

**ASSESSING DIGITAL GOVERNANCE IMPLEMENTATION ISSUES IN LOCAL GOVERNMENT UNITS: A SYSTEMATIC LITERATURE REVIEW****Cydeah Aldic J. Conchas**<https://orcid.org/0009-0001-5186-6061>**Davao del Sur State College, Matti, Digos City, Davao del Sur****Aristeo C. Salapa**<https://orcid.org/0000-0003-0934-3571>**Professor, University of Southeastern Philippines, Davao City**

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**ABSTRACT**

The research investigated the difficulties that barangay secretaries in Padada, Davao del Sur, faced when implementing Republic Act No. 12254, known as the E-Governance Act, during their transition from paper-based to digital administrative systems. The research employed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework for a systematic literature review to achieve transparent and rigorous article selection and synthesis, addressing three research questions related to implementation obstacles, official responses, and required training programs. The research included articles on digital governance, ICT adoption, online service delivery, and e-government practices from 2015 to 2025, but excluded studies without clear methodological approaches to preserve analytical precision. The review analyzed digital governance challenges through six essential themes, including a lack of Infrastructure and Internet Connectivity, limited digital skills among LGU Staff, Low Citizen Adoption and Participation, Policy, Regulation, and Governance Gaps, LGU Capacity and Resource Limitations, and Security and Privacy Concerns. The research results demonstrated multiple obstacles that barangay officials must overcome through specific solutions that combine infrastructure development with staff training, policy improvement, and citizen participation initiatives to achieve lasting digital governance success in local communities.

**Keywords:**

Digital Governance, Local Government Unit, E-Governance, Republic Act No. 12254, Digitalization, PRISMA

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**INTRODUCTION**

Digitalization has become a central focus in today's governance landscape. All processes are now expected to be digitized to enhance efficiency, particularly in data recording and the management of essential documents across offices and agencies. However, the transition toward complete digitalization poses significant challenges for many Local Government Units (LGUs). Unlike those in urban centers that have better access to modern technologies and infrastructure, rural LGUs continue to struggle in adapting to this "new normal." This digital divide creates obstacles for officials and residents in remote areas, who struggle to keep pace with evolving systems and trends, thereby hindering their compliance with the mandates of the Department of the Interior and Local Government (DILG).

Globally, according to Prakash (2022), rural regions such as those in India face significant challenges in adopting e-governance due to inadequate infrastructure, poor connectivity, and limited digital literacy. Many rural communities struggle with unstable electricity and limited internet access, making it challenging to establish and maintain digital platforms essential for efficient online service delivery and citizen engagement. Furthermore, the lack of familiarity with digital tools among rural populations hinders their effective use of e-governance systems, underscoring the need for comprehensive digital literacy programs. Language diversity also poses barriers, as many rural areas speak local dialects that are not supported on digital platforms. In addition, low awareness and trust in digital governance systems persist, as traditional governance models remain deeply rooted in rural societies, leading to hesitation toward technological transitions

In the Philippine context, Khalid and Lavilles (2019) found that many local government websites are still in the

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Basic or Emerging stages of development, indicating significant potential for enhancing their digital presence and functionality. This finding aligns with the study of Bajar (2020), who examined 21 websites under the executive branch of the Philippine government, assessing various aspects such as website features, user engagement levels, and the range of electronic services provided. Complementing these findings, Manoharan et al. (2023) conducted a global survey across 100 countries in 2019, which showed that Manila, the capital of the Philippines, was among the lowest-performing cities, scoring only 11.6 and ranking 97th overall. With the recent passage of the E-Governance Act (Republic Act No. 12254), the government is now mandated to accelerate digital transformation across all public offices, standardize online systems, and ensure efficient, transparent, and citizen-centered service delivery.

In the regional context, the adoption of e-governance continues to vary across different parts of the Philippines, reflecting disparities in digital readiness and implementation. For instance, Lagura (2017) conducted an assessment of city government websites in the Davao Region, revealing that although all cities had established an online presence, the overall quality and content of these websites reflected limited adoption and underutilization of e-governance practices. This suggests that, although the region has taken initial steps toward digital transformation, the potential of online platforms remains vastly underutilized. The study emphasized the need for local government units (LGUs) in the region to strengthen their digital governance strategies by fully maximizing their online platforms to promote transparency, accountability, and citizen participation.

