



Evaluating Readiness for E-Governance Adoption in a Philippine Local Government Unit

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Abstract

Driven by global digitalization trends and national mandates, this study assessed a Philippine local government unit's (LGU's) preparedness for e-governance adoption using the Technology-Organization-Environment (TOE) framework. Employing a quantitative descriptive-comparative design, this research evaluated the technological, operational, and economic readiness of the LGU while identifying its e-governance adoption challenges. Respondents were stratified randomly sampled 200 LGU permanent and casual employees. Data were collected using a structured survey questionnaire validated by experts, with reliability confirmed via Cronbach's alpha. Statistical tools for data analysis include frequency and percentage, weighted mean, one-way analysis of variance, and t-test. The findings indicate that the LGU is highly prepared across all dimensions (technological, organizational, and economic). Moreover, the study revealed significant variations in readiness based on age, sex, and employment status, though professional factors like tenure and education showed no meaningful differences. Despite the perceived high readiness in e-governance, the study identified challenges in its digital transformation, primarily due to limited funding for infrastructure, intermittent internet and power supply, and a lack of clear institutional policies. Based on these findings, the researchers proposed strategies to further enhance readiness in e-governance digital transformation. The study concludes that while a strong digital foundation exists, bridging infrastructure and policy gaps is vital for sustainability. This research contributes by providing an empirical, multidimensional baseline for localized e-governance, demonstrating that successful transformation requires the strategic alignment of technological capacity with equitable organizational policies.

Keywords: *Digital Transformation, E-Governance, Philippine Local Government Unit, Technology-Organization-Environment Framework*

INTRODUCTION

The adoption of electronic governance (e-governance) has emerged as a critical reform initiative within Philippine local government units (LGUs). Driven by global trends in public-sector digitalization and formally reinforced by national policies such as the Digital Transformation Act of 2025, these digital government transformations aim to enhance transparency, efficiency, and customer satisfaction across public operations (Pareja, 2025). Despite increased investments in information and communication technologies, e-governance outcomes across LGUs remain inconsistent, indicating that simply having technology available does not guarantee successful implementation. Previous research indicates that organizational readiness, as reflected in sufficient

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technological infrastructure, operational capacity, human resource skills, and supportive institutional and policy environments, is crucial for effective e-governance adoption (Bithay et al., 2025). Despite growing interest in digital governance, empirical research on the readiness of Philippine LGUs remains scarce, leading to inconsistent outcomes despite increased Information and Communications Technology (ICT) investments. Without an integrated assessment of internal readiness, local governments risk automating existing inefficiencies rather than achieving genuine operational transformation. Establishing a comprehensive framework to evaluate technological and organizational dimensions is therefore essential to ensure that local digital strategies are both sustainable and transparent.

Recent academic discourse on digital transformation highlights the complex factors that influence the successful integration of technology in the public sector. International scholarship on e-governance consistently identifies organizational readiness as the foundational condition that shapes both the adoption and the long-term sustainability of digital initiatives in public administration (Gabuya, 2025; Rosario et al., 2025). Cross-national comparative studies underscore that technological advancement alone is insufficient; rather, successful digital transformation depends on the strategic alignment of institutional mandates, administrative processes, and technological infrastructure within robust legal and regulatory environments (Munir et al., 2024; Pribadi, 2023). International studies further show that e-governance performance is shaped by the dynamic interplay of technological capacity, operational readiness, financial management, and governance practices, with constraints such as digital divides, resistance to organizational change, cybersecurity risks, and skills mismatches frequently limiting implementation (Moreno & Barrios, 2025; Astuti et al., 2024). This suggests that e-governance success depends on a mix of technological, organizational, human, and financial factors. These global studies are directly relevant to this research, as they provide a multidimensional framework and an empirical baseline for evaluating specific readiness levels, respondent profiles, and unique implementation barriers in the context of a Philippine LGU.

In the Philippine context, the post-pandemic shift toward contactless government services has intensified demand for digital maturity, yet a significant divide persists between national digitalization policy and local implementation. Although the legal framework for digitalization is robust, research by Lagura (2025) indicates that a digital governance divide persists, producing significant performance gaps across LGUs, particularly in technical infrastructure and inclusivity. These challenges are exacerbated by the risk of project stagnation during political transitions (Andaya et al., 2025; Conchas & Salapa, 2025). Furthermore, recent research emphasizes that failing to align manual workflows with automated processes, such as in the business permitting system, often results in redundant bureaucracy (Binghoy & Erno, 2025). Internal readiness determines whether an LGU truly digitizes its operations or simply automates existing inefficiencies. Sustainable e-governance demands integrated, data-driven investments in infrastructure, skills, and institutional stability.

