

The Effectiveness of Public Service Digitalization Policies in Enhancing Transparency: Evidence from Digital Governance Implementation

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ABSTRACT

The digital transformation of public services has become a key strategy for improving governance, particularly in enhancing transparency and accountability. This study aims to analyze the effectiveness of public service digitalization policies in increasing transparency, identify the factors influencing their implementation, and evaluate the gap between expected and actual outcomes. The research employs a mixed-methods approach, combining quantitative data collected through questionnaires distributed to public service users and qualitative data obtained from interviews with government officials and document analysis of relevant policies and reports. The findings indicate that digitalization policies have a positive impact on transparency, particularly in improving access to information and enabling users to monitor service processes. However, the overall level of effectiveness is categorized as moderate, as the benefits are not evenly distributed and are influenced by several factors, including technology readiness, human resource capacity, infrastructure availability, and digital literacy. The study also reveals a gap between the expected outcomes of digitalization such as full transparency and seamless service integration and the actual implementation, which is often constrained by fragmented systems, incomplete information, and limited accessibility. In conclusion, while digitalization has significant potential to enhance transparency in public services, its effectiveness depends on comprehensive implementation and supportive conditions. The study recommends strengthening policy integration, improving system design, expanding infrastructure, and enhancing digital competencies to achieve more optimal transparency outcomes. These findings contribute to the development of digital governance practices and provide insights for policymakers and researchers in the field of public administration.

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1. INTRODUCTION

The rapid advancement of information and communication technology has fundamentally transformed how governments deliver public services. This shift toward digital transformation has encouraged public institutions to adopt digital systems in order to improve efficiency, accessibility, and service quality. Governments are increasingly implementing digital-based platforms such as online licensing, electronic identity systems, and integrated service portals as part of broader reforms toward modern governance (Costa & Castro, 2021). These initiatives are closely associated

with the development of e-government, which emphasizes the use of technology to enhance interactions between the government and citizens while streamlining administrative processes.

However, prior to the adoption of digital systems, public services in many regions have long been characterized by persistent structural challenges. Conventional service delivery mechanisms often involve lengthy bureaucratic procedures, limited access to information, and a lack of accountability (Pepinsky et al., 2017). These conditions create opportunities for inefficiency, maladministration, and even corrupt practices. In such environments, citizens frequently encounter difficulties in obtaining accurate information about procedures, costs, and service timelines, which ultimately undermines trust in government institutions. Therefore, improving transparency has become a central priority in public administration reform.

Transparency refers to the openness of government processes, the availability of accessible and accurate information, and the ability of the public to monitor and evaluate government performance. It is a key pillar of good governance, alongside accountability, participation, and responsiveness. In theory, the digitalization of public services offers significant potential to enhance transparency by enabling real-time access to information, reducing face-to-face interactions that may lead to discretionary practices, and standardizing procedures across institutions. Digital platforms can also provide tracking systems that allow citizens to monitor the progress of their service requests, thereby increasing accountability (Lindquist & Huse, 2017).

Over the last decade, scholarly attention toward public service digitalization has increased significantly, with many studies examining its impact on transparency, accountability, and governance quality. Early foundational studies during this period emphasized the transformative role of information and communication technologies (ICT) in public administration. For example, Liu, Pan, and Chen (2018) analyzed the evolution of ICT-based governance and found that the adoption of digital technologies enhances information availability and supports more open government practices. However, they also highlighted emerging challenges related to data governance, public accountability, and the complexity of managing large-scale digital systems. This indicates that while digitalization creates opportunities for transparency, it also introduces new governance risks.

Further research by Elisa, Yang, Chao, and Cao (2020) explored the implementation of e-government systems using advanced technologies such as blockchain. Their study demonstrated that digital platforms can significantly improve transparency and trust by ensuring secure, verifiable, and tamper-proof information systems. At the same time, they noted that centralized digital systems are vulnerable to security risks, which may undermine public confidence if not properly addressed. This finding reinforces the idea that transparency in digital governance depends not only on access to information but also on system reliability and security.

In the context of developing countries, Mahlangu and Ruhode (2021) examined gaps in e-government implementation and identified several factors that hinder effective digital service delivery, including limited infrastructure, lack of technical capacity, and organizational constraints. Their study revealed that incomplete digitalization can create “service gaps,” where not all services are accessible online, thereby limiting the potential for transparency and equitable access. This highlights that digitalization alone is insufficient without comprehensive implementation and institutional support.

