

The Role of Digital Archival Governance: Public Service Innovation Based on Smart City

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Notes

Submitted: 15-02-2025

Revised: 23-04-2025

Accepted: 27-04-2025

How to cite: Baharuddin, A., Munna, A. S., Abdullah, A. ., Asmar, & Salam, R. (2025). The Role of Digital Archival Governance: Public Service Innovation Based on Smart City. *Khizanah Al-Hikmah : Jurnal Ilmu Perpustakaan, Informasi, Dan Kearsipan*, 13(1).
<https://doi.org/10.24252/v13i1a11>

DOI: [10.24252/v13i1a11](https://doi.org/10.24252/v13i1a11)

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ABSTRACT

This study explores the influence of digital archival governance on service efficiency, transparency, and accessibility in Makassar City. The data were gathered through semi-structured interviews, observations, and document analysis involving government officials, policymakers, and IT personnel. The findings indicated that the effectiveness of digital archival governance was shaped by institutional preparedness, supportive legal frameworks, community engagement, and technological infrastructure. Capacity-building programs and professional training were essential to enhance the digital competencies of public servants, while participatory governance mechanisms contributed to greater public trust and access. Additionally, emerging technologies such as blockchain and artificial intelligence presented significant opportunities for optimizing archival systems, though they also introduce challenges related to cybersecurity and ethical management. This study contributes to the discourse on smart governance by highlighting both best practices and obstacles encountered in implementing digital transformation within public administration. It concludes by emphasizing the importance of collaborative governance models, adaptive institutional strategies, and ongoing technological innovation to ensure inclusive and sustainable urban development. Makassar's experience offers valuable insights for other cities aiming to strengthen digital archival governance as a foundation for improved public service delivery.

Keywords: Archive Management; Digital Archive; Public Archive Services; Archivists

1. INTRODUCTION

In the contemporary digital landscape, the intersection of governance and technological innovation is reshaping the modalities through which public services are envisioned and

implemented. Digital archival governance constitutes a foundational element in advancing efficient, transparent, and user-centered public service delivery, particularly within the scope of smart city development (Geissinger et al., 2019; Kavoura & Andersson, 2016). Smart cities, which integrate Information and Communication Technologies (ICT) into urban management, depend heavily on robust digital governance systems to manage vast amounts of data and ensure their optimal use in service delivery (Machado dos Santos & Flores, 2018; Poudyal, 2020; Probirskaja, 2018; Zhang, 2018).

The theoretical framework underpinning this study draws from Networked Governance Theory and Public Sector Innovation Models. Networked Governance Theory posits that the evolution of governance from traditional, hierarchical models to more collaborative, decentralized frameworks allows for greater flexibility and responsiveness in public administration (Taher, 2023). This shift emphasizes the role of digital infrastructure in facilitating inter-organizational collaboration and citizen engagement, both of which are essential for smart city development. Furthermore, (Ngozi, 2024; Shehata & Mkadmi, 2024; Wong, 2024) Public Sector Innovation Model highlights the importance of co-evolution between governance structures and technological innovation. According to this model, public sector innovation is not solely driven by technological advancements but also by the adaptability of governance frameworks to leverage these technologies effectively.

Makassar, is a port city on eastern Indonesia's Sulawesi island and recognized as one of Indonesia's smart cities, offers a compelling context for analyzing the role of digital archival governance in advancing public service innovation. The city's strategic adoption of digital technologies has significantly contributed to improved administrative efficiency, enhanced transparency, and strengthened citizen participation. The implementation of digital archival systems not only ensures robust data preservation and accessibility but also enables the design of adaptive and innovative public services that address the dynamic needs of urban communities. This approach is in line with Naumann and Neuburger's concept of Innovations in Governance, which underscores the importance of novel approaches to networking, financing, and the allocation of rights within public administration as critical drivers of innovation (Naumann & Neuburger, 2024).

The primary purpose of this article is to analyze how digital archival governance influences public service innovation within the smart city framework of Makassar, a growing urban center in Indonesia. As the capital of South Sulawesi, Makassar is a key economic hub with a population of over 1.5 million, known for its vibrant trade and strategic location in Eastern Indonesia. By examining the relationship between digital governance structures and public service innovation, the study aims to provide insights into how these structures can be optimized to enhance service delivery, promote transparency, and support sustainable urban development. This paper draws on frameworks that emphasize the co-evolution of governance structures and technological advancements, contributing to a broader understanding of how digital governance can foster sustainable development in smart cities. Specifically, it illustrates how Information Policy and ICT diffusion shape public sector innovation, particularly in urban settings like Makassar, which are adapting to the challenges of rapid digital transformation.