Despite the growing body of literature on e-governance in the Philippines, a clear research gap remains in the empirical examination of LGU-level internal readiness. While Lagura (2025) documented how the digital governance divide and disparities in technical infrastructure continue to produce uneven performance across local government units, Andaya et al. (2025) and Conchas and Salapa (2025) underscored political discontinuity, and Binghoy and Erno (2025) exposed process misalignment that leads to redundant bureaucracy, these studies largely address these factors in isolation rather than as interdependent dimensions shaping implementation outcomes. Consequently, there is limited localized, system-level analysis that explains how infrastructure, human capital, workflow alignment, and institutional continuity collectively influence whether digitalization initiatives lead to genuine operational transformation or merely digitize

inefficiencies. Based on the researchers' knowledge, this gap points to the need for LGU-specific, readiness-focused research that moves beyond policy compliance and technology adoption metrics to assess the organizational conditions that enable sustainable and effective e-governance in LGUs. Hence, this research is timely and relevant.

This study is situated within the Philippine local governance context, focusing on a first-class municipality with a predominantly rural population and an economy anchored in agriculture, fisheries, and tourism. This setting offers a relevant and critical context for examining digital readiness and the unique implementation challenges faced by LGUs as they transition toward e-governance. Locally initiated efforts toward digital transformation, including participation in national ICT programs and the gradual introduction of online public services, align with the national government's digitalization initiatives. However, these efforts remain at varying stages of implementation, reflecting disparities in infrastructure, technical capacity, and institutional readiness typical of rural LGUs. These hindrances result in variable e-governance performance and limit the capacity of digital systems to strengthen service delivery and societal trust (Andaya et al., 2025). This research is anchored in the locale's evolving digital governance landscape and seeks to evaluate its preparedness for e-governance adoption. As public expectations for accessible, transparent, and efficient services continue to grow, evaluating LGU readiness for e-governance adoption is increasingly important (Bithay et al., 2025; Quimba et al., 2025). Accordingly, this study is essential and consequential, providing empirical evidence to guide strategic management and enhance local digital governance initiatives. Growing public demand for transparency makes LGU readiness assessments critical. This research provides an empirical basis for strategic planning by identifying key indicators to shift from reactive digitalization to integrated local digital governance.

This research assessed the LGU's readiness to adopt e-governance. Specifically, it determined the demographic and professional profiles of the respondents and assessed the LGU's readiness for e-governance adoption across technological, operational, and economic dimensions. Furthermore, the study examined significant differences in readiness levels when respondents were categorized by their profile variables. It identified the primary challenges hindering the LGU's digital transformation. Based on the study's findings, the researchers proposed strategies for how the LGU can further enhance its e-governance readiness. Theoretically, this research contributes to the literature by extending the Technology-Organization-Environment (TOE) framework in the context of an LGU to analyze the forces shaping digital transformation in local governance. Managerially, this study provides empirical baseline information for local officials and policymakers campaigning for sustainable e-governance operations. Ultimately, by addressing specific institutional gaps and fostering a regulatory environment of clarity, these findings facilitate a more inclusive, efficient, and sustainable transition to digital governance.

LITERATURE REVIEW

This section reviews relevant literature and related studies that provide the theoretical and empirical foundation for assessing e-governance readiness in LGUs. It synthesizes the literature to explain how technological, organizational, and economic factors shape an LGU's capacity to implement and sustain digital governance initiatives.

Technology-Organization-Environment (TOE) Framework

This study was anchored in the TOE Framework, which explains organizational adoption of technological innovations through the interplay of technological, organizational, and environmental contexts (Pabatang-Hussien, 2023). Unlike individual-level adoption models, TOE emphasizes institutional capacity, governance structures, resource constraints, and external regulatory pressures—conditions central to public-sector and LGU decision-making. Empirical

studies applying TOE in LGU settings show that the sustainability of digital initiatives depends on the combined effects of technological infrastructure, organizational support, and environmental factors such as funding availability and policy mandates (Alfiani et al., 2024; Adade & de Vries, 2025; Pašalić & Ćukušić, 2024), making the framework well-suited for assessing e-governance readiness. Guided by TOE, this study operationalized technological readiness (ICT infrastructure, connectivity, platforms, data management, and cybersecurity), operational readiness (staff competencies, workflow alignment, leadership support, and training), and economic readiness (financial capacity for ICT investment and sustainability). Prior research shows that digital initiatives may fail despite adequate technology when organizational capacity is weak or misaligned, and that financial constraints remain a persistent barrier in developing-country LGUs (Pašalić & Ćukušić, 2024; Suradi, 2025; Adade & de Vries, 2025).

In the context of evaluating readiness for e-governance in a Philippine LGU, the TOE framework is significant because it provides an integrated lens for examining how these dimensions jointly shape institutional preparedness and how readiness varies across demographic and professional profiles, thereby offering a coherent theoretical foundation for evidence-based assessment and policy intervention.