More recent studies closer to 2022 further explored the relationship between digitalization and governance outcomes. Assegaf (2022) found that digital transformation in public administration significantly improves service efficiency, accessibility, and transparency by enabling citizens to access information and services more easily through online platforms. However, the study also emphasized the importance of aligning technological innovation with organizational readiness and public needs to ensure effective outcomes.

Similarly, Gantika (2022) analyzed the role of digitalization in public administration and concluded that digital platforms enhance transparency by providing broader public access to information that was previously difficult to obtain. Additionally, digital systems were found to encourage greater citizen participation in governance processes, thereby strengthening accountability mechanisms. This suggests that transparency is not only about information availability but also about enabling active public engagement.

Despite these potential benefits, the implementation of digital public service policies does not automatically guarantee improved transparency. In practice, several challenges often emerge, including limited technological infrastructure, low levels of digital literacy among citizens, resistance to organizational change, and the lack of integration between systems (Sharma et al., 2016). In

some cases, digital platforms merely replicate existing bureaucratic complexities in an online format without addressing underlying governance issues. Furthermore, information provided through digital systems may still be incomplete, difficult to access, or not user-friendly, which limits their effectiveness in promoting transparency.

This situation highlights a critical gap between the expected outcomes of digitalization policies and their actual impact on public service transparency. While governments continue to invest in digital transformation initiatives, empirical evidence regarding their effectiveness remains varied and, in some contexts, inconclusive. Some studies suggest that digitalization improves openness and accountability, while others indicate that without proper implementation and supporting conditions, digital systems may fail to deliver meaningful improvements.

Based on these considerations, it is essential to conduct a comprehensive analysis of the effectiveness of public service digitalization policies in increasing transparency (Milakovich, 2021). Such research is important not only to evaluate the success of current policies but also to identify factors that influence their effectiveness, including institutional capacity, technological readiness, and user engagement. By understanding these dynamics, this study aims to contribute to the development of more effective digital governance strategies that truly enhance transparency and strengthen public trust in government institutions.

2. RESEARCH METHOD

2.1 Conceptual Framework

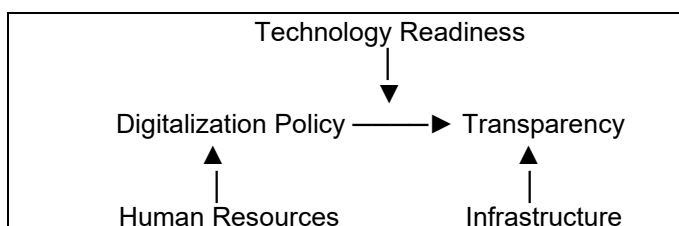
This study is built upon a conceptual framework that explains the relationship between public service digitalization policy and transparency, as well as the factors that influence this relationship (Lindgren & Jansson, 2013). The framework positions digitalization policy as the independent variable and transparency as the dependent variable, while incorporating several mediating or moderating variables that may strengthen or weaken this relationship.

Public service digitalization policy refers to government initiatives that utilize digital technologies to deliver services, manage information, and interact with citizens. These policies include the implementation of e-government platforms, online service systems, and integrated digital infrastructures. Theoretically, such policies are expected to improve transparency by enabling easier access to information, reducing bureaucratic complexity, and minimizing opportunities for discretionary or corrupt practices.

Transparency, as the dependent variable, reflects the openness of public service processes and the accessibility of relevant information to citizens (Ljungholm, 2015). It can be observed through indicators such as the availability of service information, clarity of procedures, openness in decision-making, and the ability of the public to monitor and evaluate government performance. In this study, transparency is considered an outcome of how effectively digitalization policies are implemented.

However, the relationship between digitalization policy and transparency is not always direct or automatic. Several factors may influence the effectiveness of digitalization in enhancing transparency (Zainuddin et al., 2021). First, technology readiness plays a crucial role, as the availability of adequate infrastructure, system integration, and technical reliability determines whether digital platforms can function optimally. Second, human resources are equally important, as the competence, digital literacy, and adaptability of government officials affect how well digital systems are implemented and managed. Third, infrastructure, including internet access and supporting facilities, determines whether citizens can actually utilize digital services.

