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E-GOVERNANCE: A DIGITAL APPROACH TO SERVICE DELIVERY

Evaluation of E-Governance Services in Central Luzon, Philippines

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Abstract: This study evaluated the e-governance services among cities in Central Luzon in terms of: ease of use, accessibility, efficiency, reliability, and responsiveness. It also identified the best practices and their problems encountered on delivering their e-government services. To answer this, the researcher employed a Quantitative Research this is appropriate since the study measured perceptions and examined relationships using numerical data collected from a defined group of respondents.

The study reveals that all indicators used to measure e-governance services were rated as agree. However, efficiency obtained the highest mean of 3.99 while ease of use and responsiveness obtained the lowest mean of 3.95. The overall mean of 3.96 across five dimensions was obtained which suggests that respondents generally view digital government platforms as functional and beneficial in facilitating government transactions. The results imply that citizens can access services through digital systems and complete various transactions without relying entirely on traditional in-person procedures. The growing use of online platforms in public administration reflects the broader transition toward digital governance, where technology plays an important role in improving service accessibility and administrative efficiency.

In terms of the problems encountered, "Slow system performance affects transactions" was considered as the topmost problems encountered by the respondents with a frequency of 375 or 98.68%. While the least problem raised was the "Data Privacy and security concerns are present" with a frequency of 230 or 60.53%. It should be noted that understanding these concerns is important because the success of digital government services depends not only on the availability of technology but also on how well these systems function in practice. When users encounter recurring problems during transactions, their overall perception of digital government initiatives is affected.

Considering all these findings, certain recommendations were proposed, such as reviewing regular transaction procedures to remove unnecessary steps and reducing delays, particularly during busy periods. Improved coordination among offices can also help speed up processing time and continuously monitoring and updating their current system to maintain stable system performance and sustain user trust.

I. INTRODUCTION

1.1 Background of the Study

The use of digital technologies in government has become an important part of modern public administration. Many governments around the world are now rethinking traditional bureaucratic systems that rely heavily on manual procedures, face-to-face transactions, and multiple layers of approval. While the adoption of digital services has become increasingly common, many governments have not yet fully maximized the opportunities offered by e-governance. In many cases, public services remain only partially digitized, requiring citizens to complete certain steps in person or undergo additional manual procedures.

As a result, long processing times, repeated submission of documents, and limited access to government offices continue to affect the efficiency of public service delivery. These situations often lead to

public dissatisfaction and may gradually weaken citizens' trust in government institutions. Such persistent challenges highlight the need to move beyond simply placing services online and instead examine how effectively digital platforms function in delivering reliable and accessible public services.

According to the 2024 United Nations E-Government Survey, 189 out of 193 UN Member States (98%) now provide at least one online government service. The global average number of online services offered by governments has also increased, rising from 16 services in 2022 to 18 services in 2024, indicating a continuing shift toward digital delivery of public services. At the same time, progress in digital government development has been observed globally. The proportion of the population living in countries that lag behind in digital government development declined from 45.0 percent in 2022 to 22.4 percent in 2024, suggesting that more governments are strengthening their digital capacity and expanding access to public services through technology (United Nations, 2024).

Digital governance has also advanced in the Philippines as part of overall modernization of the public sector and the change in the mode of operation. E-Governance Act or Republic Act No. 12254 is one of the significant steps taken to make the utilization of digital technologies a standard in all government agencies and local governmental organizations. According to this law, digital governance is formally accepted as a means of streamlining operations of the government, enhancing interaction among government offices, and facilitating the delivery of the services offered by the government to all citizens regardless of their place of residence (Philippine News Agency, 2025). The government has demonstrated that it is indeed serious concerning its quest to make the process of service delivery efficient, open, and accountable by ensuring the application of digital tools in the management of government. To facilitate this law, the national government agencies have established united digital platforms such as the eGov PH Super App and eLGU system. These platforms are aimed at uniting government services under a single digital platform to enable people to navigate the disjointed and confusing bureaucracy systems. The same technologies are being used increasingly in making transactions according to recent reports such as obtaining a business license, registering to vote and paying local taxes. It demonstrates that human beings are gradually forgetting about paper-based and face-to-face procedures (Philippine Information Agency, 2024). Despite these advances, national tests continue to demonstrate variations in the effectiveness of the working system, its use by the largest number of people, and the preparedness of institutions to use it. The issues of system reliability, support, and cross-agency cooperation remain evident, implying that the quality of the work of digital service delivery differs across administrative departments.

In this context, Central Luzon is a leading practice region for digital governance projects because of the economy's dynamism and increasing urbanization in the region that foster demand for better public services. The region's strategic position and growing economic strength over time have only increased the need for government services to be accessible and responsive to the fast pace of social change and economic development. Many cities in Central Luzon are adopting digital platforms for augmenting frontline services. This shows that they are trying to make their administrative procedures fit with the country's digital transformation ambitions. The Department of Information and Communications Technology (DICT) says that a lot of people in the area use government digital platforms, which shows that citizens are interested in getting services online and that the government is committed to doing so (Philippine Information Agency, 2024).

Even if there are more digital platforms available, city and municipal governments still don't always provide good service. The usability of the system, how easy it is for different types of users to access it, how quickly it processes information, how reliable the digital infrastructure is, and how swiftly government offices respond to all effects how people utilize e-government. Some local governments have cutting-edge and well-run digital systems that make services easier to use and faster to get, but others have problems with not enough technical skills, lack of training, and poor coordination among institutions. These problems show that e-governance projects can only be successful if people use the technology, the government is able to execute its job, the organization is ready, and performance is always being measured.

The researcher has worked in the Local Government Unit for eight years and has seen firsthand how bureaucratic inefficiencies affect the delivery of public services. Delays in processing, unnecessary paperwork, and poor communication across offices are still persistent problems that affect both government workers and the people who rely on their services. These challenges highlight the need for modernization in government operations. Over time, the researcher has observed how these inefficiencies can create frustration for citizens and hinder the ability of government employees to perform their duties effectively. These situations have underscored the potential of digital governance to streamline processes, reduce delays, eliminate redundant paperwork, and improve communication between offices. In turn, these advancements could help make government services faster, more efficient, and ultimately more responsive to the needs of the public.

There is a need for this study because public service delivery increasingly involves using digital platforms and there has not been enough evaluation in practice on how these systems perform. Despite the introduction of e-governance solutions throughout Cities in Central Luzon, empirical evidence of whether this digitized service is still able to address perennial administrative issues like delays, accessibility problems and patchy delivery response are still scarce. The inconsistency of the outcomes of digital governance across local government units is due to variations in the system's usability, reliability and institutional readiness. In order to enhance and better match digital service delivery with citizens and government office needs, it is required to assess these conditions. This study, therefore, is conducted to provide an empirical measure that could facilitate institutional betterment as well as steer policy choices and thus render public administration more responsible and accountable.

1.2 Statement of the Problem

This study evaluated the e-governance as a digital approach to service delivery in Central Luzon, Philippines.