Readiness for E-Governance Adoption

E-governance readiness in Philippine LGUs can be understood through the technological, operational, and economic dimensions of the TOE framework. Across the literature, a recurring tension emerges between LGUs with strong investment and leadership capacity, which achieve more advanced digital governance outcomes, and resource-poor LGUs, where limited ICT infrastructure and digital literacy hinder adoption (Andaya et al., 2025; Bithay et al., 2025). This suggests that technological readiness alone—such as internet connectivity, hardware, and interoperable systems—does not guarantee effective digital service delivery unless accompanied by institutional and human capital support.

Operational readiness further complicates this picture. Studies consistently emphasize that skilled personnel, clear procedures, and leadership backing are critical for integrating digital systems into everyday governance (Espiritu et al., 2023; Patal et al., 2025; Briones, 2020). Yet even when technology is available, weak institutional support and limited training often stall implementation. This highlights a paradox: LGUs may possess the technical infrastructure but fail to embed it meaningfully in organizational routines, underscoring the interdependence of technological and operational dimensions.

Economic readiness introduces another layer of unevenness. Variations in local revenue and budget allocation shape LGUs' ability to initiate and sustain digital initiatives. While wealthier LGUs can invest in system maintenance, cybersecurity, and personnel development, poorer ones struggle to secure long-term funding (Espiritu et al., 2023). This implies that sustainable e-governance requires not only initial investments but also continuous financial commitment, without which digital transformation risks becoming fragmented and short-lived.

Taken together, the literature suggests that successful e-governance adoption depends on the balanced interplay among technological, operational, and economic readiness. The TOE framework thus offers a useful lens for analyzing how these dimensions converge, diverge, and collectively shape the uneven trajectory of digital governance in the Philippines. This study builds on these insights by empirically examining how these readiness factors manifest within a specific LGU context, addressing gaps in prior work that has often treated them in isolation.

Differences in E-Governance Readiness Based on Respondents' Demographic and Professional Profiles

Research on e-governance readiness reveals a complex interplay between individual characteristics and organizational factors. Early studies suggested that demographic and professional attributes—such as tenure, managerial position, and ICT training—shape perceptions of readiness, with longer-serving employees and those in leadership roles reporting greater confidence in digital transformation (Dukić et al., 2016; Suradi, 2025). These findings highlight how familiarity with organizational processes and authority within institutions can mediate attitudes toward technology adoption.

However, more recent scholarship challenges the primacy of individual differences, arguing that organizational conditions exert a stronger influence. Studies emphasize that ICT infrastructure, leadership commitment, and institutional capacity are often experienced uniformly across members of the same LGU, thereby minimizing demographic disparities (Lee-Geiller, 2024; Aleisa, 2024). Empirical evidence supports this view, showing that system quality, service design, and organizational support consistently outweigh demographic attributes in shaping readiness (Ilieva et al., 2024). Similarly, when access to technology, training, and institutional policies is standardized, readiness levels converge across professional groups, reducing variation linked to age, gender, or role (Magcope et al., 2023).

This tension between individual-level and organizational-level explanations underscores the need for disaggregated analysis. On the one hand, differences in experience and authority can produce uneven perceptions of readiness; on the other, organizational structures and resources often override these differences, creating shared challenges across personnel categories. In the Philippine LGU context, this convergence is particularly evident. Studies show that readiness barriers—such as limited infrastructure, uneven policy implementation, and gaps in digital literacy—are experienced broadly across departments rather than confined to specific demographic groups (Reyes-Urmanita & Moreno, 2024). Collectively, the literature suggests that while demographic and professional characteristics may shape attitudes, the decisive factors in e-governance readiness lie in organizational and institutional capacity. Building on this synthesis, the present study evaluates readiness in Philippine LGUs to clarify how these dimensions interact and to identify persistent gaps in implementation.

In this regard, the researchers sought to examine differences in the LGU's e-governance readiness across respondents' demographic and professional profiles, hence the following null hypothesis:

H₀: There is no significant difference in the LGU's e-governance readiness when respondents are grouped by their demographic and professional profiles.

In this study, the null hypothesis was tested using appropriate inferential statistical techniques after establishing the reliability and validity of the readiness measures. Respondents were grouped by demographic (age group, sex at birth, and educational attainment) and professional (employment status, length of service, and job position level) profile variables, and their assessed levels of technological, operational, and economic readiness were compared.

Challenges affecting Digital Transformation

Digital transformation in public administration is widely recognized as both a driver of efficiency and a source of persistent challenges. Across the literature, three recurring barriers stand out: the digital divide, resistance to organizational change, and concerns about security and privacy. These issues are interrelated, shaping the uneven trajectory of e-government adoption.

The digital divide remains the most fundamental constraint, as disparities in access to infrastructure and digital skills limit citizen participation in e-government services. Studies show

that areas with low digital literacy and inadequate technological infrastructure struggle to benefit from digital reforms, reinforcing existing inequalities (Mwansa et al., 2025). Yet even where infrastructure is in place, organizational resistance often undermines implementation. Government employees may perceive digital systems as complex, fear job displacement, or lack confidence in ICT tools, creating a cultural barrier that slows adoption (Moreno & Barrios, 2025). This tension between technological availability and organizational readiness suggests that infrastructure alone cannot guarantee transformation. Security and privacy concerns add another layer of complexity. Safeguarding sensitive data requires not only technical expertise but also sustained financial investment and institutional commitment. Without these, digital initiatives risk eroding public trust (Abales et al., 2023). Collectively, these studies imply that successful e-government initiatives depend on the convergence of financial resources, technical capacity, and organizational support, rather than any single factor.

