

## Digitalization and Public Service Efficiency: Evidence from Registry and Notary Administration in Timor-Leste

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Article Info :	ABSTRACT
Accepted: 02-04-2026	Digitalization has become a strategic priority in public administration reform, particularly in improving the efficiency and effectiveness of service delivery in developing countries. In Timor-Leste, civil registry and notary services have traditionally relied on manual processes, resulting in delays, administrative inefficiencies, and limited data integration. This study aims to examine the impact of digitalization through the implementation of the Digital Management Information System (DMIS) 4.0 at the Municipal Directorate of Civil Registry and Notary Services in Dili. This research employs a qualitative analytical approach, using observation, in-depth interviews with six key informants, and document analysis. Data were analyzed using thematic analysis to identify patterns related to efficiency, effectiveness, and implementation challenges. The findings reveal that the implementation of DMIS 4.0 significantly improves service efficiency by reducing processing time, minimizing administrative errors, and streamlining workflows. At the same time, service effectiveness is enhanced through improved data accuracy, accessibility, and integration across administrative units. However, the study also identifies key challenges, including limited technological infrastructure, unstable internet connectivity, and varying levels of digital literacy among employees, which affect system performance. This study concludes that digitalization functions as a socio-technical transformation requiring alignment between technology, human resource capacity, and institutional readiness. The findings contribute to the limited empirical literature on digital governance in small developing countries and provide practical insights for strengthening digital public service systems.
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## INTRODUCTION

Digitalization has become a central pillar in the transformation of public administration, particularly in enhancing the efficiency and effectiveness of public service delivery. Governments worldwide are increasingly adopting digital technologies to streamline administrative processes, improve transparency, and respond to growing public demands for faster and more accessible services (Mergel, Edelmann, & Haug, 2019). In the context of developing countries, digital transformation is not merely an innovation but a strategic necessity to modernize governance systems and improve service performance.

In Timor-Leste, the urgency of digitalization is evident in public service sectors that traditionally rely on manual administrative processes, such as civil registry and notary services. The Municipal Directorate of Registry and Notary Services in Dili plays a critical role in providing legal documentation services, including civil registration and authentication of legal documents. However, these services have historically been characterized by time-consuming procedures, manual record-keeping, and limited data integration, often requiring between five to seven working days to process a single document. Such inefficiencies contribute to delays, increased administrative burden, and reduced public satisfaction.

The increasing demand for notary and civil registration services further intensifies the need for reform. Statistical data indicate a significant rise approximately 30% over the past three years in public requests for these services, reflecting both population growth and heightened administrative needs. This trend highlights the limitations of conventional systems and underscores the importance of adopting digital solutions to meet service demand effectively. To address these challenges, the Government of Timor-Leste has initiated digital transformation efforts, including the implementation of the Digital Management Information System (DMIS) 4.0 within the Directorate.

This system aims to digitize administrative workflows, integrate data through a unique identification system, and enhance service delivery performance. Empirical findings from this study indicate that the implementation of DMIS 4.0 has significantly improved service efficiency by accelerating administrative processes, reducing recording errors, and enabling easier access to digital archives. These outcomes are consistent with global evidence suggesting that digitalization can reduce operational costs, shorten service delivery time, and enhance data accuracy (Kar, 2023).

Despite these improvements, digital transformation in public services is often constrained by structural and institutional challenges. In the case of Timor-Leste, key barriers include limited technological infrastructure, unstable internet connectivity, system disruptions, and low levels of digital literacy among public employees. These challenges align with broader findings in the literature, which emphasize that successful digitalization depends not only on technological adoption

but also on human resource capacity, institutional readiness, and supportive regulatory frameworks (Wijaya, 2024). Beyond its geographic contribution, this study's novelty resides in its simultaneous application of two complementary analytical frameworks the Technology Acceptance Model Davis, (1989) and the DeLone and McLean IS Success Model DeLone & McLean, (2003) to a sector-specific digital governance case in a small island developing state.