In particular, the research answered the following objectives:

1. What e-governance services are offered by cities in Central Luzon?
2. How are the e-governance services among cities in Central Luzon be described and evaluated in terms of:
   1.1 Ease of Use
   1.2 Accessibility
   1.3 Efficiency
   1.4 Reliability
   1.5 Responsiveness
3. What are the best practices on e-governance among cities in Central Luzon?
4. What are the problems encountered on the delivery of e-governance services?
5. What measures can be proposed to enhance the delivery of e-governance services?
6. What are the implications of the study to public administration?

1.3 Scope and Delimitations

This study focused on evaluating the e-governance services among City Governments in Central Luzon, Philippines. It examined how city governments delivered public services through digital platforms and how these services were experienced by actual users during their transactions. The study did not focus on the technical development, programming, or system design of digital platforms. Instead, it concentrated on the performance of digital services as experienced by users.

The scope covered digital public services offered by city governments, including online applications for business permits and renewals, access to public documents, requests for birth certificates and death certificates, online applications for marriage contracts, requests for certifications, Mayor’s permits, tax payments, and other digital payment facilities. All services that required interaction between citizens and city government offices through digital platforms were included in the study. Services delivered purely through manual or full face-to-face processes were excluded.

The respondents of the study consisted of two groups. The first group included citizens who had availed themselves of online government services. Only those who had direct experience using digital platforms for their transactions were included. The second group consisted of government employees who served as implementers behind the digital services. These were personnel directly involved in managing, facilitating, or processing online applications, payments, and requests within their respective city governments. Individuals who conducted their transactions purely through traditional face-to-face processes were not included in the study.

It is important to note that the Meycauayan City Government in Bulacan Province and the Balanga City Government in Zambales Province declined to grant authorization for the conduct of the study. Because of this, respondents who could have been included from these areas were relatively sourced from other city governments within Central Luzon.

The evaluation of e-governance services was limited to service delivery dimensions that were directly visible and experienced by users. These dimensions included responsiveness, efficiency, dependability, accessibility, and ease of use. The study assessed factors such as transaction speed, clarity of procedures, system reliability, and the promptness of responses provided through digital channels. Technical aspects such as system programming, software architecture, database infrastructure, and cybersecurity measures were not included, as these were beyond the scope of user-centered service evaluation.

During the conduct of the study in February 2026, all city governments were observed to be in a transitional phase, implementing a combination of online and face-to-face transactions. Although digital

services were available, full online implementation had not yet been fully realized. Many transactions still require physical appearance even after being initiated online.

Both implementers and service users reported several factors that affected the complete digitalization of services. These included system errors in online platforms, incorrect information encoding, the need for assistance in completing online procedures, requirements for original signatures, online applications that required personal appearance, and other operational constraints. In most cases, regardless of the type of transaction, clients were still required to visit the City Hall even after transacting online.

Certain limitations were encountered during data collection. Some respondents did not consent to being photographed while answering the survey questionnaire. In several offices, due to heavy workloads and operational demands, personnel requested that the survey questionnaires be dropped off and collected at a later time. Because of this arrangement, documentation of respondents while answering the questionnaires was not fully captured.

The findings of the study were limited to the actual conditions present during the data collection period in February 2026. Any system upgrades, administrative reforms, or technological improvements implemented after the completion of data gathering were not included in the study. Although internet connectivity, availability of digital devices, and digital literacy were recognized as influencing factors, these were not treated as primary variables. The conclusions were therefore confined to the existing administrative context of city governments in Central Luzon and were intended to contribute to the improvement of digital public service delivery.

II. RESEARCH METHODOLOGY

2.1 Research Design

This study employed a Quantitative Research design to evaluate the delivery of digital government services. The design was appropriate because the study measured perceptions and examined relationships using numerical data collected from a defined group of respondents. Through this approach, the research generated measurable findings that reflected the actual experiences of users and implementers of e-governance services (Creswell et al., 2023).

The study covered all cities in Region III – Central Luzon where digital government services were being implemented at the time of data collection. Including all cities provided a broader understanding of service delivery conditions across the region rather than limiting the analysis to selected areas. This regional coverage allowed for comparison of service performance and administrative practices within a common policy and institutional setting.

A non-experimental research design was adopted because the study examined existing e-governance platforms without manipulating any variables. The evaluation focused on ease of use, accessibility, efficiency, reliability, and responsiveness as they were observed in actual practice. The systems were assessed as they operated within local government units. This approach allowed the findings to reflect real service conditions experienced by citizens who availed themselves of digital services and by Management Information Systems (MIS) personnel and office staff responsible for implementing them. Through documenting current practices and operational concerns as they occurred, the study provided a basis for identifying service gaps and proposing measures to strengthen digital service delivery.

Data was collected using a structured survey questionnaire developed to measure perceptions of e-governance service delivery. The instrument utilized a Likert scale, enabling respondents to indicate their level of agreement or experience with specific service dimensions. This format ensured uniformity in responses and facilitated statistical analysis of usability, accessibility, efficiency, reliability, and responsiveness.

The respondents consisted of two groups: citizens who had availed themselves of digital government services and government personnel, including MIS staff and employees from offices responsible for online service delivery. Including both users and implementers enabled the study to capture perspectives from those who experienced the services and those who managed them. This strengthened the reliability of the findings by presenting both operational and user-based viewpoints.

To determine the appropriate sample size, the study applied Cochran's formula in computing the required number of respondents based on the total population of the respective cities in Central Luzon. The use of this statistical method supported sample adequacy and reinforced the credibility of the quantitative results. Applying an established sampling formula ensured that the findings were statistically defensible and suitable for interpretation.

The research design provided an organized method for examining digital service delivery across cities in Central Luzon. It allowed for statistical treatment of data and ensured that conclusions were based on verifiable information relevant to administrative improvement and policy consideration.

Ethical standards were strictly observed throughout the conduct of the study. Participants were informed of the purpose of the research, the voluntary nature of their participation, and their right to withdraw at any time without consequence. Informed consent was secured prior to data collection. Confidentiality was maintained by anonymizing responses and securely storing the collected data to prevent unauthorized access.

Data were handled with impartiality and used solely for academic purposes. The study ensured that both citizens and government personnel were represented fairly in the analysis. Survey questions were constructed to remain neutral and avoid leading responses. The data collection process was conducted professionally to ensure that respondents were not pressured and were able to answer freely.

Through adherence to ethical standards and systematic procedures, the study maintained academic integrity and credibility. The findings provided information that could assist government officials, policymakers, and digital governance advocates in strengthening digital service systems, addressing implementation gaps, and encouraging broader citizen engagement in public service delivery.

2.2 Data and Sources of Data

2.2.1 Survey Questionnaire. After obtaining the required permissions, the survey questionnaire was distributed to the identified participants. These participants included citizens who had previously availed themselves of electronic government services, as well as personnel from Management Information Systems (MIS) units and other offices directly involved in managing or supporting digital government platforms.