Despite these barriers, the literature consistently underscores the transformative potential of e-government to enhance transparency, service delivery, and citizen engagement (United Nations Department of Economic and Social Affairs, 2022). Emerging technologies, such as blockchain, are increasingly seen as opportunities to strengthen trust and accountability in digital governance. In the Philippine LGU context, these insights point to the need for a standardized digitization framework—one that integrates systems, strengthens cybersecurity, and builds digital capacity. Such reforms would not only address current implementation gaps but also ensure that digital transformation contributes to sustainable and equitable public-sector modernization.

RESEARCH METHOD

This research applied a quantitative descriptive-comparative design to evaluate LGU e-governance readiness in the Philippines. The descriptive component analyzed the operational, technological, and economic dimensions of readiness, while the comparative component assessed differences in respondent profiles. This design focuses on describing group characteristics and comparing them to identify differences (Ghanad, 2023). The researchers used stratified random sampling to ensure representative participation from employee groups within the LGU. The study population of 415 LGU employees was divided into two groups based on employment status: permanent and casual employees. The researchers used stratification to improve sample accuracy while maintaining equal representation of both employee groups, consistent with quantitative research sampling standards (Lohr, 2021). The Raosoft sample size calculator was used to determine the required sample size, operating at a 95% confidence level and a 5% margin of error (Memon et al., 2020), which researchers commonly use in descriptive and comparative survey research. The study required 200 respondents because this sample size provided sufficient statistical power to meet the research needs of the study while considering the size of the entire population. The researchers selected 118 permanent employees and 82 casual employees using proportional allocation within the stratified sample. Selected respondents have adequate knowledge and experience in LGU operations, further supporting the reliability and validity of the probability sampling.

The study used a researcher-developed questionnaire, with some e-governance items adapted from Hasan et al. (2025). The survey questionnaire was organized into four components: informed consent; respondents' demographic profiles; assessment of e-governance preparedness across the three major aspects of technology, operations, and economics; and identification of challenges and barriers to e-governance implementation. The questionnaire used a four-point Likert scale to elicit clear, polarized responses and avoid neutral ambiguity, with 1 representing Strongly Disagree (1.00-1.75), 2 Disagree (1.76-2.50), 3 Agree (2.51-3.25), and 4 Strongly Agree (3.26-4.00). To establish content validity, the questionnaire was reviewed and validated by two

experts in public administration, both currently pursuing doctoral degrees in public administration, who provided improvements and incorporated consideration of government-to-government and government-to-citizen transactions. One is an LGU official leading e-governance services, while the other works in a national government agency implementing national policies that support e-governance. Moreover, the pilot study included 20 eligible employees who were not part of the total sample in the mass survey, and Cronbach's alpha was used to assess reliability. Given the survey instruments' sound internal consistency (Izah et al., 2024), Cronbach's alpha values of 0.70 or higher were considered acceptable for internal reliability among the survey respondents. The coefficients ranged from 0.747 to 0.907, indicating acceptability and consistency among the grouped survey items.

Table 1. Reliability Statistics

Indicator	Cronbach's Alpha	Number of Items
Technological Readiness	0.747	7
Operational Readiness	0.832	5
Economic Readiness	0.907	5
Implementation Challenges and Barriers	0.857	6

Permission was obtained from the relevant LGU authority before data collection. Data were collected from January 20 to 22, 2026, using a questionnaire accompanied by an informed consent statement, both formatted in Google Forms and sent via respondents' personal email addresses. Ethical standards were strictly observed, and compliance with the Data Privacy Act of 2012 was maintained to ensure efficient and accessible data collection across respondents. Results were presented using descriptive statistics, including frequency and percentage distributions to identify respondents' demographic profiles, and the weighted mean to assess e-governance readiness and the extent of implementation barriers. Moreover, one-way analysis of variance (ANOVA) was used to determine differences in variance among respondent demographic groups with more than two categories at a 0.05 level of significance, while an independent samples t-test was applied to compare implementation readiness between groups classified by sex and employment status, since each variable had only two categories. The analyses examined differences in mean scores for readiness dimensions and perceived barriers across profile variables, including age, years in service, educational attainment, position level, and frequency of public interaction. By evaluating group means simultaneously within a single model, ANOVA reduces the risk of Type I error and yields more robust, defensible conclusions aligned with the study's objectives (Ntumi, 2021). Prior to performing ANOVA and t-tests, assumption checks were conducted, including independence of observations, normality of the distribution, homogeneity of variance, absence of extreme outliers, and the scale of measurement.

