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## The Implementation of Electronic-Based Archiving to Accelerate Government Digitalization in Indonesia

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### ABSTRACT

The rapid advancements in technology have significantly influenced the way individuals interact and meet their needs, pushing for the digital transformation of government operations, particularly in archiving. Despite the introduction of electronic archiving systems in government institutions, physical archiving still prevails, leading to inefficiencies. This study utilizes a normative juridical method, focusing on secondary data analysis from library research. It examines the legal frameworks surrounding electronic-based archiving in Indonesia's public sector and evaluates its role in the government's digital transformation. The research identifies that while electronic archiving is increasingly recognized as an essential tool for government efficiency, its implementation remains optional rather than mandatory. The legal certainty surrounding digital archiving is still underdeveloped, particularly in areas related to the legality of digital documents and the transition from manual to digital processes. This paper suggests that the current regulations need to be revised, specifically those concerning financial accountability and governance, to better support the transition to a paperless system. The findings emphasize that enhancing legal clarity and updating the regulatory framework are key to fostering the adoption of electronic archiving systems, thus accelerating the government's move toward a fully digital administration.

### INTRODUCTION

Technological advancements have significantly impacted human life, altering not only how people think but also how they behave (Volti, 2024). These developments have ushered humanity into the cyber world, enabling individuals to perform activities digitally, facilitated by a networked infrastructure that supports human interaction (Adel, 2023). Consequently, modern society has become deeply interconnected with and influenced by the digital or cyber realm (Wolff, 2021).

This shift has also affected the governmental sphere, leading to demands for the adoption of technology, information, and communication to realize more efficient and effective governance in public service delivery, now known as e-government (Keban et al., 2024). The demand for

improved public service performance, driven by changes in societal interaction patterns due to rapid technological advancements, has compelled the government sector to enhance its service delivery through electronic-based systems (SPBE).

One aspect of government administration is archiving services (Rosenbloom et al., 2021). Archiving plays a vital role in providing authentic evidence, supporting decision-making processes, aiding planning, enhancing oversight, and serving as legal proof, institutional memory, and historical references (Riley, 2018). Archives also play a role in safeguarding national sovereignty and data integrity by ensuring the availability of comprehensive and reliable records. In certain international disputes, such as those concerning border issues, countries have been disadvantaged due to weak archive management systems,

particularly in providing accurate and complete data promptly, as manual archive management remains prevalent (Jamaluddin et al., 2023).

The theory of legal development offers a progressive framework in which law serves as a means of societal renewal and social engineering, with a dynamic function to guide changes in a structured and effective manner (T. Prasetyo, 2023). Mochtar Kusumaatmadja's theory positions legislation as the primary source of law, emphasizing that in drafting new laws, the existing legal sources must first be considered, followed by living laws derived from societal practices, reflecting pragmatic goals rooted in the community (Widiati, 2013).

Similarly, Ahmad Ramli views the role of law not merely as a mechanism for establishing order, certainty, and justice, but also as a transformative tool to empower the nation in addressing the unstoppable wave of the digital revolution (Kurniawan Sihombing et al., 2021). In this context, the regulatory aspects of electronic-based archiving, as an application of digital technology in archiving activities, should ensure legal certainty for its implementation within government institutions to address the changes and challenges of the digital era effectively (Pastukhov, 2018).

In general, archiving in government institutions is still conducted through manual mechanisms (Misangyi & Acharya, 2014). According to the 2023 External Archiving Audit Report by the Ministry of Communication and Information, issued by ANRI (National Archives of the Republic of Indonesia), oversight of dynamic archive management largely relies on manual practices (Caroline et al., 2022). Thus, archiving in government institutions predominantly involves physical, manual processes. The adoption of paperless (electronic archiving) systems has not been fully implemented in government agencies due to several factors: a) Payment supporting documents still need to be printed, signed manually (wet signatures), and stamped with physical seals; b) Current information systems/applications have not yet fully embraced the concept of paperless operations; c) Information technology readiness is not yet optimal; d) Regulations do not comprehensively address the creation of electronic archives for financial accountability (Hardiyanti et al., 2023).