The questionnaire was administered in printed format to ensure accessibility and convenience for the respondents. Each questionnaire contained clear instructions to guide the participants in answering the items properly. The instrument focused on the respondents' experiences in using digital government services, particularly in terms of ease of use, accessibility, efficiency, reliability, and responsiveness.

Participants were given sufficient time to accomplish the questionnaire so that they could respond carefully based on their actual experiences. During the process, the researcher remained available to clarify instructions, when necessary, but no attempt was made to influence the answers provided by the respondents.

2.2.2 Interview. To further enrich the data gathered from the survey, interviews were conducted with selected city government personnel who are directly involved in the implementation and management of digital services. The purpose of these interviews was to obtain additional insights regarding the electronic government initiatives implemented by the city governments.

During the interview, participants were asked to describe the electronic government services currently offered by their respective offices. They were also asked to discuss the procedures followed in delivering these services, the practices that helped improve service delivery, and the strategies adopted by their offices to ensure that digital platforms remain functional and accessible to the public.

In addition, the interviews explored the best practices implemented by the offices in managing their digital systems, as well as the common challenges encountered in operating these services. The information gathered through the interviews provided a clearer understanding of how digital services are carried out in actual administrative settings.

2.2.3 Documentary Analysis. The study also involved the review of relevant documents related to digital service delivery in the selected city governments. The researcher visited the official websites and online portals of the city governments to examine the digital platforms and services available to the public. These online sources provided information regarding the types of electronic services offered and the procedures involved in accessing them.

Aside from online sources, the researcher also reviewed publicly available materials such as the Citizens' Charter, disclosure boards, and other official documents displayed within the city government offices. These materials contain information about service standards, processing procedures, and administrative guidelines that support the delivery of government services.

Through documentary analysis, the researcher was able to verify the availability of digital services and compare the documented procedures with the information obtained from the survey and interviews. This step helped strengthen the credibility of the data collected for the study.

2.2.4 Retrieval and Data Preparation. After the questionnaires were completed, the researcher personally retrieved the instruments and checked them for completeness. The accomplished questionnaires were then organized and prepared for data processing. Responses were coded and encoded to facilitate statistical analysis.

All information gathered during the data collection process was treated with strict confidentiality. Personal identifiers were not disclosed, and the data were used solely for academic and research purposes. Following these procedures helped ensure that the information collected accurately represented the current condition of electronic government service delivery in the selected cities of Central Luzon and provided a reliable basis for the analysis and interpretation of the study.

2.3 Population and Sample

The respondents of this study consisted of individuals who had actual exposure to electronic government services within the cities of Central Luzon. These included citizens who availed themselves of online public services and personnel assigned to offices that implemented and managed digital government platforms. The inclusion of these groups ensured that the assessment of service delivery was based on actual utilization and operational experience rather than mere assumptions.

To determine the appropriate number of participants and to ensure statistical reliability, the study applied Cochran's formula in computing the sample size. This method was appropriate for large populations and was widely utilized in quantitative research to obtain a representative sample based on a specified confidence level and margin of error. Through this procedure, arbitrary selection was avoided, and the credibility of the findings was strengthened.

The computed sample size was proportionately distributed among the cities in Central to account for differences in population and volume of service usage. This allocation ensured that each city was adequately represented while maintaining balance in data collection. The application of Cochran's formula contributed to the production of results that reflected prevailing conditions in digital service delivery within the region

After determining the total sample size of 380 respondents using Cochran's formula, the respondents were distributed across the cities through proportional allocation. This procedure was applied to ensure that each city was represented according to its actual population size.

Cities with larger populations received a higher number of respondents, while those with smaller populations were assigned fewer participants. This method-maintained balance in data collection and reduced the risk of overrepresentation or underrepresentation among the selected cities. The population of each city was divided by the total population of 4,064,605, and the resulting proportion was multiplied by the total sample size to calculate the number of respondents per city.

Minor rounding adjustments were applied to retain the exact total of 380 respondents without significantly affecting proportional representation. Through this approach, the study captured a more accurate and balanced assessment of e-governance service delivery across the selected cities in Central Luzon.

2.4 Research Instrument

The primary tool that was used in data collection of this study is a developed structured Survey Questionnaire designed to capture firsthand evaluations of electronic government service delivery in the cities of Central Luzon. The questionnaire was developed in accordance with the objectives of the study and focused on measuring how digital government services were experienced by users during actual transactions. Through this instrument, the study was able to gather Quantitative Data that reflected perceptions regarding the quality and effectiveness of e-governance services across the selected cities.

The Questionnaire comprised four main parts. The first part gathered basic information relevant to the respondents' interaction with e-governance services, such as their role as service users or system implementers. The second part contained statements intended to evaluate key dimensions of digital service delivery, namely ease of use, accessibility, efficiency, reliability, and responsiveness. The third part identified the best practices among cities, while the last part focused on the problems encountered by the respondents in the delivery of e-governance services. These dimensions were used as indicators in assessing e-governance service delivery in a digital public administration setting.

Responses were measured using a Likert scale, which allow respondents to indicate the degree of their agreement or disagreement with each statement. This measurement scale ensured uniformity of responses and allowed for systematic quantitative analysis and comparison across variables and cities included in the study.

Prior to fully administration, the developed Survey Questionnaire was subjected to content validation by experts from government who were directly involved in the management and implementation of information and communication technology (ICT) systems, particularly those handling digital government platforms and electronic service delivery. These experts possessed practical knowledge and firsthand experience in the operation, maintenance, and evaluation of e-governance systems, which made them qualified to assess the relevance, clarity, and appropriateness of the survey items.

The validators reviewed the Questionnaire to determine whether the statements accurately reflected the key dimensions of e-governance service delivery, namely ease of use, accessibility, efficiency, reliability, and responsiveness. Their comments and recommendations were used as the basis for revising and refining the instrument to ensure that each item was clear, contextually appropriate, and aligned with actual digital service practices in government offices.

2.4.1 Expert Validators. A content validation process was used to assess the survey's appropriateness, relevance, and clarity in light of the study's goals. The tool was reviewed by three experts with years of experience in public service and digital governance. Their evaluation concentrated on determining whether the statements were free of confusion, logically ordered, and clearly worded, as well as whether the items accurately reflected the constructs being measured.

The Provincial IT Officer of the Tarlac Provincial Government, who served as the first validator, gave an average weighted mean of 4.5, which was considered valid. The expert, who has over ten years of experience in government service, noted that the instrument covered all the important aspects pertinent to the study and was thorough and methodically structured. The second validator, is a Project Development Officer from Department of Information and Communications Technology Tarlac Provincial Office, gave the average weighted mean of 4.4, which is also considered valid. The evaluation emphasized the questionnaire items' relevance, readability, and clarity. The third validator, an Administrative Assistant I from the Municipal Government of Gerona's Business Permits and Licensing Office—One Stop Shop, obtained a weighted average score of 4.8, which is considered highly valid. The instrument's objectivity, coherence, and systematic structure were confirmed by the expert.