This dual-framework approach enables a more nuanced analysis of both the adoption dynamics (efficiency-related) and the outcome quality (effectiveness-related) of DMIS 4.0, which prior studies have examined in isolation or in different geographic and administrative contexts. Furthermore, there remains a significant research gap in the empirical examination of digitalization impacts within small island developing states, particularly in Southeast Asia. While extensive studies have explored e-government implementation in advanced economies, limited attention has been given to fragile or emerging digital governance contexts such as Timor-Leste. This gap is particularly relevant in understanding how digital systems influence both efficiency (resource optimization, time reduction) and effectiveness (goal achievement, service quality) in public administration. More specifically, three intersecting gaps can be identified in the existing literature.

First, no prior empirical study has examined the implementation of DMIS 4.0 as a case of digital transformation in the civil registry and notary services sector of Timor-Leste. Second, while both the Technology Acceptance Model (TAM) Davis, (1989) and the DeLone and McLean Information Systems Success Model DeLone & McLean, (2003) have been applied in e-government research, their simultaneous application in analysing efficiency and effectiveness outcomes within a single sector in a small island developing state in Southeast Asia remains unexplored. Third, existing studies on digital governance in developing contexts rarely distinguish between the specific administrative functions of civil registry and notary services, which involve distinct legal, procedural, and institutional requirements compared to other public services. This study addresses these gaps through an integrated empirical analysis grounded in both frameworks.

**Research Problem Statement:** The core research problem addressed by this study is the absence of empirical evidence regarding whether and how the implementation of a specific digital management information system (DMIS 4.0) transforms public service efficiency and effectiveness in a small island developing state facing compound institutional and infrastructural constraints. The problem is not merely descriptive it is analytical: how do the benefits and limitations of digitalization manifest simultaneously in an institution with high service demand, limited technological capacity, and constrained human resource development? This problem has practical implications for digital governance policy in Timor-Leste and broader theoretical implications for understanding digitalization in comparable developing country contexts.

Therefore, this study aims to examine the impact of digitalization on public service efficiency and effectiveness through a case study of the Municipal Directorate of Registry and Notary Services in Dili, Timor-Leste. Specifically, it analyzes the implementation of DMIS 4.0, identifies the challenges encountered, and evaluates the role of human resource capacity in supporting digital transformation.

This study contributes to the literature in three main ways. First, it provides empirical evidence from a developing country context that is underrepresented in digital governance research. Second, it offers practical insights into the relationship between digitalization and public service performance, particularly in registry and notary administration. Third, it proposes policy-relevant recommendations for strengthening digital infrastructure, improving human resource capacity, and enhancing institutional readiness to support sustainable digital transformation.

Digitalization has become a fundamental driver of transformation in public administration, reshaping how governments design, deliver, and evaluate public services. It refers not only to the digitization of information but also to the reconfiguration of administrative processes through the integration of information and communication technologies (ICT) (Mergel et al., 2019). In this context, e-government is widely recognized as a strategic instrument to enhance transparency, accountability, and service responsiveness (Gandonou et al., 2024). Scholars argue that digital transformation entails structural and organizational change, including process automation, inter-agency data integration, and the development of citizen-centered service platforms (Ciancarini, & Grimaudo, 2024). These transformations reduce bureaucratic fragmentation and enable more coordinated governance systems.

Empirical evidence from the present study supports this perspective. The implementation of the Digital Management Information System (DMIS) 4.0 demonstrates how digital platforms can integrate administrative data using a unique identification system, thereby improving data consistency and institutional coordination. This finding aligns with global evidence suggesting that interoperability and data integration are key determinants of successful digital governance (World Bank, 2021). It is important, however, to critically evaluate the assumptions underlying e-government optimism. While scholars such as Ciancarini et al., (2024); Mergel et al., (2019) broadly characterise digital transformation as a progressive force in public governance, this perspective has been contested.

Heeks, (2002) demonstrates that the majority of e-government projects in developing countries fail or only partially succeed, attributing this to design-reality gaps wherein digital systems are developed based on idealised models that do not reflect local organisational cultures, resource constraints, or administrative capacities. Janowski, (2015), meanwhile, argues that sustainable digital governance requires contextualization the deliberate adaptation of systems to specific local

conditions and that transformative impacts are contingent upon institutional readiness rather than technological sophistication alone. These critical perspectives are directly relevant to the case examined in this study, where the implementation of DMIS 4.0 in Timor-Leste illustrates both the measurable gains and the persistent institutional constraints associated with digitalization in a small island developing state.