Therefore, the implementation of electronic-based archiving in government institutions needs to be encouraged to strengthen internal government bureaucracy, particularly in facilitating the provision of authentic data and traceable records of programs that have been executed. These records serve as a reference for future decision-making or policy formulation. Furthermore, electronic archives will drive the growing need for the use of electronic documents and digital signatures in governance (Smallwood, 2020).

In light of these advancements, this study seeks to explore the implementation of electronic-based archiving within government institutions as a means to accelerate digital transformation. Specifically, it aims to evaluate the legal frameworks that govern digital archiving and identify the regulatory adjustments necessary for its full integration. Additionally, the research will assess the challenges and opportunities associated with transitioning from manual to digital archival practices within the context of e-government initiatives in Indonesia.

## **METHODS**

This study employs a normative juridical method, which is a library-based or document study approach focused on secondary data collection. This methodology involves analyzing written legal materials, including primary, secondary, and tertiary legal references, to examine the issues related to electronic-based archiving within government institutions. The research is primarily conducted in Indonesia, with a focus on the legal and regulatory frameworks governing digital archiving in government sectors.

The data for this study is collected through an extensive literature review of legal texts, regulations, governmental reports, and academic journals related to digital transformation, e-government, and archival management (Carter et al., 2022). Secondary data sources include government publications, such as reports from the National Archives of the Republic of Indonesia (ANRI) and the Ministry of Communication and Information, as well as relevant legal documents including Presidential Regulations and Laws pertinent to e-government initiatives and archival systems (Clarke & Margetts, 2014; Casadesús de Mingo & Cerrillo-i-Martínez, 2018).

The analysis involves a qualitative approach that utilizes content analysis techniques to interpret the legal texts and regulatory frameworks (Mitchell, 2023). This method aims to identify gaps, challenges, and opportunities for improving the implementation of electronic-based archiving systems in Indonesia's public sector. The analysis also considers the legal certainty of digital archiving and its role in accelerating the government's digital transformation, based on existing and proposed regulations. This approach is supported by frameworks in the fields of legal theory and information governance (Smallwood, 2020).

## **RESULTS AND DISCUSSION**

### **Legal Certainty of Electronic-Based Archiving in Government Administration**

Legal certainty regarding the digital transformation of administrative services in government, including archiving, is currently observed through regulations outside the specific archival law (Casadesús de Mingo & Cerrillo-i-Martínez, 2018b). One example is in the annex of Presidential Regulation No. 132 of 2022 concerning the SPBE architecture (Jumroh et al., 2024). Information and communication technology in government management is no longer optional but a necessity, applicable both in administrative activities and public services aimed at enhancing the effectiveness and efficiency of government operations (Dike, 2019).

Further, the direction and policy strategies of the national SPBE architecture position SPBE as Government as a Platform, with the consequence that digital transformation structurally changes work processes, activities, and other operations from being physical and offline to predominantly online. This shift requires significant adjustments in the creation and management mechanisms of archives as part of government administrative services (Donati, 2017).

Another regulation emphasizing the need for digital transformation in government administrative services is Presidential Regulation No. 39 concerning Indonesia's One Data policy. As stated in Article 2, paragraph (2), the One Data initiative aims to enable the government to collect accurate, up-to-date, integrated, and accessible data through a unified system. The data includes sectors such as food, energy, infrastructure, maritime affairs,

education, health, economics, industry, tourism, bureaucratic reform, and more (Mursitama & Ying, 2021). This regulation implicitly underscores the urgency of digital document or electronic information support and its management within government institutions. Achieving the speed, integration, and ease of sharing data between government entities is highly challenging if the data and archive management still rely on manual systems (Yusuf et al., 2023b).