The instrument showed a high level of validity based on the average weighted means that the three experts calculated. The ratings consistently demonstrated that the questionnaire items were appropriate for use in the study's context and were in line with the intended constructs.

2.4.2 Content Validation Result. The results of the Content Validity Index (CVI) indicate that the instrument demonstrates very strong content validity under the Knowledge domain. All three expert validators agreed that the items included in the questionnaire were relevant and appropriate for measuring the concepts intended in the study. The Proportion of Relevance (PR) obtained by each expert was 1.00, which means that all items were consistently rated as relevant. This level of agreement shows that the statements in the questionnaire are well aligned with the objectives and variables of the research.

Similarly, the Scale-Level Content Validity Index using the Average method (S-CVI/Ave) and the Universal Agreement method (S-CVI/UA) both produced a value of 1.00. This indicates complete agreement among the validators that the set of items adequately represents the construct being measured. Since an S-CVI/Ave value of 0.80 is generally considered the acceptable minimum for content validity, the obtained result suggests that the instrument meets and exceeds the required standard.

After establishing the content validity of the instrument, its reliability was examined using Cronbach's Alpha to determine the internal consistency of the items. The computed Cronbach's Alpha coefficient indicated a very high level of reliability, suggesting that the items in the questionnaire consistently measure the same underlying concept. In general, a Cronbach's Alpha value of 0.60 or higher is considered acceptable for research instruments. Based on this result, the questionnaire demonstrates strong internal consistency. With both validity and reliability established, the instrument is considered appropriate for pilot testing and the subsequent collection of data for the study.

2.4.3 Reliability Test Results. After completing the content validation process, the survey questionnaire underwent reliability testing prior to the pilot implementation. The pilot test was conducted with respondents who shared similar characteristics to the study's intended participants. Representing 10% of the total population across cities in Central Luzon, a total of 38 respondents participated in this phase. This sample size was considered sufficient to provide an initial assessment of the instrument's consistency and suitability.

The findings indicate that respondents generally perceived e-governance services among the cities in Central Luzon as positively performing across all measured dimensions. In terms of *ease of use*, the overall mean of 3.97, interpreted as "Agree," reflects that user experienced the digital platforms as manageable and understandable. This suggests that the systems were designed with user interaction in mind, allowing transactions to be completed with relative clarity and minimal confusion. Participants recognized that the structure, instructions, and procedural flow supported their engagement with the platforms. While certain aspects received slightly lower ratings, these remained within the acceptable range, implying that although the systems were functional and user-friendly, refinements may still be introduced to further simplify processes, particularly for first-time users. So, the findings portray platforms that are accessible in design and generally supportive of user navigation.

With respect to *accessibility*, the overall mean of 3.93, also interpreted as "Agree," demonstrates that respondents considered the digital services reachable and available to a broad range of users. The results suggest that stakeholders were able to access the system through various means and at different times, reflecting efforts to provide flexible service delivery. However, the slightly lower assessments in certain aspects imply that disparities in connectivity and digital literacy may still influence user experiences. Although accessibility was viewed positively, these findings highlight the importance of strengthening

infrastructure and providing user support mechanisms to ensure that digital services remain inclusive. Accessibility, therefore, is not only about system availability but also about ensuring that diverse users can effectively benefit from the platform.

In terms of *efficiency*, the overall mean of 3.96 indicates that respondents acknowledged improvements in service delivery through digital processes. The agreement suggests that the platforms contributed to smoother coordination, reduced the need for physical transactions, and streamlined procedural steps. Users perceived that digital workflow minimized repetitive tasks and supported more organized service transactions. These findings reflect the role of e-governance in enhancing administrative operations and reducing delays commonly associated with manual systems. Nevertheless, while efficiency was positively rated, continuous evaluation of processing speed and internal coordination remains essential to sustain and further improve performance outcomes.

Regarding *reliability*, the overall mean of 3.86 reveals that respondents generally trusted the system's capacity to function consistently and accurately. The results suggest confidence in how transactions were recorded, maintained, and retrieved when necessary. Users perceived the platforms as dependable, with technical issues addressed within reasonable parameters. Although minor variations in experience may have occurred, the collective responses indicate that reliability was sustained at a satisfactory level. Maintaining this trust requires ongoing monitoring, technical maintenance, and system upgrades to ensure consistent service quality over time.

Lastly, in terms of *responsiveness*, the overall mean of 3.85 signifies that users observed timely actions and communication through digital channels. Respondents acknowledged that requests were generally addressed and updates were provided within acceptable periods. This reflects the system's capacity to facilitate communication between stakeholders and service providers. However, the slightly lower perception regarding the resolution of issues suggests that while acknowledgment and processing may occur promptly, the completion of certain concerns may require additional time. Strengthening follow-up mechanisms and improving turnaround times would further enhance user satisfaction and reinforce confidence in digital service delivery.

The results shows that e-governance services in cities were positively evaluated across ease of use, accessibility, efficiency, reliability, and responsiveness. Although all dimensions fell within the "Agree" range, subtle variations in ratings point to areas where strategic improvements may be implemented. Continuous refinement, infrastructure enhancement, and user-centered design remain essential to ensure that digital governance initiatives evolve in a manner that fully supports public service delivery.

2.5 Conceptual Framework

This study adopted the Input–Process–Output (IPO) model to examine how digital services are delivered in city governments. It presents the relationship between service quality dimensions, the implementation of digital services, and the outcomes that influence government operations and service delivery.

The conceptual framework of the study illustrates the process of evaluating and improving e-governance services in local government units in Region III–Central Luzon. The first component focuses on the description and evaluation of existing e-governance services using key service quality indicators such as ease of use, accessibility, efficiency, reliability, and responsiveness. Evaluating these dimensions helps determine whether the current e-governance systems are user-friendly, accessible to the public, capable of improving service efficiency, dependable in their operations, and responsive to the needs and concerns of users.

The second component of the framework focuses on the identification and analysis of e-governance practices implemented by local government units. This stage involves determining the types of e-governance services offered, identifying best practices among LGUs, and gathering empirical data through interviews, survey questionnaires, and data analysis. Through these methods, the study examines how digital services are implemented and managed, as well as the challenges encountered during their operation. This process enables the researcher to analyze both the strengths and weaknesses of existing systems, including issues related to technological infrastructure, administrative capacity, and user experience.

The final component of the framework focuses on the development of proposed measures and their implications for public administration. Based on the evaluation results and analysis of best practices and challenges, the study formulates recommendations aimed at improving the delivery of e-governance services. These proposed measures may include enhancements in digital infrastructure, system integration, capacity building for government personnel, and improvements in citizen engagement through digital platforms.

2.6 Data Analysis

To interpret the collected data effectively, the study applied descriptive statistical methods, enabling a structured and thorough examination of e-governance service delivery in the cities of Central Luzon. Various statistical tools, including frequency counts, percentage calculations, ranking, and weighted means, were employed to summarize responses and provide a clear understanding of how digital services were experienced by both citizens and government personnel. Data was presented through tables and graphs to make trends and patterns readily observable and aligned with the objectives of the study.