Efficiency in Public Administration Is Defined As The Optimal Utilization Of Resources To Achieve Maximum Output (Afonso, Jalles, & Venâncio, 2023). Digitalization Enhances Efficiency by Streamlining Workflows, Automating Routine Tasks, And Minimizing Administrative Redundancies. Previous Studies Indicate That Ict Adoption Significantly Reduces Processing Time And Operational Costs While Improving Accuracy (Musa & Abraham, 2025). Automation Of Administrative Procedures Eliminates Repetitive Manual Tasks and Accelerates Service Delivery, Leading To More Efficient Governance Systems.

Findings from this study corroborate these arguments. The adoption of DMIS 4.0 has accelerated administrative processes, reduced data recording errors, and facilitated access to digital archives. These improvements demonstrate how digital systems can shift public service delivery from labor-intensive processes to more efficient, technology-driven operations. Furthermore, digitalization contributes to resource optimization by reducing dependence on physical documentation and enabling better allocation of human resources (Mergel et al., 2019).

This is particularly relevant in administrative contexts characterized by high service demand and limited institutional capacity. While efficiency focuses on resource use, effectiveness relates to the extent to which public services achieve intended outcomes and meet citizens' needs. In digital governance, effectiveness is often measured through service quality, accessibility, responsiveness, and user satisfaction (DeLone & McLean, 2003). Digitalization enhances effectiveness by improving data accuracy, enabling real-time access to services, and facilitating faster communication between government and citizens (Janowski, 2015).

Online service platforms, for instance, allow users to access services regardless of geographical and temporal constraints, thereby increasing inclusivity. Evidence from the study indicates that digitalization improves service effectiveness by ensuring data consistency and enabling easier retrieval of digital records. These improvements enhance the reliability and usability of public services, which are key dimensions of service effectiveness. Thus, digitalization functions as a dual mechanism that improves both efficiency (process-oriented outcomes) and effectiveness (service quality and goal attainment), reinforcing its strategic importance in public sector reform.

The success of digital transformation in public administration depends on multiple interrelated factors. First, technological infrastructure is a fundamental

requirement. Reliable internet connectivity, adequate hardware, and secure data systems are essential for sustaining digital operations (World Bank, 2021). Inadequate infrastructure can significantly hinder system performance and limit service accessibility. Second, human resource capacity plays a critical role. Digital literacy and technical competence among public employees determine the extent to which digital systems are effectively utilized (Venkatesh, & Davis, 2003). The study highlights that limited digital literacy among staff slows adaptation and affects system performance.

Third, institutional readiness and governance frameworks are essential for ensuring sustainability. Clear regulations, organizational support, and inter-agency coordination are necessary to facilitate system integration and long-term implementation (Janowski, 2015). These findings reinforce the argument that digitalization is a socio-technical transformation, requiring alignment between technology, human capacity, and institutional structures.

Despite its transformative potential, digitalization faces significant challenges, particularly in developing countries. These challenges include infrastructural limitations, low digital literacy, institutional resistance, and regulatory gaps (Heeks, 2002). The findings of this study are consistent with this body of literature. Key barriers identified include limited technological devices, unstable internet connectivity, server disruptions, and low levels of digital literacy among employees. These constraints not only slow system adoption but also affect service reliability and user experience. Additionally, resistance to organizational change remains a critical issue in digital transformation initiatives. As noted by Heeks, (2002), many e-government projects fail due to misalignment between technological design and local institutional realities.

The existing literature on digital governance is heavily concentrated in developed countries with advanced technological infrastructures. There is limited empirical research on small island developing states, particularly in Southeast Asia. This study contributes to addressing this gap by providing empirical evidence from Timor-Leste, focusing on registry and notary services sectors traditionally characterized by manual processes. It offers insights into how digitalization affects both efficiency and effectiveness in a resource-constrained administrative environment. Moreover, the study highlights the critical role of human resource capacity and infrastructural readiness in determining the success of digital transformation. These findings contribute to a more context-sensitive understanding of digital governance, which is often overlooked in mainstream literature.

This study adhered to established ethical standards in qualitative research. Prior to data collection, informed consent was obtained from all six key informants, who were clearly briefed on the purpose and scope of the research, their right to withdraw at any time, and the measures taken to protect their confidentiality. All informants are referred to by their institutional roles rather than personal names

throughout this study to ensure anonymity. Research approval was granted by the Municipal Directorate of Civil Registry and Notary Services (DMKSRN) in Dili in accordance with applicable administrative procedures. No identifying personal information has been disclosed in the findings, and all data were stored securely and used exclusively for the purposes of this study (Creswell & Creswell, 2018).