In line with the aforementioned regulations, the urgency of digital transformation in government administrative services is also highlighted in Presidential Regulation No. 95 of 2018 on the Electronic-Based Government System (SPBE). Article 42 specifies that SPBE services include government administrative services and public services. Paragraph (2) clarifies that electronic-based government administrative services refer to services that support internal bureaucratic processes to enhance government performance and accountability (Bertot et al., 2010). These services encompass planning, budgeting, finance, procurement, human resources, archiving, asset management, oversight, performance accountability, and other internal government needs. Paragraph (3) further states that these services should be implemented through the development and deployment of General Applications. Consequently, archive services as part of government administrative services must also be implemented electronically, requiring the adoption of digital technology instead of manual or conventional methods (Alshamaila et al., 2013).

Another consequence of the widespread use of electronic systems in government administrative mechanisms is the increased responsibility for managing data security, especially personal data. This heightened responsibility necessitates the adoption of robust measures to protect sensitive information, as highlighted by Safitra et al. (2023), who emphasize the need for comprehensive technical and organizational measures to ensure data security. Janet Ngesa (2023) also underscores the challenges in implementing international security standards within the public sector, noting that many e-government systems still fall short in adopting best practices for personal data protection. Furthermore, the use of blockchain technology in e-government systems, as proposed by Li et al.

(2022), offers a promising approach to enhancing data security and privacy by ensuring the integrity and transparency of personal data through decentralized ledger systems.

This is emphasized by the enactment of Law No. 27 of 2023 on Personal Data Protection. Government institutions, as electronic service providers directly engaging with the public in delivering services, are inevitably responsible for handling the personal data and information of individuals (Leschanowsky et al., 2024). This compels the management of archives involving personal data to adopt electronic approaches rather than manual, physical methods, reflecting the shifting patterns of interaction between society and the government in an increasingly digitalized environment.

### **Electronic-Based Archiving Promotes Paperless Adoption for e-Government Effectiveness and Efficiency**

The adoption of electronic-based archiving through information technology was first initiated by the National Archives of the Republic of Indonesia (ANRI) in 2003. Under Presidential Decree No. 74/M/2003, issued on June 3, 2003, during the leadership of Drs. Oman Syahrani, M.Si., ANRI developed the Electronic Information and Communication Technology-Based Archival Management System (Sistem Manajemen Kearsipan Berbasis Teknologi Informasi dan Komunikasi Elektronik (SiPATI)). This application was designed to facilitate dynamic archive management electronically, in line with global trends in information technology and the issuance of Presidential Instruction No. 3 of 2003 on e-government development strategies (Ke & Wu, 2023). At that time, most government and private offices were transitioning to computer-based operations.

The application aimed to provide direction and a framework for national archive management, ensuring effectiveness and efficiency. Its goals included optimizing the role of archives as the backbone of government management and development, a record of accountability for officials' performance, a collective national memory, and a source of information for the nation's welfare (Rydén, 2023). However, the focus remained on the storage of static archives, prioritizing the arrangement of archival

administration according to established standards, enabling quick, precise, and affordable access to stored archives at any time (Kearney et al., 2025). In 2009, through ANRI Regulation No. 15 of 2009 concerning dynamic and static archive information systems, ANRI developed an application for national archiving purposes, namely the Dynamic Archive Information System (Sistem Informasi Kearsipan Dinamis (SIKD)). This system was later socialized and implemented in other government institutions to ensure comprehensive and integrated archive management (Ariyanti & Akbar, 2023).

To implement Articles 36 and 43 of the Presidential Regulation on SPBE, in 2020, the Ministry of Administrative and Bureaucratic Reform (KemenPANRB) issued Decision No. 679 of 2020 on Integrated Dynamic Archive Applications, introducing the SRIKANDI application (Teku et al., 2024). This application aimed to ensure the availability of authentic and reliable archives, safeguard national interests and civil rights, and establish a Comprehensive and Integrated National Archive System (Rahman et al., 2024). It also sought to identify archives with interrelated information as a cohesive unit across organizations, integrated into a National Archive Information System (Syahidan, 2024).