Each dataset was carefully reviewed and organized to assess the performance of e-governance services in terms of ease of use, accessibility, efficiency, reliability, and responsiveness. This approach allowed the study to highlight areas where digital services performed well and identify aspects that required improvement, serving as a basis for recommendations.

Collected responses were tallied and structured in tables for easier interpretation. The following statistical treatments were applied:

2.6.1 Frequency. Frequency indicated the number of times a particular response occurred among participants. It showed how often specific experiences or perceptions appeared within the study population.

2.6.2 Percentage. Percentages were computed to express the proportion of respondents who gave a particular answer, providing a clear representation of overall trends. Percentages were calculated using the formula:

$$\% = \frac{r}{b} \times 100$$

Where:

% = Percentage

r = Number of respondents selecting a particular response

b = Total number of respondents

2.6.3 Ranking. Ranking was used to order service attributes from the highest to lowest scores, indicating which aspects of e-governance services performed best and which required further attention.

2.6.4 Weighted Mean. Weighted means were calculated to evaluate each indicator of e-governance service delivery. These scores offered an overall assessment of performance, helping to determine which service dimensions were most effective and which needed improvement.

Through this systematic analysis, the study produced objective findings that reflected the actual experiences of citizens and government personnel. The results provided a solid foundation for recommending measures to enhance service delivery and improve the overall efficiency and responsiveness of digital governance in Region III – Central Luzon.

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Numerical Equivalent	Range	Adjectival Description
5	4.50 – 5.00	Strongly Agree
4	3.50 – 4.49	Agree
3	2.50 – 3.49	Neutral
2	1.50 – 2.49	Disagree
1	1.00 – 1.49	Strongly Disagree

Through this systematic analysis, the study generated objective findings that reflected the actual experiences of citizens and government personnel in using digital services. To facilitate clear interpretation of the survey results, responses were converted into numerical equivalents using a Likert scale. A rating of 5 (4.50–5.00) represented “Strongly Agree,” 4 (3.50–4.49) indicated “Agree,” 3 (2.50–3.49) corresponded to “Neutral,” 2 (1.50–2.49) denoted “Disagree,” and 1 (1.00–1.49) signified “Strongly Disagree.” This numerical framework enabled the study to quantify perceptions, rank the performance of service dimensions, and identify which aspects of e-governance implementation performed well and which required improvement. The results provided a reliable basis for formulating evidence-based recommendations aimed at enhancing the delivery and effectiveness of digital government services in Central Luzon.

III. RESULT AND DISCUSSIONS

3.1 Overall evaluation of E-Governance Services in Central Luzon

Table 3.1 Overall Evaluation of E-Governance Services in Central Luzon

Indicators	Mean	Adjectival Description
Ease Of Use	3.95	Agree
Accessibility	3.96	Agree
Efficiency	3.99	Agree
Reliability	3.96	Agree
Responsiveness	3.95	Agree
Ease Of Use	3.95	Agree
Overall Grand Mean	**3.96**	**Agree**

Evaluating the overall performance on e-governance services provides a clearer understanding of how digital systems function delivering public services. As government institutions increasingly rely on digital platforms to facilitate transactions and communication, assessing whether these systems effectively support citizens and administrative processes becomes essential. E-governance initiatives are intended to enhance efficiency, accessibility, transparency, and service quality by integrating information and communication technologies into public administration. In this study, the evaluation of e-governance services focuses on several key dimensions that reflect the quality of digital service delivery, including ease of use, accessibility, efficiency, reliability, and responsiveness. These dimensions' capture how citizens experience digital platforms while also reflecting the operational goals of government institutions that aim to modernize public service systems.

Table 3.1 presents the overall evaluation of e-governance services in Central Luzon. The results indicate that all indicators fall within the "Agree" category, with an overall mean score of 3.96. This suggests that respondents generally view digital government platforms as functional and beneficial in facilitating government transactions. The results imply that citizens can access services through digital systems and complete various transactions without relying entirely on traditional in-person procedures. The growing use of online platforms in public administration reflects the broader transition toward digital governance, where technology plays an important role in improving service accessibility and administrative efficiency.

Efficiency obtained the highest mean score of 3.99, indicating that respondents recognize the contribution of digital platforms in simplifying procedures and reducing the time required to complete government transactions. Citizens often experience delays and lengthy processing times when relying on manual government procedures. Digital systems help address these challenges by enabling electronic submission of documents, automated processing of requests, and faster communication between agencies and citizens. Studies have shown that digital governance systems can significantly improve administrative efficiency by streamlining workflows and reducing bureaucratic delays. For example, Aswar et al. (2023) found that the implementation of e-government platforms enhances service efficiency by integrating digital information systems that allow government agencies to process requests more quickly and coordinate services more effectively. These findings support the results of the present study, where respondents acknowledged the efficiency of digital platforms in facilitating public service transactions.

Government institutions also continue to prioritize efficiency in the delivery of public services through digital transformation initiatives. In the Philippines, government agencies are expanding the use of online portals and electronic platforms that enable citizens to access government services remotely. Such initiatives aim to reduce administrative bottlenecks and improve the overall responsiveness of public institutions. In integrating digital technologies into administrative processes, governments are able to enhance the speed and organization of service delivery while improving the overall experience of citizens interacting with government agencies.

Accessibility and reliability both received a mean score of 3.96, indicating that respondents generally perceive digital government services as accessible and dependable. Accessibility is an important factor in the adoption of e-governance services because citizens must be able to access digital platforms conveniently in order to benefit from them. Online systems allow individuals to access government services regardless of time and location, which reduces the need for repeated visits to government offices. The expansion of digital government services therefore helps improve the reach of public institutions and makes government transactions more convenient for citizens.

Research conducted by Nookhao and Kiattisin (2023) emphasizes that citizens are more likely to adopt e-government services when they perceive digital platforms as accessible, reliable, and useful for completing government transactions. The study further notes that accessible digital platforms strengthen the relationship between citizens and government institutions by providing efficient channels for communication and service delivery.

Government initiatives aimed at strengthening digital infrastructure also contribute to improving accessibility. Efforts to expand online service portals and integrated digital platforms are intended to ensure that public services can be accessed by a broader segment of the population. These initiatives reflect the growing recognition that digital governance can enhance inclusiveness in public administration by making services available beyond the limitations of physical government offices.

Reliability is equally important in maintaining public confidence in digital government platforms. Reliable systems allow citizens to complete transactions without technical interruptions and ensure that the information provided through digital platforms remains accurate and consistent. When government systems operate reliably, citizens are more likely to trust these platforms and continue using them for future transactions. Research examining digital governance initiatives highlights that the stability and security of digital systems play a crucial role in strengthening citizen trust in government services. Reliable systems therefore contribute not only to efficient service delivery but also to the credibility of digital governance initiatives.