These variables may act as mediators (explaining how digitalization affects transparency) or moderators (strengthening or weakening the relationship). For instance, even well-designed digital policies may fail to improve transparency if users lack digital literacy or if infrastructure is inadequate. Conversely, strong institutional capacity and technological support can significantly enhance the positive impact of digitalization.



Conceptual Framework Diagram

2.2 Research Methodology

This study employs a systematic research methodology to analyze the effectiveness of public service digitalization policies in increasing transparency. This research adopts a mixed-methods approach, combining both quantitative and qualitative strategies. The quantitative approach is used to measure the relationship between digitalization policies and transparency through statistical analysis, particularly by capturing public perceptions of digital service performance (Pedrosa et al., 2020). Meanwhile, the qualitative approach is utilized to explore in greater depth how digitalization policies are implemented, including the challenges, constraints, and contextual dynamics that influence their effectiveness. By integrating these two approaches, the study is able to provide both empirical measurement and contextual explanation.

Data collection is conducted using three main techniques to ensure data triangulation and validity. First, questionnaires are distributed to users of digital public services (Barnes & Vidgen, 2006). These questionnaires are designed using a Likert scale to measure respondents' perceptions regarding system usability, accessibility, and transparency. Second, semi-structured interviews are carried out with key informants, including government officials, system administrators, and service users. These interviews aim to gain deeper insights into policy implementation, operational challenges, and perceived impacts of digitalization. Third, document analysis is conducted on relevant policy documents, government regulations, official reports, and service evaluation records. This analysis helps to understand the formal structure, objectives, and implementation strategies of digitalization policies.

In this study, the variables are clearly defined and operationalized into measurable indicators. The independent variable is digitalization policy, which is measured through indicators such as system usability, accessibility, and system integration. System usability refers to the ease with which users can interact with digital platforms, accessibility relates to the availability and inclusiveness of services for different user groups, and system integration reflects the extent to which various digital services are interconnected. The dependent variable is transparency, which is measured through information openness, service tracking, and public access. Information openness refers to the availability and completeness of service-related information, service tracking indicates the ability of users to monitor the progress of their requests, and public access reflects how easily citizens can obtain relevant information (Clarke & Margetts, 2014). In addition, supporting variables such as technology readiness, human resources, and infrastructure are considered to influence the relationship between digitalization and transparency.

The data analysis process combines quantitative and qualitative techniques. Quantitative data obtained from questionnaires are analyzed using descriptive statistics to summarize respondent characteristics and variable distributions. Furthermore, regression analysis is employed to examine the effect of digitalization policies on transparency and to determine the strength and significance of the relationships between variables. On the other hand, qualitative data from interviews and document analysis are analyzed using thematic analysis. This involves coding the data, identifying recurring patterns, and developing themes related to policy implementation, effectiveness, and influencing factors.

3. RESULTS AND DISCUSSIONS

3.1 The Effect of Digitalization on Transparency

The findings of this study indicate that public service digitalization policies generally have a positive impact on improving transparency, although the extent of this impact varies depending on implementation quality and supporting conditions. Digitalization contributes to transparency primarily by increasing access to information, standardizing service procedures, and enabling real-time monitoring of public services. However, the relationship is not automatically linear, as several contextual and institutional factors influence the overall effectiveness.

From the quantitative analysis, the results show that digitalization has a statistically significant positive effect on transparency. Indicators such as system usability, accessibility, and integration are positively correlated with improvements in information openness, service tracking, and public access (Weerakkody et al., 2017). This suggests that when digital platforms are designed to be user-friendly and accessible, citizens are more likely to obtain clear and accurate information about public services. In particular, the availability of online portals and service dashboards allows users to monitor application processes, reducing uncertainty and opportunities for manipulation. These

findings support the assumption that digital systems can minimize bureaucratic opacity by making processes more visible and standardized.

Furthermore, descriptive findings reveal that respondents perceive digital services as more transparent compared to conventional systems. Many users report that digital platforms provide clearer procedures, detailed requirements, and predictable service timelines (Tiwana & Ramesh, 2001). This reduces reliance on informal intermediaries and limits discretionary behavior among public officials, which has traditionally been a source of inefficiency and corruption. In this sense, digitalization helps shift public service delivery from a closed, officer-centered system to a more open and citizen-centered model.