FINDINGS AND DISCUSSION

This section presents, analyzes, and interprets the survey results in relation to the research objectives, specifically examining the Philippine LGU's e-governance readiness across technological, operational, and economic dimensions, as well as the barriers to its implementation.

Demographic Profile

The demographic profile includes respondents' age, sex at birth, educational attainment, employment status, years of service, job position level, and level of public interaction. Table 2 presents the demographic profile of the 200 LGU employees surveyed.

Table 2. Demographic Profile

Indicator	Frequency	Percentage
Age		
18-25 years old	76	38.00
26-35 years old	79	39.50
36-50 years old	37	18.50
51 years old and above	8	4.00
Sex at birth		
Male	111	55.50
Female	89	44.50
Educational Attainment		
High School/Vocational	59	29.50
Bachelor	103	51.50
Master	35	17.50
Doctorate	3	1.50
Employment Status		
Permanent	118	59.00
Casual	82	41.00
Years in Service		
Less than 5 years	65	32.50
6-10 years	83	41.50
11-15 years	35	17.50
16-19 years	8	4.00
More than 20 years	9	4.50
Job Position Level		
Entry-Level (Below SG-9)	117	58.50
Mid-Level (SG-10 to SG-17)	60	30.00
Senior Level (SG-18 to SG-24)	21	10.50
Management (Above SG-25)	2	1.00
Level of Public Interaction		
Less than 6 times	50	25.00
6-10 times	89	44.50
11-15 times	40	20.00
16-19 times	13	6.50
More than 20 times	8	4.00

Table 2 presents demographic characteristics that contextualize perceptions of e-governance readiness. The results indicate a workforce largely composed of relatively young, educated, and institutionally stable personnel, suggesting favorable organizational conditions for digital transformation. Consistent with the TOE framework, these characteristics reflect internal capacity factors that support technology adoption. Employees who are professionally prepared and supported by stable employment structures tend to be more adaptable to innovation and more receptive to digital governance initiatives ([Pabatang-Hussien, 2023](#); [Alfiani et al., 2024](#); [Adade & de Vries, 2025](#)).

The distribution of service experience, professional roles, and levels of public interaction reflects the LGU's operational environment. The profile strongly represents personnel directly involved in frontline service delivery, highlighting the functional importance of digital platforms in

enhancing efficiency and responsiveness. This aligns with the TOE framework, suggesting that employees who regularly interact with citizens are more likely to appreciate and support digital systems. Similar findings by Pašalić and Ćukušić (2024) and Suradi (2025) confirm that successful e-governance adoption depends not only on available technology but also on organizational responsibilities and service demands that influence how systems are implemented and utilized.

Readiness for E-Governance Adoption

Readiness for e-governance adoption refers to the technological, operational, and economic dimensions of LGU employees' current situation, which strategically affect readiness and the success of e-governance initiatives. Table 3 presents the survey results on overall readiness.

Table 3. Readiness for E-Governance Adoption

Indicator	Mean	Descriptive Rating
Technological Readiness	3.52	Strongly Agree
Operational Readiness	3.47	Strongly Agree
Economic Readiness	3.47	Strongly Agree
Overall Mean	3.49	Strongly Agree

The survey results indicate that the LGU consistently demonstrates a high level of initiative. This suggests that the LGU can transform governance into a more efficient, transparent, and citizen-centric system. This readiness aligns with the findings of Quimba et al. (2025), which indicate that LGUs with this status are well-positioned to expand digital public services, enhance operational efficiency, and improve service delivery to the public. Similarly, Brucal et al. (2024) noted that high e-governance readiness enhances service delivery efficiency.

Differences in E-Governance Readiness Based on Respondents' Demographic and Professional Profiles

To examine differences in e-governance readiness across respondents' demographic and professional profiles, independent-samples t-tests were conducted for variables with two categories, specifically sex and employment status, while ANOVA was applied to variables with more than two categories, including age, educational attainment, years in service, job position level, and level of public interaction (Ntumi, 2021). Prior to analysis, the assumptions for parametric testing were verified, as shown in Table 4.

Table 4. Assumptions Checks for Parametric Tests (t-test and ANOVA)

Assumption Tested	Method / Diagnostic Used	Decision Rule	Result
Independence of Observations	Research design and sampling procedure (stratified random sampling)	Each respondent must belong to only one group and provide one response	Met
Normality of Distribution	Shapiro–Wilk Test and inspection of Q–Q plots	p-value should be greater than .05 indicating approximately normal distribution	Met
Homogeneity of Variance	Levene's Test of Equality of Variances	p-value should be greater than .05 indicating equal variances across groups	Met
Absence of Extreme Outliers	Standardized residuals and boxplot inspection	Standardized residuals should fall within –3 and +3	Met
Scale of	Evaluation of measurement	Dependent variable should be	Met

Assumption Tested	Method / Diagnostic Used	Decision Rule	Result
Measurement	level of readiness scores	continuous (interval/ratio)	