Ease of use and responsiveness both received a mean score of 3.95, indicating that respondents generally find digital government platforms manageable and responsive during transactions. Ease of use is particularly important because citizens who interact with digital government platforms have varying levels of familiarity with technology. Platforms that are designed with clear instructions and intuitive navigation allow users to complete transactions more easily. Digital services that prioritize user-friendly design encourage greater participation in online government platforms and improve citizens' overall experience when interacting with public services.

Responsiveness refers to the ability of digital platforms to provide timely system feedback during transactions. Citizens expect digital services to confirm submitted requests, provide updates on application status, and deliver responses without unnecessary delays. Systems that respond promptly to user actions reduce uncertainty and help citizens monitor the progress of their transactions. Governments increasingly incorporate automated notifications, tracking features, and digital communication tools within online platforms in order to improve responsiveness and maintain effective interaction with citizens.

Overall, the findings indicate that e-governance services in Central Luzon are generally perceived positively in terms of usability and service performance. Citizens acknowledge the convenience of digital platforms in facilitating access to government services, while recent studies confirm that digital governance initiatives contribute to improved efficiency and accessibility in public administration. Frinaldi et al. (2023) highlight that digital governance initiatives strengthen public sector performance by improving service effectiveness and enabling governments to deliver services more efficiently. These findings support the results of the present study, which indicate that respondents perceive digital government systems as functional and supportive of public service delivery.

Despite the positive evaluation, the results also suggest that continued improvements are necessary to further enhance the effectiveness of digital governance platforms. Governments must continue investing in digital infrastructure, system maintenance, and user support services to ensure that digital platforms remain reliable and accessible to citizens. Strengthening these aspects will help ensure that e-governance initiatives continue to support efficient, transparent, and responsive public service delivery while meeting the evolving expectations of citizens in the digital age.

The convergence of scores across all five dimensions, ranging narrowly from 3.95 to 3.99, is itself a significant finding that merits analytical attention. This tight clustering suggests that citizens in Central Luzon do not perceive one dimension of e-governance as dramatically superior or inferior to the others; instead, they evaluate all five dimensions as broadly equivalent in terms of their current level of performance. This pattern indicates a systemic rather than isolated quality profile: the e-governance systems of Central Luzon are performing at a comparable, moderately positive level across all major service quality dimensions simultaneously. Such uniformity is consistent with systems that have reached a plateau of intermediate quality, where no single dimension has been neglected but none has yet been developed to a high-performance standard. It also suggests that the region's LGUs may benefit from coordinated, cross-dimensional improvement strategies rather than targeted fixes to individual indicators, since the evidence does not point to one dimension as the critical bottleneck.

The overall grand mean of 3.96 positions e-governance in Central Luzon within what may be characterized as the "agree" band but at a level that leaves meaningful space for improvement before the

"strongly agree" threshold of 4.50 and above. To contextualize this score: a citizen who answers "agree" across all dimensions is expressing general satisfaction but not enthusiastic endorsement. This distinction matters for policymakers because general satisfaction may support continued use of digital services among existing users, but it may not be sufficient to motivate adoption among non-users, encourage voluntary advocacy, or build the high levels of public trust that fully transformative e-governance requires. Moving from "agree" to "strongly agree" across these dimensions would represent a qualitative shift in citizen-government digital relations, one in which e-governance is not merely a serviceable alternative to in-person transactions but a genuinely preferred and trusted mode of government service delivery.

The finding that efficiency ranks highest (3.99) while ease of use and responsiveness rank lowest (both 3.95) carries an important strategic implication. Efficiency is primarily a benefit experienced by users who are already able to navigate the system successfully, reflecting the gain in speed and reduced physical effort that digital platforms provide over traditional in-person processes. Ease of use and responsiveness, on the other hand, affect all users regardless of prior experience, including first-time users, less digitally literate residents, and those who encounter problems or have questions during transactions.

The fact that the dimensions most closely tied to universal citizen experience score slightly lower than the dimension most closely tied to experienced-user benefit suggests that Central Luzon e-governance is delivering better outcomes for its current user base than it is for potential new users or those who require more support. Addressing this asymmetry by prioritizing improvements in ease of use and responsiveness could help the region's e-governance systems achieve more equitable and inclusive digital service delivery, expanding their positive impact beyond the currently engaged user population to encompass the full range of citizens they are designed to serve.

The overall evaluation scores also provide a useful baseline against which to measure the impact of future improvements. The current grand mean of 3.96 represents the state of e-governance quality as perceived by citizens at the time of this study. As the proposed measures in Table 3.2 are implemented, subsequent evaluations using the same framework can track whether scores improve, stagnate, or decline, providing LGU administrators and policymakers with longitudinal evidence of whether their improvement investments are translating into better citizen experiences. Establishing a regional e-governance evaluation cycle, perhaps conducted annually or biennially through a coordinated survey effort across all thirteen cities, would institutionalize this baseline and create a powerful accountability and learning mechanism. Cities that demonstrate score improvements can share their strategies with others, while cities where scores stagnate can receive targeted technical assistance. Over time, such a monitoring framework would support a culture of evidence-based digital governance improvement that moves the region steadily toward the higher performance levels its citizens deserve.

It is also worth situating the overall evaluation findings within the broader trajectory of e-governance development in the Philippines. The national government, through the DICT and related agencies, has articulated ambitious targets for digital government transformation, including the full digitalization of frontline government services and the expansion of the eGovPH platform across all LGUs.

The overall mean of 3.96 across five dimensions suggests that Central Luzon cities are making meaningful progress toward these national targets, but that significant work remains before the region can claim to have achieved the level of digital governance quality envisioned in national policy frameworks. Bridging the gap between the current performance level and the aspirational standards set by national digital transformation goals will require sustained investment, strong local leadership, and effective coordination between national agencies and local governments. The findings of this study provide a clear empirical foundation for this ongoing work, identifying both the strengths to build upon and the specific dimensions where targeted improvement will yield the greatest gains in citizen satisfaction and service quality.

3.2 Problems Encountered

3.2 Problems Encountered on the Delivery of E-Governance Services

Problems	*f*	%	R
Slow system performance affects transactions.	375	98.68	1
Lack of clear instructions causes confusion.	374	98.42	2
Users experience difficulty understanding some system procedures.	371	97.63	3
Internet issues disrupt access to services.	350	92.11	4
Limited system capacity affects performance during peak usage.	346	91.05	5
Limited technical support delays issue resolution.	327	86.05	6
Lack of timely updates causes uncertainty.	313	82.37	7
Difficulty coordinating between offices affects service completion.	273	71.84	8
Limited system features affect service delivery.	236	62.11	9
Data Privacy and security concerns are present	230	60.53	10

The findings provide an overview of the common challenges experienced by users when interacting with digital government platforms. While e-governance systems are intended to make public services more accessible, efficient, and transparent, the results indicate that several operational and technical issues continue to influence the effectiveness of these platforms.

Understanding these concerns is important because the success of digital government services depends not only on the availability of technology but also on how well these systems function in practice. When users encounter recurring problems during transactions, their overall perception of digital government initiatives may be affected. Therefore, identifying these concerns provides valuable insights into the areas where improvements are needed in order to strengthen the delivery of digital government services.