## RESEARCH METHOD

This study employed a qualitative analytical approach to examine how digitalization, particularly through the implementation of the Digital Management Information System (DMIS) 4.0, influences public service efficiency and effectiveness. A qualitative design was considered appropriate to capture institutional practices, user experiences, and contextual challenges associated with digital transformation in public administration (Creswell & Creswell, 2018). This approach aligns with the study's objective of understanding digitalization as a socio-technical process involving technology, human resources, and institutional structures.

The research was conducted at the Municipal Directorate of Civil Registry and Notary Services (DMKSRN) in Dili, Timor-Leste, which represents a critical case of digital transformation in a developing country context. The institution was selected due to its adoption of DMIS 4.0 as part of broader government efforts to modernize administrative processes and improve service delivery performance. The study involved six key informants selected using purposive sampling based on their relevance to digital service implementation. These included policy-level decision-makers, technical personnel responsible for system management, administrative staff directly involved in service delivery, and service users. This selection ensured the inclusion of multiple perspectives necessary to assess both operational efficiency (e.g., process acceleration, error reduction) and service effectiveness (e.g., accessibility, user experience).

Data were collected through observation, in-depth interviews, and document analysis. Observations were conducted to examine workflow changes and system utilization in daily service operations. In-depth interviews were carried out to explore perceptions of efficiency improvements, service quality, and challenges in system implementation. Document analysis included institutional reports, policy documents, and system-related records to support empirical findings and provide contextual understanding.

The collected data were analyzed using thematic analysis following the framework of (Braun & Clarke, 2006). The analysis involved systematic coding of interview transcripts and observational data to identify patterns related to efficiency, effectiveness, and determinants of digital transformation, including infrastructure, human resource capacity, and institutional readiness. This analytical approach

enabled the interpretation of both process-oriented outcomes and service quality dimensions, consistent with the conceptual framework outlined in the literature.

To ensure the validity and reliability of the findings, triangulation was applied by comparing data from multiple sources and methods, including interviews, observations, and documentation (Patton, 2002). This strategy enhanced the credibility of the analysis and minimized potential bias, particularly in assessing the real impact of digitalization in a resource-constrained environment.

The research procedure was conducted systematically, beginning with a literature review to identify theoretical foundations and research gaps, followed by field data collection, thematic analysis, and interpretation of findings. This methodological design ensures alignment between the research objectives, theoretical framework, and empirical analysis of digitalization in public service delivery.

## RESULT AND DISCUSSION

### Implementation of Digitalization through DMIS 4.0

The findings indicate that the implementation of the Digital Management Information System (DMIS) 4.0 has significantly transformed administrative processes within the Municipal Directorate of Civil Registry and Notary Services in Dili. The system replaces manual procedures with integrated digital workflows, enabling faster processing, structured data management, and improved service coordination.

Empirical evidence shows that DMIS 4.0 integrates population data through a unique identification system, allowing interoperability across different services such as birth certificates, marriage registration, and death records. This confirms that digitalization facilitates data consistency and reduces fragmentation in public administration.

This transformation was confirmed by key informants directly involved in service operations. One administrative staff member noted: “Before DMIS 4.0, we had to search through physical files manually, which could take days. Now, we can retrieve any citizen record within minutes using the unique ID system.” Similarly, a technical officer observed: “The system has reduced the duplication of data entry significantly. Previously, the same information had to be entered multiple times for different services. Now, it is entered once and accessed everywhere.” A policy-level informant further remarked: “DMIS 4.0 has changed not just how we work, but the quality of what we can deliver to the public. Citizens no longer need to return multiple times for the same document.” These accounts illustrate that the impacts of digitalization are experienced not only in measurable process indicators but also in the daily operational culture of the institution.

These findings are consistent with the concept of digital transformation in public administration, which emphasizes process automation and system

integration as key drivers of service improvement (Ciancarini et al., 2024; Mergel et al., 2019). The implementation of DMIS 4.0 demonstrates that digital platforms function not only as technological tools but also as institutional mechanisms for administrative modernization.