The SIKN was designed to deliver authentic, legal, complete, and reliable information, establishing archives as the backbone of state governance, the collective memory of the nation, and a unifying pillar within the framework of the Unitary State of the Republic of Indonesia. Despite efforts to develop archival systems since 2003, their implementation remains predominantly manual across institutions. Archive management practices are still based on physical archives. According to the 2023 External Archival Audit Report by the Ministry of Communication and Information, issued by ANRI, oversight of dynamic archive management continues to rely on manual mechanisms (Ariyanti & Akbar, 2023). Consequently, paper usage, storage, and maintenance, often requiring significant budget allocations, have not been reduced. Challenges also include the difficulty of accessing archives, as searching for physical documents often requires considerable time, limiting archives' ability to support decision-making processes effectively.

Government administration involves decision-making and actions by government bodies or officials to perform regulatory, service, development, empowerment, and protection functions (DE BENEDETTO, 2018). Its objectives include ensuring orderly governance, and legal certainty, preventing abuse of authority, and maintaining government accountability. As government tasks encompass a wide range of functions defined by the 1945 Constitution of Indonesia, technological advancements necessitate a transformation in governance to better meet societal expectations and needs (Utama, 2020).

One significant challenge stemming from technological advancements is the need for a paperless office concept, which reduces paper usage by transitioning from physical documents to digital ones (S. E. Prasetyo et al., 2020). This shift is increasingly essential, not only for efficiency but also for environmental sustainability (Mohamed et al., 2020). Technology adoption in government administration is unavoidable in addressing global challenges and societal changes in the digital era (Lutsenko, 2024). Transitioning from manual to electronic systems, including archiving, is therefore inevitable (Jordan et al., 2022).

Electronic-based archiving systems simplify archive access, meeting the demand for documents as authentic records of events (Pacheco et al., 2023). These systems are particularly relevant to copyright protection in the digital era, requiring robust information security measures (Windon & Youngblood, 2024).

The challenges in implementing SPBE, as identified in the 2022 SPBE monitoring and evaluation report by KemenPANRB, include the lack of leadership commitment to SPBE initiatives and digital transformation programs (El Gohary, 2017). These challenges impact various aspects of government administration, including archive management, which largely remains conventional, leading to the following issues (Yusuf et al., 2023):

1. Storage space issues: Many institutions face storage limitations due to insufficient planning, resulting in poorly organized archives that are difficult to locate.
2. Risks with physical archives: Physical archives are prone to forgery or manipulation, compromising their authenticity and reducing trust in the documents.

3. Archive integrity issues: Physical archives are susceptible to damage or loss of components, affecting document readability and integrity.
4. Accessibility issues: Inadequate systems for managing archives make locating necessary documents time-consuming and challenging.
5. Inefficient archive management: Manual creation, usage, maintenance, and preservation processes are time-consuming and inefficient for staff.
6. Resource availability: A lack of skilled archivists, infrastructure, and archiving tools undermines effective archive management.

In contrast, electronic-based archives offer significant advantages over conventional archives. Benefits include easier retrieval, cost, labor, and time savings, minimized risk of file loss, reduced storage space, and greater efficiency (Cain, 2001). Additionally, the increased use of electronic documents naturally promotes a paperless culture in governance, contributing to a more efficient and environmentally friendly administration (Haq & Huo, 2023).

#### **Legal Certainty of Electronic-Based Archiving to Accelerate Government Digitalization**

Legal certainty is a critical aspect in encouraging government institutions to undergo digital transformation, enabling them to adapt to the demands of change and providing a robust foundation to guide the process as envisioned (Ragani et al., 2023). With the rapid increase in internet users in Indonesia, numerous innovations in digital media and applications have emerged, necessitating clear and definitive legal frameworks for their implementation.

The implementation of electronic-based archiving, from a legal perspective, is not without challenges. Digital archives, which lack physical form, may provoke debates regarding their legality, as not all institutions currently recognize digital archives as equivalent to original physical archives. This skepticism often stems from traditional practices that prioritize authenticity indicators such as stamps and wet signatures.