The most frequently reported concern among participants is slow system performance affecting transactions, which obtained 375 responses or 98.68 percent. This result indicates that system speed remains the most significant issue experienced by users when accessing digital government services. In digital environments, speed plays an important role in shaping the overall experience of the user. When systems operate slowly, the process of completing a transaction becomes time-consuming, which contradicts the primary objective of digital governance—to provide faster and more efficient public services.

Slow system performance may occur due to several technical and operational factors. In many cases, government digital platforms are developed gradually as part of broader modernization programs. However, the infrastructure supporting these systems may not always be upgraded at the same pace as the increasing demand for digital services. As more users rely on online platforms, the pressure placed on servers, databases, and network systems increases. Without adequate capacity, these systems may struggle to maintain stable performance, resulting in delays during transactions.

Slow system performance can create frustration and inconvenience. Individuals who choose digital services often expect them to provide faster alternatives to traditional in-person transactions. When the system becomes slow or unresponsive, users may lose confidence in the platform and may prefer to complete their transactions directly at government offices instead. This situation can reduce the overall effectiveness of e-governance initiatives and may limit the long-term adoption of digital services.

The second highest-ranked concern identified in the table is the lack of clear instructions within the system, which received 374 responses or 98.42 percent. This finding suggests that many users encounter confusion when navigating digital platforms due to unclear or insufficient guidance. In online service environments, instructions serve as an essential guide that helps users understand the required steps to complete a transaction. When instructions are incomplete, overly technical, or poorly organized, users may struggle to understand the procedures involved.

Janssen et al. (2022) note that unclear instructions can significantly impact the usability of digital platforms, making it difficult for users to successfully complete their transactions. Simplifying the system's user interface and providing step-by-step guidance would help alleviate these issues and enhance the user

experience. Governments must invest in user-centered design and accessible language to ensure that e-governance platforms are understandable and easy to navigate for all citizens.

For many citizens, interacting with digital government platforms may still be a relatively new experience. Unlike trained personnel who regularly work with digital systems, some users may not have extensive familiarity with online procedures. In such situations, clear and easy-to-understand instructions become particularly important. If users cannot easily follow the process, they may make mistakes when submitting forms or providing information, which can lead to delays or rejected applications.

Closely related to this concern is the third-ranked problem, difficulty in understanding certain system procedures, which received 371 responses or 97.63 percent. This finding highlights the importance of system usability in digital governance initiatives. Even when instructions are available, the design of the system itself may still present challenges to users. Complex procedures, multiple verification steps, or unclear navigation structures may make it difficult for users to complete their transactions successfully.

The usability of digital platforms is an important factor in determining their overall effectiveness. Systems that are overly complicated may discourage users from continuing the process, especially if they encounter repeated difficulties. In contrast, platforms that are designed with simplicity and clarity in mind are more likely to encourage consistent use. For government institutions, improving system usability can significantly enhance the accessibility of digital services and promote wider adoption among citizens.

Another important concern identified in the study is internet connectivity issues that disrupt access to services, which received 350 responses or 92.11 percent. Internet access plays a crucial role in the functioning of digital government systems. Even when the system itself is operating properly, unstable internet connections can interrupt transactions and prevent users from accessing the platform.

Connectivity challenges remain a practical concern in many areas, particularly in locations where internet infrastructure is still developing. Users who rely on mobile data connections may experience fluctuations in signal strength, which can interrupt the process of submitting online forms or uploading required documents. These interruptions can be frustrating for users, especially if they have already spent time completing part of the transaction.

In addition to connectivity issues, limited system capacity during peak usage was also identified as a major problem, with 346 responses or 91.05 percent. This result suggests that digital platforms may experience performance difficulties when a large number of users access the system simultaneously. During peak periods, such as application deadlines or high-demand service hours, the volume of transactions may exceed the system's processing capacity.

When systems reach their capacity limits, users may experience slower response times, system errors, or temporary service interruptions. These issues may cause delays in completing transactions and may require users to attempt the process multiple times before it is successfully completed. Expanding system capacity and strengthening digital infrastructure can help address these challenges by ensuring that the platform remains stable even during periods of high demand.

Another issue highlighted in the findings is limited technical support, which delays the resolution of problems encountered by users. This concern received 327 responses or 86.05 percent. Technical support services are essential in digital platforms because they provide assistance when users encounter difficulties. Without reliable support channels, users may struggle to resolve issues on their own, particularly when the problem involves system errors or technical requirements.

In situations where assistance is not immediately available, users may feel uncertain about how to proceed with their transactions. Delays in resolving these issues can extend the time required to complete services and may reduce user confidence in the digital platform. Establishing responsive technical support systems, such as help desks or online assistance channels, can help ensure that users receive timely guidance when needed.

Another concern raised by participants is the lack of timely updates regarding transaction status, which received 313 responses or 82.37 percent. Digital platforms are expected to provide users with clear and timely information about the progress of their transactions. When updates are delayed or unavailable, users may feel uncertain about whether their requests are being processed.

For example, individuals who submit applications online may want to know whether their documents have been received, reviewed, or approved. Without regular updates, users may repeatedly check the system or contact government offices to confirm the status of their requests. Providing automated notifications or real-time status tracking can help address this concern by keeping users informed throughout the process.

The study also found that difficulty coordinating between offices affects the completion of certain transactions. This issue received 273 responses or 71.84 percent. Many government services involve multiple departments or units before a request can be fully processed. When coordination between these offices is not well organized, delays may occur even if the initial request was submitted through a digital platform.

Digital systems can facilitate communication between offices, but institutional coordination remains an important factor in service delivery. Strengthening internal communication channels and integrating administrative processes can help reduce delays and improve the efficiency of multi-office transactions.

Another issue identified by participants is limited system features, which received 236 responses or 62.11 percent. This finding suggests that some digital platforms may not yet provide the full range of services needed by users. In some cases, certain procedures may still require in-person visits to government offices because the system does not yet support those functions.

Expanding system capabilities and continuously updating platform features can help ensure that digital services remain relevant to the needs of the public. As more services become available online, users may find it easier to complete transactions without visiting government offices.

Lastly, data privacy and security concerns were reported by 230 respondents or 60.53 percent. Although this issue ranked lowest among the identified problems, it remains an important consideration in digital governance. Users must feel confident that their personal information is properly protected when interacting with online government platforms.

Maintaining strong data protection measures and clearly communicating privacy policies can help build public trust in digital government systems. When users are assured that their information is secure, they are more likely to use digital services confidently.

The findings presented in Table 21 demonstrate that while digital government services have been introduced in the cities of Central Luzon, several operational and technical challenges continue to influence their effectiveness. Addressing these concerns requires continuous system improvement, stronger digital infrastructure, and better coordination among government offices. By focusing on these areas, local governments can further strengthen the delivery of e-governance services and ensure that digital platforms effectively serve the needs of the public.