Table 4 presents the results of the assumption checks conducted to assess the dataset's suitability for parametric statistical tests, specifically ANOVA and t-tests. The results indicate that all required assumptions were satisfied. Independence of observations was ensured. Table 4 presents the results of assumption checks conducted to assess the dataset's suitability for parametric statistical tests, specifically ANOVA and t-tests. The results indicate that all required assumptions were satisfied. Independence of observations was ensured through the research design and stratified random sampling. The normality of the data distribution was confirmed using the Shapiro–Wilk test and Q–Q plot inspection, while Levene's test verified that the assumption of homogeneity of variance was met. Additionally, inspection of standardized residuals and boxplots showed no extreme outliers, and the readiness scores were measured on a continuous scale. These results confirm that the dataset meets the necessary assumptions for conducting parametric analyses.

Following confirmation that all assumptions were met, the null hypothesis was tested: There is no significant difference in the level of e-governance readiness of the LGU when respondents are grouped by their demographic and professional profiles. Table 5 presents the results of the ANOVA and t-test. research design and stratified random sampling. The normality of the data distribution was confirmed through the Shapiro–Wilk test and Q–Q plot inspection, while Levene's test verified that the assumption of homogeneity of variance was met. Additionally, inspection of standardized residuals and boxplots showed no extreme outliers, and the readiness scores were measured on a continuous scale. These results confirm that the dataset meets the necessary assumptions for conducting parametric analyses.

Following confirmation that all assumptions were met, the null hypothesis was tested: There is no significant difference in the level of e-governance readiness of the LGU when respondents are grouped by their demographic and professional profiles. Table 5 presents the results of the ANOVA and t-test.

Table 5. Differences in E-Governance Readiness Based on Respondents' Demographic and Professional Profiles

Respondent Profile	Test	df	N	Statistic	p-value	Effect Size	Decision	Remarks
Age	ANOVA	F(3,196)	200	4.302	0.00580	$\eta^2 = 0.062$	Reject Ho	Significant
Sex at Birth	t-test	t(194)	200	-2.042	0.04250	$r^2 = 0.021$	Reject Ho	Significant
Educational Attainment	ANOVA	F(3,196)	200	2.334	0.07520	$\eta^2 = 0.035$	Accept Ho	Not Significant
Employment Status	t-test	t(176)	200	-3.651	0.00034	$r^2 = 0.063$	Reject Ho	Significant
Years in Service	ANOVA	F(4,195)	200	1.770	0.13600	$\eta^2 = 0.035$	Accept Ho	Not Significant
Job Position Level	ANOVA	F(3,196)	200	0.824	0.48200	$\eta^2 = 0.013$	Accept Ho	Not Significant
Level of Public Interaction	ANOVA	F(4,195)	200	1.303	0.27000	$\eta^2 = 0.026$	Accept Ho	Not Significant

Table 5 shows differences in e-governance readiness across respondents' demographic and

professional profiles. The null hypothesis is rejected for age, sex at birth, and employment status, as these variables show statistically significant differences. Age reflects generational differences in digital familiarity and adaptability, with younger employees generally more comfortable and proficient with ICT systems. Sex at birth suggests gender-related variation in ICT experience, possibly due to differential exposure or confidence in using digital tools. Employment status highlights the role of job security and institutional support, indicating that permanent employees may have greater access to ICT resources and training opportunities. These significant findings align with [Pabatang-Hussien \(2023\)](#) and the TOE framework, in which technological readiness is shaped by individual ICT familiarity, organizational readiness is influenced by employment conditions and institutional support, and economic readiness is indirectly reflected in workforce policies governing access to ICT infrastructure. In contrast, the null hypothesis is accepted for educational attainment, years in service, job position level, and level of public interaction, as these variables are not statistically significant (all $p > .05$). This suggests that formal qualifications, tenure, hierarchical rank, and direct public engagement do not automatically translate into higher e-governance readiness. From a TOE perspective, technology adoption depends less on static profile markers and more on the alignment of organizational structures, targeted capacity-building, and access to ICT infrastructure ([Pašalić & Ćukušić, 2024](#)). This suggests that digital initiatives in public sector organizations may underperform when institutional support and resource allocation are inadequate, even among employees with high educational attainment or extensive experience, underscoring the need for tailored training and organizational strategies to improve ICT adoption.

Taken together, these results reinforce the view that effective and inclusive e-governance requires LGUs to implement targeted interventions that address age, gender, and employment-related disparities in ICT skills, organizational support, and access to digital platforms. From a TOE framework perspective and in accordance with [Caotivo \(2025\)](#), achieving readiness is not only a matter of providing technological infrastructure but also ensuring operational alignment and environmental support through equitable policies and sustainable funding. This integrated approach ensures that LGUs can move beyond uniform digital initiatives and enhance institutional capacity for the long-term adoption and utilization of e-governance systems.