### OBJECTIVES

The study was conducted to explore the challenges encountered by barangay secretaries in Padada, Davao del Sur, in implementing Republic Act No. 12254, also known as the E-Governance Act. This study focuses on attaining the following objectives: (1) To identify the significant challenges that barangays in Padada faced as they transitioned from manual to digital governance systems; (2) To determine the measures that barangay officials implemented to address issues related to digitalization and e-governance adoption; and (3) To recommend the support mechanisms or capacity-building initiatives that were necessary to ensure the effective and sustainable implementation of the E-Governance Act at the barangay level.

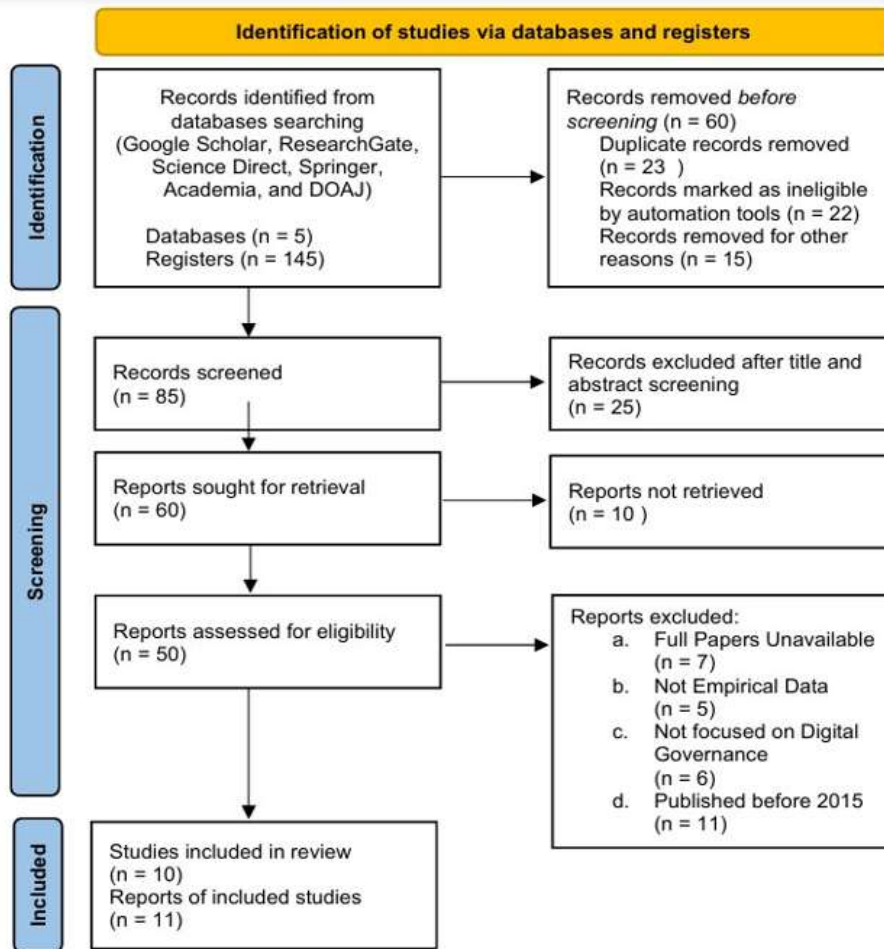
### METHODOLOGY

The study employed a systematic review of the literature, using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework to ensure transparency and a structured approach in the selection, assessment, and synthesis of the literature.

Articles published within the last ten years, from 2015 to 2025, that examined digital governance in global contexts were included in the review. Studies that employed quantitative, qualitative, or mixed-method research designs, utilized empirical data, and were published in the English language were considered for inclusion. Priority was given to research focusing on digital governance themes such as e-government systems, digitalization of public services, ICT adoption at the local level, online transparency, and digital participation. Meanwhile, articles and studies with unclear methodological frameworks or vague research procedures were excluded to ensure methodological precision, analytical rigor, and overall significance to the study.

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**Figure 1. Selection Flow using PRISMA Guidelines**

Figure 1 illustrates the selection process, which was documented using a PRISMA flow diagram. This diagram shows the identification, screening, eligibility assessment, and inclusion stages of the literature review. This structured approach enabled the identification of key challenges and recurring themes in the implementation of digital governance in Local Government Units (LGUs).