2. METHODS

This study employs a qualitative research design with a descriptive approach to explore the implementation and impact of digital archival governance in enhancing public services within

the smart city framework. The focus of this research is on government institutions in Makassar that manage digital archives as part of public service innovation. The population of the study includes government agencies, policymakers, and IT personnel involved in digital archive management, while the sample is selected using a purposive sampling technique, ensuring the inclusion of key stakeholders with relevant expertise and experience.

Data collection is conducted through semi-structured interviews, direct observations, and document analysis. The interviews involve 15 participants, including representatives from local government, digital archive managers, and IT experts, to gain insights into policy implementation, challenges, and best practices. Observations focus on the operational aspects of digital archival governance, while document analysis examines government policies, regulations, and strategic plans related to smart city initiatives.

Table 1. Data collection

Data Collection Method	Participants/Institutions	Number of Participants/Institutions
Semi-Structured Interviews	Representatives from local government, digital archive managers, IT experts	15
Direct Observations	Operational aspects of digital archival governance	Ongoing
Document Analysis	Government policies, regulations, and strategic plans related to smart city initiatives	Ongoing

The data were analyzed using thematic analysis to uncover key themes and patterns concerning digital archival governance and its influence on public service innovation. This analysis was conducted manually through open coding, whereby the researcher repeatedly reviewed the data without relying on pre-established categories. Codes were generated inductively, emerging directly from the data to enable a nuanced interpretation of how digital archival systems contribute to enhancing the efficiency, transparency, and accessibility of public services in Makassar. To ensure the validity and credibility of the findings, triangulation was employed by cross-referencing information from multiple sources, including in-depth interviews, direct observations, and relevant documentary materials. The insights gained from this study aim to illuminate best practices and identify challenges in the implementation of digital archival governance within a smart city context, ultimately offering actionable recommendations for strengthening public service innovation and performance.

3. RESULTS AND DISCUSSION

Organizational Readiness and Capacity Building

The effectiveness of digital archival governance also depends on the readiness and adaptability of government institutions in embracing digital transformation. The successful integration of digital archives requires a shift in organizational culture, where public servants are equipped with the necessary digital competencies to manage, secure, and utilize archival data effectively. Capacity-building initiatives and continuous professional development programs are essential in ensuring that government officials can maximize the potential of digital archives for improving administrative efficiency and policy implementation. Without adequate training and institutional support, the transition to digital governance may face resistance or operational inefficiencies.

The interview data underscore a recurring theme, organizational readiness, as a foundational element for successful digital archival governance. Several local government representatives identified the transition to digital systems not merely as a technical upgrade but as an organizational transformation. One IT manager noted that, *"The shift to digital archives requires more than just software and infrastructure; it requires a fundamental change in how our teams approach and manage information."* This statement encapsulates the broader challenge faced by public institutions which is the need for a cultural shift that redefines internal processes, attitudes, and competencies surrounding information governance.

This observation aligns with existing literature emphasizing the socio-technical nature of digital transformation (Kraus et al., 2021). Technology implementation, without concurrent organizational and behavioral changes, often leads to suboptimal outcomes. In this context, digital archival governance is not simply about digitizing records but about embedding digital practices into the administrative DNA of government institutions.

Another salient theme emerging from the interviews is the critical role of capacity building and continuous professional development. A representative from the Human Resources department remarked: *"We need to equip public servants with the skills to manage, secure, and use digital archives. Without training, the transition to digital governance will face operational inefficiencies."* This concern was reiterated by several other informants, suggesting that the success of digital archival systems hinges on the human infrastructure that supports it.

These findings highlights the importance of institutional learning and human capital investment as enablers of public sector innovation. In practice, digital archives require not only technological literacy but also ethical and procedural competence in handling sensitive public information. Institutional readiness must be supported by structured training programs, strategic leadership, and adaptive policies to ensure that digital initiatives translate into tangible service improvements. The interviews reveal that digital archival governance in Makassar is shaped not only by technological capacity but, more critically, by organizational culture and workforce preparedness. These insights point to the need for a holistic approach to digital transformation, one that integrates technical tools with institutional reform and human resource development to sustain innovation in public service delivery.

Legal and Regulatory Frameworks

Additionally, legal and regulatory frameworks play a crucial role in shaping the governance of digital archives. Clear policies regarding data protection, public access, and long-term preservation of digital records are necessary to establish a structured and standardized approach to archival management. Legal frameworks must also address ethical concerns related to data ownership, confidentiality, and the rights of citizens in accessing public information. Ensuring compliance with national and international digital governance standards can help enhance public trust and prevent misuse of digital archival systems.