However, qualitative findings provide a more nuanced perspective. While digitalization improves transparency in principle, its effectiveness is often constrained by practical challenges. One major issue is the uneven quality of information provided through digital platforms. In some cases, information is incomplete, outdated, or difficult to understand, which limits its usefulness for the public. Additionally, not all digital systems are fully integrated, resulting in fragmented services that require users to navigate multiple platforms. This fragmentation can reduce the perceived transparency, as users may still experience confusion and inefficiency.

Another critical finding is the role of user capability and access. Transparency improvements are more evident among users who possess adequate digital literacy and have reliable internet access (Chetty et al., 2018). Conversely, individuals in areas with limited infrastructure or low technological familiarity may not fully benefit from digital services. This creates a digital divide, where transparency is improved for some groups but remains limited for others. As a result, digitalization may unintentionally reproduce existing inequalities if inclusivity is not addressed.

Institutional factors also play a significant role. The study finds that strong organizational commitment, adequate training for public officials, and effective system management significantly enhance the transparency outcomes of digitalization policies. In contrast, resistance to change, lack of technical expertise, and insufficient maintenance of digital systems can weaken their impact. In some instances, digital platforms merely replicate traditional bureaucratic processes without simplifying them, resulting in what can be described as “digital bureaucracy” rather than true transparency.

3.2 Extent of Effectiveness of Digitalization in Increasing Transparency

On the one hand, digitalization has clearly contributed to enhancing transparency in several important aspects. Public access to information has improved through online platforms that provide service procedures, requirements, and timelines in a more structured and accessible manner (Drigas & Koukianakis, 2009). In addition, features such as service tracking systems enable citizens to monitor the progress of their requests in real time, thereby reducing uncertainty and limiting opportunities for discretionary practices. These improvements indicate that digitalization has successfully addressed some of the key weaknesses of conventional public services, particularly in terms of information openness and process visibility.

However, the effectiveness remains moderate rather than high because these benefits are not consistently experienced across all users and service contexts. One major limitation lies in the uneven quality and completeness of information provided on digital platforms (Bonina et al., 2021). In some cases, information is outdated, fragmented, or difficult to interpret, which reduces its practical value for users. Furthermore, the lack of integration between different systems often forces users to navigate multiple platforms, thereby diminishing the overall transparency experience.

Another important factor contributing to moderate effectiveness is the existence of a digital divide. Not all citizens have equal access to digital infrastructure or possess sufficient digital literacy to utilize online services effectively. As a result, while transparency may improve for technologically capable users, it remains limited for others, particularly in areas with inadequate internet connectivity or lower levels of technological familiarity. This uneven access prevents digitalization from delivering uniformly high levels of transparency.

Institutional and organizational challenges also play a role in limiting effectiveness (Ho & Im, 2015). In some cases, public institutions have not fully adapted to digital systems, resulting in partial implementation or continued reliance on conventional procedures alongside digital platforms. Additionally, insufficient training, resistance to change, and limited technical capacity among government personnel can hinder the optimal use of digital tools. Consequently, digitalization sometimes leads to the replication of bureaucratic complexity in an online format rather than its simplification.

While public service digitalization has demonstrated a positive and significant impact on transparency, its overall effectiveness can best be described as moderate. The results suggest that digitalization is a necessary but not sufficient condition for achieving high transparency. To move from moderate to high effectiveness, improvements are needed in system integration, information quality, infrastructure development, digital literacy, and institutional readiness. Only through addressing these factors can digitalization fully realize its potential as a tool for transparent and accountable governance.

3.3 Comparison Between Expected and Actual Outcomes

The implementation of public service digitalization policies is generally driven by high expectations that digital systems will significantly improve transparency, efficiency, and accountability in governance. In theory, digitalization is expected to transform public services into more open and citizen-centered systems by providing easy access to information, reducing bureaucratic complexity, and minimizing opportunities for corruption. Through integrated digital platforms, citizens are anticipated to obtain accurate, real-time information, monitor service processes, and interact with government institutions in a more transparent and efficient manner.