Legitimate academic databases such as Google Scholar, ResearchGate, ScienceDirect, Springer, Academia, and DOAJ were utilized. The search strategy employed keywords including "digital governance," "e-governance," "LGU," "Philippines," "ICT adoption," "public services," "barangay digitalization," and "E-Governance Act," combined with Boolean operators "AND" and "OR" to refine and expand the search results. Initial identification generated a total of 145 records from databases, which were reduced to 85 after removing duplicates. Titles and abstracts were screened, leaving 60 reports for retrieval, of which 50 were assessed for eligibility. Based on the inclusion criteria, the final synthesis comprised 10 studies and 11 supporting reports, which collectively provided substantial evidence on infrastructure limitations, staff digital skills gaps, low citizen participation, policy and governance issues, resource constraints, and security and privacy concerns

Source/Database	Number of Studies	Key themes
Google Scholar	7	Lack of Infrastructure and Internet Connectivity
ResearchGate	4	Limited Digital Skills of LGU Staff
Science Direct	3	Low Citizen Adoption and Participation
Springer	3	Policy, Regulation, and Governance Gaps

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Academia	2	LGU Capacity and Resource Limitations
DOAJ	2	Security and Privacy Concerns

*Table 1. Summary of Distribution of Studies in Peer-Reviewed Journals and Databases*

As shown in Table 1, 21 peer-reviewed studies, distributed across various academic databases, demonstrate the essential themes that evaluate digital governance implementation problems in local government units. The theme of Lack of Infrastructure and Internet Connectivity stands as the most enduring barrier to digital governance effectiveness because Google Scholar published seven (7) studies about this issue. ResearchGate published four (4) studies that demonstrated that LGU staff members lack sufficient digital competencies to support digital transformation initiatives. ScienceDirect published three (3) studies that showed that Low Citizen Adoption and Participation remain a significant challenge for e-government service utilization. The three (3) studies from Springer demonstrated that digital governance faces obstacles because of inconsistent policies and regulatory frameworks between national guidelines and local execution. The two (2) studies published on Academia.edu demonstrated that LGUs face dual challenges because they lack resources and financial support for ICT infrastructure development. The two (2) studies published in DOAJ (Open Access) focused on Security and Privacy Concerns, which identified data protection issues and public distrust of digital platforms and cybersecurity threats. The study's findings highlight the challenges that LGUs face when attempting to establish and maintain digital governance systems, as revealed through its research.

### RESULTS AND DISCUSSION

The 21 studies included in this literature review encompass the global and national context. Different regions in the Philippines, employing various methodologies, are included, ranging from surveys and interviews to case studies. Key themes identified across these studies include a Lack of Infrastructure and Internet Connectivity, limited digital skills among LGU Staff, Low Citizen Adoption and Participation, Policy, Regulation, and Governance Gaps, LGU Capacity and Resource Limitations, and Security and Privacy Concerns.

**Lack of Infrastructure and Internet Connectivity.** The absence of proper ICT infrastructure and dependable internet access continues to pose a significant challenge for local government units (LGUs) in establishing effective digital governance systems. The research conducted by Alfiani et al. (2024) demonstrates that developing nations face two significant infrastructure challenges: their broadband networks are unreliable, and their network coverage is insufficient, which blocks e-government service adoption and creates digital inequality between urban and rural populations. The delivery of continuous online public services becomes impossible when governments face infrastructure problems, including insufficient hardware, unstable internet connections, and poor system maintenance. The research conducted by Pangaribuan (2019) demonstrates that developing countries face significant obstacles to e-government implementation due to insufficient ICT infrastructure. The absence of reliable internet access prevents citizens from utilizing digital public services, resulting in social inequalities, decreased trust in government digital initiatives, and reduced public involvement. Omweri (2025) demonstrates that e-governance initiatives in the Global South face substantial barriers to effective governance due to insufficient infrastructure and limited access to ICT. Local government units that aim to establish digital governance should begin by establishing reliable ICT infrastructure, including stable internet access, modern hardware, and robust digital platforms. The success of digital services depends on basic infrastructure investments, as insufficient funding will prevent these services from reaching their target audience, thus harming public service delivery and participation.