### **Structural and Technological Challenges**

Despite its benefits, the implementation of DMIS 4.0 faces several structural and technological constraints. The study identifies unstable internet connectivity, limited hardware capacity, and system disruptions as major barriers affecting service performance. These constraints slow down processing time and occasionally disrupt service delivery.

In addition, human-related challenges such as limited digital literacy and insufficient technical training further complicate system adoption. Some employees experience difficulties adapting to new workflows, particularly those previously accustomed to manual procedures.

These findings align with existing literature on digital governance in developing contexts, which highlights infrastructure limitations and human resource constraints as key obstacles to successful digitalization (Heeks, 2002). The results also support the Technology Acceptance Model, suggesting that perceived complexity and limited familiarity with technology can hinder system adoption (Davis, 1989). Thus, digital transformation in this context should be understood as a socio-technical process requiring alignment between technological infrastructure and human capacity.

Informants' accounts corroborate these structural constraints. One technical officer stated: "The most difficult part is not learning the system it is that when the internet goes down, everything stops. We have no backup protocol, so services simply cannot be processed." An administrative staff member similarly observed: "There are colleagues who have been working here for many years using manual records. When DMIS was introduced, it created anxiety. Not because they did not want to learn, but because there was no formal training programme we had to figure it out ourselves." These testimonies underscore that the barriers to digitalization in this context are not merely technical but are embedded in broader institutional conditions, including the absence of formal change management strategies and contingency planning for infrastructure failure.

### **Human Resource Adaptation and Capacity**

The study reveals that human resource capacity plays a critical role in determining the success of digital transformation. While some employees demonstrate adaptability and willingness to learn, others face challenges due to limited experience with digital systems and insufficient training opportunities. Continuous training, managerial support, and clear communication are identified as

key factors that enhance employee confidence and system utilization. Conversely, limited time for adaptation and lack of structured training programs contribute to stress and resistance among staff.

Informant testimonies illuminate the human dimension of this challenge. A senior administrative officer explained: “When I first started using DMIS, I made mistakes. But my supervisor was patient and helped me step by step. Without that guidance, I would have gone back to writing by hand.” A service user also remarked: “I noticed that sometimes the younger staff process my documents faster because they seem more comfortable with the computer system. The older staff are trying, but you can tell it is still not natural for them.” These accounts confirm that digital literacy is not homogeneous within the institution and that informal peer support plays a compensatory role in the absence of structured training, a finding with important implications for capacity-building policy.

These findings reinforce the argument that digital transformation is not solely dependent on technological innovation but also on human resource development (Venkatesh et al., 2003). In line with Public Service Management theory, institutional reform requires strengthening human capacity alongside technological implementation.

### **Impact on Public Service Efficiency**

The implementation of DMIS 4.0 has resulted in substantial improvements in public service efficiency. The study finds that service processing time has been significantly reduced, with many administrative procedures now completed within a single day, compared to several days under the manual system. Furthermore, digitalization minimizes administrative errors through automated data validation and integrated databases. The system also reduces reliance on physical archives, enabling faster document retrieval and more efficient workflow management.

These findings are consistent with previous studies indicating that Digitalization Improves Operational Efficiency By Reducing Processing Time, Minimizing Redundancy, And Optimizing Resource Utilization (Afonso et al., 2023; Musa & Abraham, 2025). The Results Confirm That Dmis 4.0 Enhances Process-Oriented Outcomes In Public Service Delivery.

### **Impact on Public Service Effectiveness**

In addition to efficiency, DMIS 4.0 improves service effectiveness by enhancing data accuracy, accessibility, and service reliability. The integration of data across units ensures consistency in service delivery and reduces duplication of records. The system also increases service capacity, allowing institutions to handle a larger number of clients without significantly increasing workload. This scalability demonstrates the ability of digital systems to respond to growing public demand.

These findings align with the (DeLone & McLean, 2003) model, which emphasizes system quality, information quality, and service quality as key determinants of effectiveness. Digitalization enhances these dimensions by providing accurate data, faster access, and more reliable services. Thus, the study confirms that digitalization functions as a dual mechanism, improving both efficiency (process optimization) and effectiveness (service quality and outcomes).