Challenges Affecting E-Governance Digital Transformation

Challenges to e-governance digital transformation include limited funding for ICT infrastructure and equipment, cybersecurity and privacy concerns, and policy and regulatory constraints. Table 6 presents respondents' perceptions of these dimensions.

Table 6. Challenges Affecting E-Governance Digital Transformation

Statement	Mean	Descriptive Rating
1. Limited funding for ICT infrastructure and equipment	2.72	Agree
2. Intermittent internet connectivity and Unreliable power supply	2.71	Agree
3. Lack of technical expertise or trained personnel	2.60	Agree
4. Staff resistance due to limited digital familiarity	2.71	Agree
5. Limitations in cybersecurity and data privacy	2.72	Agree
6. Lack of clear policies, regulations, and guidelines	2.67	Agree
Overall Mean	2.69	Agree

While the LGU demonstrates a high readiness rating across all dimensions, substantial implementation barriers, including infrastructure instability, funding limitations, and cybersecurity gaps, suggest that perceived readiness may reflect institutional optimism or policy

intent rather than fully operationalized digital systems. This apparent contradiction has been observed in other developing LGU contexts, where organizations report high preparedness yet continue to face practical implementation barriers (Espiritu et al., 2023; Conchas & Salapa, 2025). Consequently, readiness should be interpreted not as full digital maturity but as the presence of foundational capacities that still require structural and policy reinforcement.

As shown in Table 6, the LGU faces challenges that affect the e-governance digital transformation. Notable challenges include limited funding for ICT infrastructure and equipment, as well as limitations in cybersecurity and data privacy. According to Quimba (2025), insufficient financial resources and weak cybersecurity continue to hinder the effective adoption of digital governance systems in many LGUs, particularly outside highly urbanized areas.

Infrastructure-related challenges were also evident, particularly intermittent internet connectivity and an unreliable power supply, both of which are critical prerequisites for e-governance operations. These implementation barriers have been widely documented, with uneven ICT infrastructure and connectivity gaps significantly affecting system reliability and service continuity (Espiritu et al., 2023). These limitations reduce the efficiency of online transactions and undermine public trust in digital services. The presence of these barriers suggests that, despite overall readiness, infrastructural deficiencies remain a practical obstacle to the consistent implementation of e-governance at the local level.

Institutional factors such as a lack of technical expertise, staff resistance due to limited familiarity with digital systems, and the absence of clear policies, regulations, and guidelines for e-governance implementation further contribute to these barriers. These findings were also reported by Gabuya (2025), emphasizing that unclear institutional policies and limited digital competencies among LGU employees impede the full institutionalization of e-governance initiatives. This implies that beyond infrastructure and funding, LGUs must strengthen employees' capacity and policy frameworks to effectively overcome implementation constraints and sustain digital transformation.

Proposed Strategies to Further Enhance the Readiness of E-Governance

These proposed strategies aim to further advance the digital transformation of e-governance. Although the LGUs demonstrate high readiness across technological, operational, and economic dimensions, sustained improvement is necessary to ensure long-term digital transformation. Grounded in the TOE framework, the following outlines strategic interventions to address identified limitations in ICT funding, connectivity, and power reliability, technical expertise, staff resistance, cybersecurity, and policy gaps. This holistic approach goes beyond mere hardware procurement, focusing on long-term sustainability and mitigating human-centric barriers. Table 6 presents the proposed strategies for e-governance readiness.

Table 7. Proposed Strategies to Further Enhance the Readiness of E-Governance

Dimension	Proposed Strategies	Expected Outcomes
Technological	Upgrade ICT infrastructure and diversify power connectivity sources.	Enhanced ICT infrastructure and multiple power connectivity sources provide more stable systems, enabling public services to be delivered consistently to a wider range of users (Quimba, 2025).
	Implement robust cybersecurity	Enhanced the integrity and confidentiality of e-governance systems. These measures supported

	protocols and data encryption.	and mitigated privacy risks and strengthened the protection of sensitive data (Gill, 2025).
Organizational	Conduct intensive training in digital literacy and technical skills.	Conducted the capacity building sessions focused on enhancing technical expertise and strengthening organizational strategies to improve ICT adoption (Wagan et al., 2025). This resulted in increased digital familiarity and confidence among LGU personnel (Pašalić & Ćukušić, 2024).
Economic	Develop clear e-governance policies and guidelines.	Enforced improved policies and guidelines that ensured operational consistency (Briones, 2020). This resulted in clearly defined and standardized procedures for the implementation of e-governance initiatives (Bithay et al., 2025).
	Engage in public-private partnerships (PPP) for infrastructure.	Allowed partnerships with the private sector that enhanced institutional readiness (Hermoso et al., 2025). This provided the LGU with technical support and accelerated the transformation process (Astuti et al., 2024).