From a theoretical perspective, the expected outcomes of digitalization include full information openness, seamless service integration, and equal access for all citizens. Digital platforms are designed to standardize procedures, eliminate discretionary practices, and ensure that all service-related information such as requirements, costs, and processing times is clearly available (Tiwana & Ramesh, 2001). In addition, digital systems are expected to enhance accountability by enabling traceability of processes, thereby allowing both users and oversight institutions to monitor government performance effectively. Ultimately, digitalization is envisioned as a tool to strengthen public trust by making government actions more visible and predictable.

However, the actual outcomes observed in practice reveal a more complex and less ideal reality. While digitalization has indeed improved certain aspects of transparency, such as increasing access to basic information and enabling service tracking, these improvements are often partial and uneven. In many cases, the information provided through digital platforms is not fully comprehensive or regularly updated, which limits its usefulness for citizens. Instead of achieving complete openness, transparency is often restricted to procedural information without sufficient detail on decision-making processes or service outcomes.

Moreover, the expectation of seamless integration across public services is not always realized. Many digital systems operate in isolation, requiring users to navigate multiple platforms for different services (Hu et al., 2014). This fragmentation creates inefficiencies and can lead to confusion, thereby undermining the intended transparency benefits. Rather than simplifying processes, digitalization sometimes reproduces existing bureaucratic complexity in an online format, a phenomenon often referred to as “digital bureaucracy.”

Another significant gap between expected and actual outcomes lies in accessibility. Ideally, digital public services should be inclusive and accessible to all segments of society. In reality, disparities in digital literacy, internet access, and technological infrastructure create unequal benefits. Citizens who are technologically proficient and have reliable internet access tend to experience greater transparency, while others remain excluded from these advantages. As a result, digitalization may inadvertently widen existing inequalities rather than fully democratizing access to information.

Institutional factors further contribute to the discrepancy between expectations and outcomes. While digital policies are designed to promote transparency, their effectiveness depends heavily on organizational readiness, human resource capacity, and the commitment of public institutions. In some cases, resistance to change, lack of technical expertise, and inadequate system maintenance limit the functionality of digital platforms. Consequently, digital tools are not always utilized to their full potential, reducing their impact on transparency.

3.4 Implications of the Study

From a policy perspective, the study highlights the need for governments to move beyond merely adopting digital technologies toward ensuring their effective and inclusive implementation (Gidigbi, 2021). Digitalization policies should be strengthened by emphasizing system integration across institutions to avoid fragmented services that reduce transparency. In addition, policymakers must prioritize the standardization and completeness of information provided on digital platforms, ensuring that all relevant service details, procedures, costs, timelines, and decision-making processes are accessible and regularly updated. Another crucial recommendation is the expansion of digital infrastructure, particularly in underserved areas, to

address disparities in access. Governments should also invest in capacity-building programs for public officials to enhance their digital competencies and reduce resistance to technological change. Furthermore, continuous monitoring and evaluation mechanisms need to be institutionalized to assess the performance of digital systems and ensure that they genuinely contribute to transparency rather than simply digitizing existing bureaucratic inefficiencies.

In terms of practical implications, the findings emphasize the importance of user-centered design in developing digital public service platforms (Gidigbi, 2021). Systems should be designed with a strong focus on usability, simplicity, and accessibility to accommodate diverse user groups, including those with limited digital literacy. This includes intuitive interfaces, clear navigation, and multilingual or context-sensitive support features where necessary. Additionally, integrating service platforms into a single, cohesive system can significantly enhance user experience and transparency by reducing the need for citizens to access multiple applications. Practical improvements should also include the implementation of real-time tracking features, automated notifications, and feedback mechanisms that allow users to monitor services and report issues. Ensuring system reliability, data accuracy, and cybersecurity is equally essential, as these factors directly influence public trust and the perceived transparency of digital services.

From a theoretical standpoint, this study contributes to the development of public administration and governance literature by providing empirical evidence that digitalization alone does not automatically lead to high transparency. Instead, the findings reinforce the idea that transparency is a multidimensional outcome influenced by technological, organizational, and social factors (Albu & Flyverbom, 2019). This supports and extends existing theories of digital governance and e-government by demonstrating the importance of contextual variables such as infrastructure readiness, human resource capacity, and user accessibility. Moreover, the study offers a more nuanced understanding of effectiveness by showing that the relationship between digitalization and transparency is conditional rather than deterministic. This insight encourages future research to adopt more integrative frameworks that consider mediating and moderating variables in assessing digital governance outcomes.