## Discussion

### Bridging Empirical Findings and Theory

The findings of this study provide strong empirical support for existing theories on digital governance while also addressing the research gap identified in the introduction. In the context of a small developing country like Timor-Leste, digitalization through DMIS 4.0 demonstrates that significant improvements in public service performance can be achieved despite infrastructural limitations. However, the study also highlights that technological adoption alone is insufficient. The effectiveness of digital transformation depends on the interaction between infrastructure, human resource capacity, and institutional readiness.

This confirms the socio-technical perspective emphasized in the literature. Moreover, the results extend previous research by showing how digitalization operates in a resource-constrained environment, providing context-specific insights that are often missing in studies focused on developed countries. The case of DMKSRN–Dili illustrates that even partial digital transformation can produce measurable improvements in efficiency and effectiveness when supported by appropriate institutional practices.

**Theoretical Implications: Engaging Competing Frameworks.** A deeper reading of the findings reveals an important tension between techno-optimist and institutionalist theoretical positions. From the perspective of the Technology Acceptance Model (Davis, 1989), the adoption of DMIS 4.0 can be understood as shaped by employees' perceived usefulness and perceived ease of use. The study findings partially support this: staff who perceived the system as genuinely simplifying their workload demonstrated higher levels of adoption and confidence, consistent with TAM predictions. However, TAM's emphasis on individual-level perceptions does not fully account for the structural and organisational factors that constrained adoption in this context, such as unstable internet infrastructure and insufficient formal training programmes. The Unified Theory of Acceptance and Use of Technology (UTAUT), which incorporates social influence and facilitating conditions Venkatesh et al., (2003), offers a more comprehensive explanatory lens, particularly in capturing how managerial support and peer encouragement mediated the adaptation process among staff with varying levels of digital literacy.

From the perspective of the DeLone and McLean IS Success Model DeLone & McLean, (2003), the findings are broadly supportive of the model's core

argument that system quality, information quality, and service quality interact to produce user satisfaction and organisational benefits. The study confirms that DMIS 4.0 has improved information quality through enhanced data accuracy and reduced recording errors, and has improved service quality by enabling faster processing and increased institutional capacity. However, the model's assumption of a linear progression from system quality to organisational impact is complicated by the persistent infrastructure deficiencies identified in this study. Unstable internet connectivity and server disruptions introduce non-linear feedback loops wherein service quality gains achieved through system improvement are partially negated by operational disruptions a dynamic that the original DeLone and McLean model does not fully accommodate. This finding suggests the need for a contextualised adaptation of the model when applied in resource-constrained settings.

**Unexpected and Complex Findings: The Paradox of Partial Digitalization.** One of the more nuanced and theoretically significant findings of this study is what may be termed the “partial digitalization paradox.” While DMIS 4.0 has demonstrably improved processing time and data accuracy, its benefits are unevenly distributed across the institution. Units with more stable internet access and better-trained staff report substantially greater performance gains than those operating under connectivity constraints. This internal differentiation challenges the assumption of uniform digital transformation impact that is common in policy narratives and some academic literature.

The paradox highlights that digitalization can simultaneously increase operational capacity for some service units while creating new forms of institutional inequality within the same organisation. This finding aligns with Heeks' (2002) warning about design-reality gaps but extends it by showing that partial success can coexist with partial failure within a single implementation. The theoretical contribution here is to underscore the importance of analysing intra-organisational variation not just overall institutional outcomes when evaluating digitalization impact.

**Contributions Beyond Confirming Existing Theories.** This study advances the existing literature in three respects. First, it provides the first empirical examination of DMIS 4.0 in the civil registry and notary sector in Timor-Leste, establishing a documented evidence base for a context that has remained invisible in international digital governance scholarship. Second, by integrating both TAM/UTAUT and DeLone-McLean perspectives, the study offers a more holistic analytical model that captures both adoption dynamics and systemic outcome quality an approach that may be more appropriate for studying digitalization in transitional administrative environments than single-framework analyses.

Third, the partial digitalization paradox identified in this study introduces a new conceptual lens for understanding uneven intra-organisational transformation,

which may be applicable to similar cases in other small island developing states and fragile institutional contexts. These contributions position the study not merely as a confirmation of established theory, but as a refinement and contextual extension of existing frameworks in ways that have practical implications for digital governance policy design.