According to the Ministry of Finance, several regulatory adjustments are required to support the full transition to electronic operations. These include regulations on accountability for official travel, procurement processes entirely conducted electronically, and other rules related to state budget

(APBN) transactions being fully electronic. Without these regulatory adjustments, implementing a paperless system will remain difficult, as physical documents and paper-based processes are still mandated, even if partially assisted by electronic systems. This perspective aligns with the concept of law as an infrastructure for transformation, as articulated by Ahmad M. Ramli. He asserts that technology is a crucial non-juridical element in law-making, defining law as a system of principles and norms that ensures order, certainty, and justice while serving as a foundation for societal transformation and development. Thus, fulfilling and adjusting regulations to strengthen the implementation of electronic-based archiving is essential, as legal certainty forms a primary pillar for digital transformation infrastructure.

Archiving, as defined in Law No. 43 of 2009, encompasses all activities related to records management. Electronic archiving is specifically addressed in Article 68, which states:

1. Record creators and/or archival institutions may create archives in various formats and/or perform media conversion, including electronic and other media.
2. Authentication of static archives as referred to in paragraph (1) can be conducted by archival institutions.
3. The authenticity of electronically created static archives and/or those resulting from media conversion must be verifiable under the requirements established by government regulations.

An analysis of Article 68 reveals that the regulation does not explicitly mandate government institutions or archival bodies to implement electronic-based archiving. Instead, it merely provides an option to create archives in electronic form or to perform media conversion. Current regulations do not contain clear provisions requiring government institutions to transition from conventional archive management to digital or electronic implementation. Although guidelines for electronic archive management exist, such as ANRI Regulation No. 6 of 2021, these are merely operational steps for managing archives electronically and not binding mandates.

Additionally, ANRI, as the national archival body, conducted a study in 2019 on the development of a digital archiving ecosystem

involving eight selected institutions: KemenPANRB, the National Library, ANRI, the Provincial Government of Yogyakarta, Bogor Regency Government, Depok City Government, Open University, and PT Kereta Api Indonesia. The program, known as the *Outdoor Laboratory Kearsipan* (OLK), aimed to provide evaluations and recommendations for policy formulation and to serve as a driver for digital archiving transformation. This initiative focused on three dimensions: digital culture, digital systems, and digital access. The study identified several challenges, including minimal awareness of the importance of archives, low compliance in transferring expired retention records with valid documentation, the dominance of a non-digital mindset among institutional leaders, insufficient human resources in archiving, and the absence of guidelines or standards for electronic archive management instruments.

The absence of clear regulations mandating government institutions to implement digital transformation in archiving is paradoxical, considering that archive creation is a vital business process for the continuity of government administration. ANRI experts have highlighted those existing regulations focus more on institutional structures rather than on the architecture, business processes, and reference models required for archiving functionality. Governments aiming to implement SPBE need to invest in sound archival management practices, as government transparency depends heavily on easy archive access.

The critical role of archival transformation can serve as a foundation for advancing electronic-based government systems through the implementation of electronic signatures and the use of digital documents. By creating archives electronically from the outset, the need for electronic signatures in government processes will naturally increase, facilitating the broader adoption of digital governance practices.

## **CONCLUSION**

This study highlights the importance of electronic-based archiving in accelerating Indonesia's government's digital transformation. The legal frameworks governing digital archiving in government institutions remain insufficient,

primarily recognizing electronic archives as an alternative rather than mandating their adoption. While some regulations, such as the Presidential Regulation on SPBE and One Data Policy, emphasize the need for digital transformation, they do not yet provide explicit mandates for transitioning from manual to digital archive management.

The research identifies key regulatory gaps that hinder the full integration of electronic-based archiving systems. These include the absence of comprehensive rules ensuring the transition to digital archives, particularly about public financial management and governance in the digital era. For a successful digital transformation, regulations on accountability, procurement, and state budget management must be updated to support electronic processes, and clear legal frameworks must be developed to enforce the transition from physical to electronic archiving.

The study concludes that enhancing legal certainty and updating regulatory frameworks are essential steps in promoting electronic-based archiving within government institutions. Doing so will facilitate the broader adoption of digital documents and signatures, ultimately improving the effectiveness and efficiency of government operations and accelerating Indonesia's move toward a paperless, digital administration. These adjustments will also strengthen government transparency, ensuring that archives are readily accessible and reliable, and better supporting decision-making and policy development.

### CONFLICTS OF INTEREST

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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