The implications of this study suggest that achieving high transparency through digitalization requires a holistic approach that combines sound policy design, effective implementation practices, and robust theoretical understanding. By addressing the identified gaps, governments and researchers can better harness the potential of digital technologies to promote transparent, accountable, and inclusive public services.

3.5 Limitations of the Study

First, this study is constrained by its limited research scope, particularly in terms of location and sample coverage. The analysis is based on data collected from specific public service institutions and a defined group of respondents, which may not fully represent broader national or international contexts. Variations in institutional capacity, technological infrastructure, and governance practices across regions may lead to different outcomes. As a result, the generalizability of the findings is somewhat restricted, and caution should be exercised when applying these results to other settings with different socio-economic or administrative conditions.

Second, the study faces data-related limitations. The quantitative data rely primarily on self-reported responses from questionnaires, which may be subject to response bias, including social desirability bias or differences in individual perception. While efforts have been made to ensure data validity through triangulation with interviews and document analysis, inconsistencies between reported experiences and actual system performance may still exist. Additionally, access to certain official documents and detailed system performance data may be limited, restricting the depth of analysis regarding policy implementation and outcomes.

Another important limitation lies in the measurement of transparency, which is inherently complex and abstract. Transparency is a multidimensional concept that encompasses not only the availability of information but also its quality, accessibility, clarity, and usability (Hosseini et al., 2018). Although this study operationalizes transparency through measurable indicators such as information openness, service tracking, and public access, these indicators may not fully capture the broader and more nuanced aspects of transparency, such as public trust, perceived fairness, or accountability in decision-making processes. Consequently, the measurement used in this study may simplify a concept that is, in reality, more complex and context-dependent.

Furthermore, the study does not fully account for all possible external influencing factors, such as political dynamics, cultural attitudes toward governance, or rapid technological changes, which may also affect the relationship between digitalization and transparency. These factors could play a

significant role in shaping both policy implementation and public perception but are beyond the scope of the current research (Volkery & Ribeiro, 2009).

While this study offers meaningful contributions to understanding the relationship between digitalization and transparency, its limitations highlight the need for further research with broader samples, more comprehensive data sources, and more refined measurement approaches. Addressing these limitations in future studies will help to develop a deeper and more accurate understanding of how digital governance can effectively promote transparency in public services.

4. CONCLUSION

This study set out to examine the effectiveness of public service digitalization policies in increasing transparency. The findings demonstrate that digitalization has a positive but not yet optimal impact, with the overall level of effectiveness categorized as moderate. Digital platforms have improved access to information, enabled service tracking, and reduced some aspects of bureaucratic opacity, thereby contributing to more open and accountable public service delivery. However, these improvements remain uneven and are not consistently experienced by all users. The study also reveals that the effectiveness of digitalization is strongly influenced by several key factors. Technology readiness, including system reliability and integration, determines how well digital platforms function. Human resource capacity, particularly the digital competence of public officials, affects the quality of implementation. In addition, infrastructure availability and digital literacy among citizens play a crucial role in ensuring that digital services are accessible and beneficial to all segments of society. Without adequate support in these areas, digitalization risks becoming superficial, merely transferring traditional bureaucratic practices into digital formats without significantly enhancing transparency. Furthermore, the research highlights a clear gap between the expected outcomes of digitalization policies and their actual implementation. While digital systems are designed to promote full transparency and efficiency, practical challenges such as fragmented platforms, incomplete information, and unequal access limit their effectiveness. This indicates that digitalization should not be viewed as an automatic solution, but rather as a tool whose success depends on proper design, implementation, and continuous evaluation. In conclusion, public service digitalization has proven to be a promising strategy for increasing transparency, but its effectiveness remains conditional. To achieve higher levels of transparency, digitalization efforts must be supported by integrated systems, strong institutional commitment, adequate infrastructure, and inclusive access for all citizens. Only through a comprehensive and well-managed approach can digital governance fully realize its potential in fostering transparent, accountable, and citizen-centered public services.

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