As part of Table 7, the technological interventions within these strategies are vital for the LGU to realize its full potential in integrating e-governance into its administration. These efforts are supported by the research of Suradi et al. (2024), which affirms that technological success in e-governance is heavily dependent on resilient digital platforms that can sustain operations despite infrastructure challenges. In line with the technological enhancement mentioned by Faller et al. (2025), sustained investment in human capital—through continuous professional development, structured capacity-building initiatives, and adequate fiscal allocation—remains indispensable for organizational readiness. Addressing employee resistance to digital transformation requires strategic change management, participatory communication, and leadership support. This aligns with the findings of Kraus et al. (2021), who argue that the success of digital transformation is strongly associated with organizational learning, employee engagement, and proactive change management strategies. Lastly, the development of clear institutional policies and the establishment of strategic partnerships are critical to ensuring legal preparedness, accountability, and long-term sustainability in the adoption of e-governance. Formalized governance structures, regulatory clarity, and cross-sector collaboration enhance institutional capacity and support the scalability of digital initiatives across public-sector systems. This perspective is reinforced by Shahaab et al. (2023), who argue that effective digital governance depends on clearly articulated accountability frameworks, legal safeguards, and coordinated institutional arrangements that guide implementation and oversight.

CONCLUSIONS

This study assessed the Philippine LGU's readiness for e-governance adoption across technological, operational, and economic dimensions and examined differences by demographic and professional profiles. High readiness ratings across all three dimensions indicate that the LGU has adequate ICT infrastructure, leadership commitment, workforce competence, and financial support to sustain digital transformation. These findings affirm that the institutional foundation for e-governance implementation is firmly established. The study further revealed statistically significant differences in readiness by age, sex at birth, and employment status. This suggests that generational exposure to ICT, gender-related digital experiences, and institutional employment conditions shape readiness more strongly. By contrast, there were no significant differences in

educational attainment, years in service, job position level, or level of public interaction. This indicates that formal educational credentials, length of service, positional authority, or direct interaction with the public do not inherently result in greater readiness for e-governance adoption. Hence, the null hypothesis was partially rejected.

Despite this high level of readiness, significant constraints remain. Intermittent connectivity, power instability, limited specialized technical expertise, cybersecurity gaps, staff resistance, and the absence of clear, formalized policies continue to undermine implementation efforts. These findings demonstrate that digital transformation is not solely a matter of technological availability but also of structural, organizational, and cultural processes that require sustained institutional alignment. As a practical extension of these findings, a proposed strategy was developed to strengthen infrastructure reliability, enhance cybersecurity systems, institutionalize clear e-governance policies, and implement inclusive, age-sensitive, and gender-responsive capacity-building programs. By addressing identified disparities and structural gaps, the LGU can move fragmented digital adoption toward a more sustainable, equitable, and citizen-centered governance model. This study contributes to the literature by providing empirical evidence on the multidimensional nature of e-governance readiness within the Philippine LGU. From a policy and administrative perspective, the findings emphasize the need for local leaders to adopt integrated, policy-driven digital strategies that extend beyond infrastructure investment toward long-term capacity development and organizational reform. The practical contributions of this study include demonstrating how an LGU can efficiently deliver digital services, foster transparency, and provide a model of replicable best practices that other LGUs can adopt to strengthen and streamline governance. Likewise, this study highlights the sustainability of e-governance initiatives, showing that a well-prepared LGU can maintain and expand digital systems to improve long-term public trust and participation. Theoretically, the study reinforces the applicability of the TOE framework, confirming that sustainable e-governance implementation depends on the balanced interaction of technological capability, organizational readiness, and environmental support.

LIMITATION & FURTHER RESEARCH

The study primarily evaluates readiness for e-governance adoption in a Philippine LGU. However, several limitations should be acknowledged. First, the study was conducted in a single LGU, which may limit the generalizability of the findings to other LGUs in highly urbanized settings and with diverse socio-economic profiles. In addition, the administrative challenges, financial constraints, and mobilization of the specific LGU may not reflect the operational realities of remote rural LGUs and transitional rural-urban LGUs. Second, while the quantitative descriptive-comparative design identifies disparities in e-governance maturity between LGUs, it does not explore the underlying socio-political or behavioral factors that cause these variations. Third, the study focused only on selected dimensions of the technological, operational, and economic aspects; thus, it does not provide a definitive measure of whether this digital transformation will achieve long-term sustainability or institutional stability.

Future studies could address these limitations by broadening the scope to include all LGUs and using a mixed-methods approach to provide a more comprehensive analysis that strengthens the full implementation of e-governance in the Philippines. This would provide deeper insights into the underlying factors influencing readiness and strengthen the interpretation of the mixed-methods approach. Future research could also explore other variables such as ICT infrastructure audits, budget allocation records, system usage data, and policy implementation. These additional dimensions result in a more comprehensive evaluation of e-governance readiness and better alignment with a holistic digital governance framework.

The researchers suggest that future studies should examine specific mechanisms to improve

digital infrastructure, promote digital literacy, address security concerns, and engage citizens in the design and implementation of e-government initiatives. With this, the government has become a transformative tool for public accountability and institutional integrity.

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