**Limited Digital Skills of LGU Staff.** The implementation of digital governance faces a significant barrier because local government staff members lack sufficient digital competencies. The Japanese municipal digital transformation study (Nakagawa, 2025) revealed that local governments face digital talent shortages, which forces them to choose between external IT hiring and utilizing their civil servants. However, their staff members' insufficient ICT expertise and coordination abilities weaken the execution of e-government strategies. The implementation of e-government services faces multiple barriers in developing countries due to public servants' lack of digital literacy skills and insufficient ICT training, as well as their organizations' insufficient internal technical expertise (Abasilim & Edet, 2015; IJRISS case-study on Camarines Norte SDO, 2025). The financial constraints of smaller local governments prevent them from offering ongoing professional development and ICT training, resulting in employees who are unable to handle digital system management,

according to ElMassah and Mohieldin (2020). Digital skills deficiencies create two significant problems for organizations because they impact both system operations and their ability to adopt digital transformation. The research "Bridging Digital Gaps in Smart City Governance" demonstrates that municipalities achieve better results when their IT capabilities align with their managerial digital readiness, as staff require both technical expertise and strategic skills to implement digital solutions effectively.

Tools in governance operations (Rahman et al., 2024). Digital governance projects with sufficient funding will fail to meet their targets because staff members lacking the required competencies will lead to platform underuse, service delays, and adverse citizen reactions. The success of digital governance depends on LGU staff receiving specialized training, which includes ICT literacy, system usage, data management, and digital service delivery skills. Digital infrastructure and policy reforms require human capital development through training programs to fully realize their potential.

**Low Citizen Adoption and Participation.** Digital governance success depends on three essential elements: infrastructure, policy, and the digital competencies of public sector staff. The Indonesian study demonstrates that civil servants who possess IT capabilities and digital skills become more prepared to manage e-governance systems; however, digital transformation fails when these competencies are absent, even with existing technology (Setyawan, Raharjo, & Dewayani, 2025). Research on village-level public administration shows that official digital competencies, including ICT tool usage, digital data management, and workflow adaptation, directly impact organizational performance and the quality of public service delivery in digital environments (Azwir, Yadewani, & Kulal, 2025). Developing countries face ongoing challenges in digital governance implementation because their civil servants lack digital literacy skills and receive insufficient training and capacity development. The existing capacity shortages in public services result in substandard delivery performance and digital system breakdowns, which reduce citizen access to e-government services.

Additionally, qualitative research on local government units (LGUs) in the Philippines demonstrates that while some LGUs have implemented e-governance initiatives, human resource constraints, especially in terms of ICT literacy and technical expertise, impede the full realization of these initiatives. As described in the Sorsogon LGU case, limited in-house technical capacity and overreliance on external partnerships limit the sustainability and scope of digital services (De Castro & De Castro, 2022). Therefore, for digital governance reforms to succeed at the LGU level, investments must go beyond infrastructure and platforms: local governments need continuous capacity building, digital skills training, and the development of human capital to manage, maintain, and evolve digital systems. Without such investments, even well-designed e-government services risk underperformance, service delays, or outright failure, undermining public trust and reducing the expected benefits of digital transformation.

**Policy, Regulation, and Governance Gaps.** The effectiveness of digital governance initiatives is significantly hindered by persistent policy, regulatory, and governance gaps that limit the ability of local government units (LGUs) to implement cohesive digital transformation strategies. A cross-country analysis on municipal e-governance frameworks showed that many governments operate without unified digital governance policies, resulting in fragmented implementation and inconsistent service standards (Lee & Kwak, 2016). In the Philippine context, a study on LGU digital transformation readiness found that outdated local ordinances and the absence of institutionalized ICT governance policies create procedural bottlenecks and unclear responsibilities among departments, slowing down the adoption of digital platforms (Reyes & Cabalag, 2021). Governance weaknesses also contribute to delays in harmonizing national and local digital strategies, especially when LGUs lack formal regulatory guidelines on data governance, system interoperability, and digital service delivery standards (Villanueva & Santos, 2020). International research also shows that digital governance reforms fail when regulatory environments do not support long-term planning. For example, the European public administration study by Müller and Schuppan (2023) reveals that e-government sustainability is compromised when regulations do not mandate cross-agency coordination or digital accountability mechanisms. These policy gaps result in operational confusion, resource duplication, and unequal access to digital services for citizens. Strengthened governance frameworks, such as clear ICT policies, updated digital regulations, standardized procedures, and enforced accountability structures, are essential to ensuring that digital transformation becomes systematic, coherent, and sustainable across LGUs.