## **CONCLUSION**

This study examined the impact of digitalization on public service efficiency and effectiveness through the implementation of DMIS 4.0 at the Municipal Directorate of Civil Registry and Notary Services (DMKSRN) in Dili, Timor-Leste. The findings confirm that digitalization significantly transforms administrative processes by enabling faster service delivery, improving data accuracy, and enhancing system integration across service units. Efficiency gains are reflected in reduced processing time, streamlined workflows, and optimized resource utilization, while effectiveness improvements are evidenced through higher service quality, greater data consistency, and increased institutional capacity to meet public demand. However, the study also establishes that digital transformation success is not determined by technology alone.

Structural constraints including unstable internet connectivity, infrastructure deficiencies, and uneven digital literacy among staff substantially condition implementation outcomes, confirming that digitalization must be understood as a socio-technical process requiring simultaneous alignment of technology, human capacity, and organizational readiness. This study contributes empirical evidence from a resource-constrained small island developing state that remains underrepresented in digital governance scholarship. Future research should extend this work through comparative multi-sector analyses and quantitative longitudinal approaches to assess long-term impacts on service performance and citizen satisfaction.

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solely those of the authors and do not represent the official position of any institution.

## REFERENCES

- Afonso, António, Jalles, João Tovar, & Venâncio, Ana. (2023). Introduction To Public Sector Efficiency. *Handbook On Public Sector Efficiency*, 1–4.
- Braun, Virginia, & Clarke, Victoria. (2006). Using Thematic Analysis In Psychology. *Qualitative Research In Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Ciancarini, Paolo, Giancarlo, Raffaele, & Grimaudo, Gennaro. (2024). Digital Transformation In The Public Administrations: A Guided Tour For Computer Scientists. *Ieee Access*, 12, 22841–22865.
- Creswell, John W., & Creswell, J. David. (2018). *Research Design: Qualitative, Quantitative, And Mixed Methods Approaches*. Sage Publications.
- Davis, Fred D. (1989). Perceived Usefulness, Perceived Ease Of Use, And User Acceptance Of Information Technology. *Mis Quarterly*, 319–340.
- Delone, William H., & Mclean, Ephraim R. (2003). The Delone And Mclean Model Of Information Systems Success: A Ten-Year Update. *Journal Of Management Information Systems*, 19(4), 9–30.
- Gandonou, Jean Baptiste, Degila, Jules, Wandji, Thierry, Dagba, Théophile, Tognisse, Ida Sèmévo, & Adehan, Anziz. (2024). Bibliometric Analysis On Cybersecurity And E-Government. *International Conference On E-Infrastructure And E-Services For Developing Countries*, 315–328. Springer.
- Heeks, Richard. (2002). Information Systems And Developing Countries: Failure, Success, And Local Improvisations. *Information Society*, 18(2), 101–112. <https://doi.org/10.1080/01972240290075039>
- Janowski, Tomasz. (2015). Digital Government Evolution: From Transformation To Contextualization. *Government Information Quarterly*, Vol. 32, Pp. 221–236. Elsevier.
- Kar, Sanjoy. (2023). Data For Better Lives: World Development Report 2021 By World Bank Group. *Journal Of Data Science, Informetrics, And Citation Studies*, 2(2), 136–139.
- Mergel, Ines, Edelmann, Noella, & Haug, Nathalie. (2019). Defining Digital Transformation: Results From Expert Interviews. *Government Information Quarterly*, 36(4), 101385.
- Musa, Okekwu A. T. E., & Abraham, Meliga. (2025). The Impact Of Information And Communication Technology (Ict) Adoption On Accounting Practices And Financial Reporting Accuracy In Public Institutions. *International Journal Of African Research Sustainability Studies*.

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Patton, Michael Quinn. (2002). Two Decades Of Developments In Qualitative Inquiry: A Personal, Experiential Perspective. *Qualitative Social Work*, 1(3), 261–283.

Venkatesh, Viswanath, Morris, Michael G., Davis, Gordon B., & Davis, Fred D. (2003). User Acceptance Of Information Technology: Toward A Unified View1. *Mis Quarterly*, 27(3), 425–478.

Wijaya, Indra Dharma. (2024). Tantangan Dan Peluang Dalam Penerapan Teknologi Digital Bagi Pemerintah Di Indonesia. *Pallangga Praja*, 6(2).