The issue of legal frameworks was discussed by several interviewees, who pointed out that clear policies regarding data protection and public access are necessary for effective governance. A key insight from a senior policy advisor was: *"We need clear legal guidelines to regulate data privacy, public access to records, and the long-term preservation of digital files. Without these frameworks, digital archives will not be fully functional or trustworthy."* This underscores the notion that technological capability alone is insufficient without a legal

infrastructure that defines the boundaries and responsibilities associated with digital records management.

Furthermore, the interviews highlighted the necessity for legal harmonization, aligning local and national regulations with international standards to ensure ethical and equitable information governance. A regulatory compliance expert articulated this need by stating, *"Legal frameworks must address ethical concerns related to data ownership, confidentiality, and the rights of citizens in accessing information. This ensures that the public has trust in digital archival systems."* Such concerns reflect broader debates in the literature around digital ethics, particularly in contexts where information access intersects with privacy rights and administrative transparency (Floridi & Taddeo, 2016).

Community Engagement and Transparency

The role of community engagement in digital archival governance is another important aspect to consider. Public participation in the design and implementation of digital governance initiatives can increase awareness, acceptance, and effectiveness of these systems. By involving citizens in decision-making processes, governments can create more user-friendly and accessible digital archives that cater to the specific needs of different demographic groups. Open government initiatives, such as participatory platforms and feedback mechanisms, can further strengthen transparency and accountability in public service delivery.

Participants consistently emphasized that citizen involvement is not merely a peripheral activity but a central component in ensuring that digital archives are inclusive, transparent, and responsive to public needs. As one representative from the Public Relations Office noted, *"Public participation in digital initiatives can help create archives that are more user-friendly and cater to the needs of different demographic groups."* This highlights the potential for participatory approaches to shape archival systems that reflect the lived experiences and informational priorities of diverse user communities.

Moreover, interviewees underscored the importance of open government platforms and citizen feedback mechanisms as tools to promote transparency and accountability. A community outreach coordinator explained, *"Engaging citizens through participatory platforms ensures that they feel more involved in the governance process, which builds trust in the system and promotes greater accountability."* This perspective is consistent with the principles of collaborative governance, wherein the active involvement of stakeholders in policy design and implementation enhances both legitimacy and outcomes (Ansell & Gash, 2008).

Innovation and Future Directions

Looking ahead, continuous innovation in digital archival governance will be necessary to keep pace with rapid technological advancements and evolving public service demands. Emerging technologies such as blockchain, artificial intelligence, and big data analytics have the potential to enhance the security, accuracy, and efficiency of digital archives. Governments must remain proactive in exploring and integrating new digital solutions while also addressing potential risks, such as cybersecurity threats and ethical dilemmas associated with automated decision-making.

The interviews also revealed a forward-looking perspective among government stakeholders, emphasizing the necessity of continuous innovation in digital archival governance. Participants acknowledged that emerging technologies—such as blockchain and

artificial intelligence (AI)—offer transformative potential for improving the security, accuracy, and efficiency of digital archives. As one IT specialist noted, “Emerging technologies like blockchain and AI can significantly improve the security and accuracy of digital archives, but we must also be cautious of cybersecurity risks.” This highlights an acute awareness of the dual-edged nature of technological advancement, where benefits must be weighed against potential vulnerabilities.

The discussion also brought to light the imperative of proactive governance in the face of rapid digital transformation. A senior government official emphasized, *“We must remain proactive in integrating new digital solutions, but we must also carefully manage the risks associated with automated decision-making and ensure that our systems are ethical and secure.”* This reflects a growing recognition that innovation must be accompanied by robust ethical oversight, risk assessment, and regulatory frameworks, particularly as AI systems increasingly influence decision-making in the public sector (Wirtz, Weyerer, & Geyer, 2019).

The findings of this study highlight the critical role of institutional readiness and adaptability in the successful implementation of digital archival governance within the smart city framework. As noted by Moro-Cabero (2021), digital transformation in public administration is not merely a technological shift but requires significant organizational and cultural changes. In line with this perspective, the study found that the preparedness of government institutions, particularly in developing digital competencies among public servants, plays a crucial role in ensuring the efficiency and security of digital archival systems. Without adequate capacity-building initiatives and professional development programs, resistance to digital adoption may hinder the effectiveness of governance processes (Alcantara-Rodriguez et al., 2024; Berman et al., 2024; Vanek, 2024). The findings emphasize that successful digital transformation in governance requires more than just technological tools; it requires a shift in organizational culture to equip public servants with the necessary skills to manage digital archives effectively. The findings emphasize that successful digital transformation in governance requires more than just technological tools; it requires a shift in organizational culture to equip public servants with the necessary skills to manage digital archives effectively.

