especially for people in remote or hard-to-reach areas. Information technology allows people to access various services without having to come directly to government offices, thereby reducing geographical and physical

barriers. In terms of function, it can help reduce the gap between the center and the regions and provide opportunities for all levels of society to obtain more open information and accessible services.

SPBE supports increased transparency and accountability in government. With SPBE, the government can provide more open information to the public regarding various things, such as administrative processes, budget use, and policies implemented. An integrated system allows for easier and more structured reporting so that the public can more easily monitor government performance and the results achieved. This will further increase public trust in the integrity and credibility of government institutions.

SPBE enhances the quality of data available to policymakers. With a connected system, the data collected becomes more accurate, and up-to-date, and can be accessed in real-time. It enables better, evidence-based, and more targeted decision-making. For example, in terms of budget allocation, resource management, and development planning, more complete and reliable data can help government policies be more responsive to community needs. SPBE enables the government to respond more quickly to community requests and complaints and provide more appropriate and faster solutions. With an integrated system, various communication channels such as chatbots, applications, or online customer services can improve interaction between the government and the community. This also makes it easier to submit requests or complaints and increases efficiency in resolving existing problems.

SPBE encourages innovation in the public service sector through advanced technologies such as artificial intelligence (AI), big data, and cloud computing. These technologies enable the development of new applications and platforms that are more efficient and in line with community needs. Such innovations also enable the creation of new service models that are faster, more interactive, and more responsive to the development of community needs, thus modernizing the way the government delivers public services. Although SPBE has great potential to improve the quality of public services, challenges and obstacles remain, such as the disparity in technological infrastructure between central and regional areas, the lack of competent human resource training in information technology, and resistance to change from, both government officials and the community. These problems can hinder the optimal implementation of SPBE, affect the quality and coverage of services, and reduce the expected positive impacts of technology in government.

Conclusion

The implementation of *Sistem Pemerintahan Berbasis Elektronik* (*SPBE*) in Indonesia represents a strategic step in addressing the challenges of the digital era through a more modern, efficient, transparent, and accountable bureaucratic transformation. Through a solid legal foundation, such as the *SPBE* Presidential Regulation and its derivative regulations, the government has demonstrated a strong commitment to delivering integrated, secure, and citizen-oriented public services. The implementation of *SPBE* reflects core principles of digital governance, national strategies, and the strengthening of infrastructure and information security—efforts that are carried out collaboratively by various ministries and institutions. With increasingly structured policies and a clear roadmap for digitalization, *SPBE* serves as a vital instrument in realizing a sustainable and globally competitive digital government ecosystem.

Nonetheless, various challenges continue to hinder the optimal implementation of *SPBE*. These include limited technological infrastructure, low human resource competencies, and inadequate system integration among government institutions. The digital divide between urban and rural areas, along with restricted data center capacities, further slows the equitable distribution of *SPBE* services. Additionally, resistance to change, cybersecurity concerns, regulatory inconsistencies, and limited funding constitute structural barriers that must be addressed urgently. Without comprehensive and coordinated efforts to tackle these issues, the transformative potential of *SPBE* in enhancing public service quality will remain underutilized.

Despite these obstacles, the implementation of *SPBE* has already delivered significant positive impacts in transforming public services by promoting efficiency, accessibility, transparency, accountability, and improved data quality and service innovation. *SPBE* not only streamlines bureaucratic procedures and accelerates government responsiveness to public needs but also expands service reach to remote areas through the support of information technology. However, to ensure that the benefits of *SPBE* are equitably and optimally experienced by all levels of society, persistent efforts are required to overcome infrastructure disparities, human resource limitations, and institutional resistance to digital transformation.

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