**LGU Capacity and Resource Limitations.** Local government units (LGUs) continue to face substantial capacity and resource constraints that undermine the successful implementation of digital governance initiatives. A

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national assessment of Philippine LGUs showed that many local governments operate with limited fiscal space, which restricts their ability to invest in ICT infrastructure, hire technical specialists, and sustain digital systems over time (Brillantes & Fernandez, 2015). These limitations are more pronounced in rural municipalities, where inadequate staffing, lack of specialized personnel, and bureaucratic overload significantly delay the adoption of digital innovations (Tapscott & Agbisit, 2020). International findings reflect similar challenges: a comparative study of developing countries found that insufficient organizational capacity and weak administrative structures hinder local governments' ability to effectively manage digital platforms, resulting in inconsistent service delivery and low citizen satisfaction (Zhang & Chen, 2022). Within the Philippine context, LGUs also struggle with.

Limited budgeting autonomy makes it challenging to prioritize ICT-related investments over urgent social and economic programs (De Leon & Dizon, 2018). These structural constraints create operational challenges, such as technology underutilization, system failures, inadequate maintenance, and dependence on external service providers, which often increase long-term costs and reduce institutional sustainability. Strengthening LGU capacity through increased fiscal support, human resource development, and organizational restructuring is essential to ensure the successful implementation of digital governance reforms.

**Security and Privacy Concerns.** The shift toward digital governance and e-government brings significant benefits in terms of efficiency and accessibility. However, it also introduces serious security and privacy risks that can undermine public trust and hinder the adoption of this technology. For example, a recent meta-analytic study of 68 empirical investigations found that perceived risk, privacy concerns, and lack of trust in internet/government security practices are among the strongest predictors of citizens' reluctance to use e-government services (Trust, Risk, Privacy and Security in e-Government Use, 2024). Users often fear unauthorized data exposure, identity theft, or misuse of sensitive personal information, which reduces their willingness to engage with online public services. Moreover, as governments increasingly adopt cloud computing to host public services, systemic vulnerabilities in cloud-based infrastructures pose critical risks. A 2024 systematic review on cloud adoption by public institutions reveals that insufficient data protection, weak access controls, and a lack of comprehensive privacy frameworks remain significant barriers to the secure implementation of e-governance. These vulnerabilities become especially problematic when citizen data, which may include personal identity, social service records, or sensitive demographic information, is stored centrally without robust encryption or privacy safeguards. Real-world audits of e-government websites also reveal technical security flaws. For instance, a web-security assessment of 79 e-government portals in Tanzania found that over half had "high-severity vulnerabilities".

In contrast, many others suffered medium-level vulnerabilities, suggesting that even when portals are available, many are insecure, putting user data at risk (Elisa, 2020). This demonstrates that a lack of security readiness at the technical level can lead to serious breaches, thereby undermining the legitimacy of digital governance efforts. Furthermore, in the context of smart-city and urban e-governance initiatives, security and privacy issues are often exacerbated by poor data governance policies and a lack of transparency regarding how personal data is collected, stored, and used. An analysis of e-governance in urban settings suggests that, despite digitization, the absence of robust regulatory safeguards and informed consent mechanisms poses a threat to citizens' informational autonomy, potentially leading to data misuse or unauthorized access.

### CONCLUSION

This systematic review highlights that the journey toward full digital governance remains challenging for many Local Government Units, especially in rural communities like those in Padada, Davao del Sur. Consistent with global and national trends, the findings reveal that inadequate infrastructure, limited digital skills, low citizen adoption, governance and policy gaps, resource limitations, and persistent concerns over security and privacy hinder digital transformation. These issues mirror the conditions described in the introduction, where rural LGUs struggle to keep pace with digital reforms mandated under the E-Governance Act.

The review highlights the need for more robust support systems for barangay officials, who serve as frontline implementers of digital services. Addressing infrastructure gaps, enhancing digital competencies, and refining policy guidance and cybersecurity practices are crucial steps for overcoming the challenges outlined in the study's objectives. The sustainable implementation of the E-Governance Act will require continuous capacity-building, reliable technology, and strong institutional support, enabling barangays to transition effectively from manual to digital processes. By understanding and addressing these implementation issues, LGUs, particularly rural barangays, can move closer to achieving efficient, transparent, and citizen-centered digital governance.

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