Furthermore, the study underscores the importance of legal and regulatory frameworks in shaping the governance of digital archives. Previous research has emphasized the necessity of clear policies concerning data protection, accessibility, and the long-term preservation of digital records (Evangelista, 2022; Hanna & Brogi, 2023; Kim, 2022; Pacheco et al., 2023; Taher, 2023). The findings align with this view, demonstrating that compliance with national and international governance standards enhances public trust and mitigates risks related to data misuse. Ethical considerations, including data ownership, confidentiality, and citizen rights, must be embedded within legal frameworks to ensure an equitable and transparent digital governance system (Jaillant & Caputo, 2022; Leigh, 2021; Wilson, 2021). This is critical for establishing a structured, standardized approach to digital archival governance that protects both the integrity of the records and the rights of citizens.

Community engagement emerged as another crucial factor in the study, reinforcing the idea that participatory governance enhances the effectiveness and acceptance of digital initiatives. Previous studies have shown that public involvement in digital policy design leads to more user-friendly and accessible services (Čelofiga et al., 2022; Murphy, 2021). The findings suggest that initiatives such as open government platforms and feedback mechanisms foster transparency and strengthen public trust. This participatory approach is particularly relevant for cities adopting smart governance, where citizen-centric solutions

contribute to a more inclusive and responsive public service framework (Jaillant & Caputo, 2022; Yin et al., 2020). Engaging citizens not only increases the relevance of digital services but also empowers communities to take an active role in shaping public policy. Furthermore, this approach fosters a sense of ownership and accountability, ensuring that the digital archives reflect the diverse needs and interests of the population.

In addition, the study highlights the need for continuous innovation in digital archival governance to keep pace with technological advancements. Emerging technologies such as blockchain, artificial intelligence, and big data analytics have been recognized for their potential to enhance security, accuracy, and operational efficiency in archival management (Chakraborty, 2023; Hanna & Brogi, 2023; Rouf, 2024; Wong, 2024). The findings suggest that proactive exploration of these technologies is essential for ensuring the resilience and scalability of digital governance systems. However, concerns regarding cybersecurity risks and ethical implications of automated decision-making must be carefully addressed to maintain public confidence and system integrity.

The implications of these findings extend beyond Makassar, offering valuable insights for policymakers and researchers in the field of digital governance. As digital archival governance becomes an integral component of smart city development, the study contributes to the growing body of knowledge on best practices and challenges in implementing digital transformation in public administration. Future research should explore comparative studies across different urban settings to identify contextual variations and further refine governance models for digital archives.

Digital archival governance in Makassar represents a dynamic and evolving process that requires ongoing collaboration, institutional adaptation, legal reinforcement, community involvement, and technological innovation. While challenges persist, the commitment to digital transformation within the smart city framework provides opportunities to improve public service delivery, enhance transparency, and promote sustainable urban development. By fostering inclusive and adaptive digital governance strategies, Makassar can strengthen its position as a leading smart city and serve as a model for other urban areas seeking to implement digital archival systems effectively.

Overall, the study underscores the dynamic and evolving nature of digital archival governance, emphasizing the need for sustained collaboration, institutional adaptation, legal reinforcement, community involvement, and technological innovation. By addressing these key factors, Makassar City can strengthen its position as a leading smart city and provide a model for other urban areas seeking to optimize digital archival governance for enhanced public service delivery and sustainable urban development.

4. CONCLUSION

Digital archival governance plays a crucial role in fostering public service innovation within the smart city framework, as demonstrated in Makassar. This study highlights the importance of institutional readiness, legal frameworks, community engagement, and technological advancements in ensuring the efficiency, transparency, and accessibility of digital archives. The successful implementation of digital archival governance depends on the adaptability of government institutions, capacity-building initiatives, and participatory governance that involves citizens in decision-making processes. Additionally, the integration of emerging technologies such as artificial intelligence and blockchain presents opportunities for

enhancing security and operational efficiency, although challenges related to cybersecurity and ethical considerations must be addressed. The findings provide valuable insights for policymakers and researchers in optimizing digital governance structures to improve public service delivery and support sustainable urban development, positioning Makassar as a model for other cities in implementing smart governance strategies.

ACKNOWLEDGEMENT

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AUTHORS' CONTRIBUTIONS

Aris Baharuddin: Writing original draft preparation. Ideas; formulation or evolution of overarching research goals and aims. **Afzal Sayed Munna:** Supervision. **Asmilah Abdullah:** Ideas; formulation or evolution of overarching research goals and aims. **Asmar:** Ideas; formulation or evolution of overarching research goals and aims. **Rudi Salam:** Data validation.

CONFLICT OF INTERESTS

We state that there are no known conflicts of interest linked with this publication, and that there has been no significant financial assistance for this work that could have influenced its outcome.

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