The extremely high response rates for the top three problems in Table 21 deserve analytical attention. Slow system performance (98.68%), lack of clear instructions (98.42%), and difficulty understanding system procedures (97.63%) were each reported by nearly all respondents, indicating that these are not the concerns of a minority of users, but near-universal experiences shared across the entire citizen respondent population. This near-unanimity is statistically striking and carries a strong policy signal: these are not peripheral issues to be addressed at the margins of system improvement but fundamental obstacles that affect almost every citizen who interacts with e-governance platforms in Central Luzon. The fact that these top concerns cut across both technical dimensions (system speed) and user experience dimensions (instructional clarity and procedural comprehensibility) confirms that improving e-governance quality requires action on multiple fronts simultaneously, as no single category of improvement alone will resolve the breadth of challenges citizens are experiencing.

A notable observation is the apparent tension between the generally positive evaluation scores documented in Tables 14 through 20 and the near-universal problem reports in Table 21. This tension is not a contradiction but a reflection of the nuanced nature of citizen evaluation of public services. Citizens can simultaneously agree that a service is generally useful, accessible, and efficient in relative terms, while also identifying specific recurring frustrations that reduce their experience below what it could or should be. In other words, positive mean scores in the evaluation tables reflect citizens' overall orientation toward e-governance as a worthwhile and functional alternative to traditional service delivery, while the high problem rates in Table 21 reflect their awareness of specific gaps and frustrations that have not yet been resolved. This distinction is important for policymakers because it means that the generally positive evaluation landscape does not indicate that citizens are fully satisfied or that the status quo is adequate; rather, it indicates that citizens see value in digital government services while simultaneously experiencing meaningful unresolved pain points that policy improvements must address.

The relative ranking of problems in Table 21 also reveals a prioritization structure that should inform resource allocation decisions. The sharp drop in response rate between the top five problems, all above 91 percent, and the bottom five, ranging from 60 to 86 percent, suggests a two-tier problem landscape. The top-tier problems, slow performance, unclear instructions, procedural complexity, internet connectivity, and peak load limitations, represent systemic and broadly experienced issues that affect the baseline functional quality of e-governance for most users. The second-tier problems, limited technical support, delayed updates, inter-office coordination gaps, limited features, and data security concerns, are serious but experienced by a smaller, though still substantial, proportion of users. This structure implies that while all ten problems warrant attention, the top-tier issues should command priority action because resolving them would produce the widest improvement in citizen experience across the entire user population. Incremental improvements to second-tier problems, while valuable, would have a narrower immediate impact unless the foundational top-tier issues are also addressed concurrently.

The problems identified in Table 21 also invite reflection on the gap between service design intent and service delivery reality in Central Luzon e-governance. The cities in the region have invested meaningfully in digital platforms, as evidenced by the diverse service portfolios documented in Table 1 and the best practices enumerated in Table 20. Yet the near-universal experience of slow performance, unclear instructions, and procedural complexity suggests that the gap between what these systems are designed to deliver and what citizens actually experience during transactions remains substantial.

This intent-reality gap is a common challenge in digital public sector transformations, where systems are often designed and evaluated by technically proficient staff under optimal conditions but used by a diverse public under variable connectivity and varying levels of prior familiarity. Closing this gap requires not only technical improvements but also rigorous real-world usability testing that simulates the conditions under which ordinary citizens access government platforms, including low-bandwidth environments, unfamiliar interfaces, and first-time use scenarios. Incorporating such testing into the standard pre-deployment and post-deployment review process for all e-governance systems would help LGUs identify and address experience gaps before they become entrenched as widely shared citizen frustrations.

The data privacy and security concern, though ranked last in Table 21, deserves attention disproportionate to its rank position. The 60.53 percent response rate means that more than three out of every five citizen respondents expressed concerns about data privacy and security in their interactions with e-governance platforms. In absolute terms, this is a substantial proportion of the user population. The relatively lower rank compared to performance and usability issues likely reflects that performance problems create immediate, visible friction during transactions, while security concerns are more diffuse and less immediately apparent to individual users. However, the long-term implications of unresolved security concerns are potentially more serious than those of usability or performance issues: a single significant data breach affecting government digital platforms could rapidly undermine public trust across all dimensions of e-governance, reversing years of positive experience and adoption gains. LGUs should therefore treat data security not merely as a ranked policy priority but as a foundational governance obligation that must be continuously strengthened regardless of its relative position in citizen problem rankings. Investment in robust security infrastructure, regular penetration testing, staff cybersecurity training, and transparent privacy communication is not optional but essential for the long-term sustainability of digital government services.

3.3 Proposed Measures

Table 3.3 Proposed Measures on Problems Encountered

Problems Encountered	Measures	Objective	Strategy	Outcome	Office Responsible
Slow system performance affects transactions.	Upgrade the system capacity and optimize architecture. Optimize database management Implement cloud-based solutions	To ensure faster and smoother system transactions. To improve data processing efficiency To enhance scalability and flexibility	Implement server upgrades and conduct regular monitoring of system performance. Clean redundant data, apply indexing, and optimize queries Migrate system to cloud infrastructure for better resource allocation	Reduced delays and improved transaction speed for users. Faster data retrieval and improved system response Improved system availability and reduced downtime	IT Department, System Administration/ External Providers

Lack of clear instructions causes confusion.	Standardize and clarify instructions. Incorporate visual guides and infographics Conduct user testing for instructions	To reduce errors and improve user understanding. To improve comprehension among users. To ensure clarity and effectiveness of instructions.	Use simple language and provide consistent, step-by-step instructions across the platform. Add screenshots, icons, and video walkthroughs. Gather feedback and revise unclear sections.	Fewer mistakes and a smoother user experience. Better understanding even for first-time users. More user-friendly and effective instructions.	Content Management, User Interface (UI) Design Team
Users have trouble understanding some system procedures.	Simplify interfaces and provide guidance. Introduce guided navigation (wizard-based system). Conduct user orientation programs.	To help users navigate the system more easily. To assist step-by-step completion. To improve user familiarity.	Develop simplified procedures, tutorials, FAQs, and interactive help features. Break processes into guided steps. Offer webinars and onboarding sessions	Users can complete transactions independently with less confusion. Reduced confusion and errors. Increased user confidence and efficiency.	UI Design Team, Training & Support
Internet issues disrupt access to services.	Improve internet connections and provide alternative access options. Develop offline-enabled features. Establish public access kiosks.	To ensure more reliable access to e-governance services. To allow access despite poor connectivity. Set up kiosks in LGU offices. To support users with limited internet	Coordinate with Internet Service Providers, optimize the system for low-bandwidth users, and provide downloadable forms when necessary. Enable saving and later submission of forms. Set up kiosks in LGU offices.	More stable access and fewer disruptions due to connectivity problems. Continuous service access. Increased accessibility	IT Department, Coordination with ISPs
Limited system capacity affects performance during peak usage.	Expand capacity and manage peak load effectively. Schedule system usage or appointment system. Monitor peak usage trends	To maintain service reliability during high demand. To manage demand efficiently. To anticipate system demand.	Increase server capacity, optimize databases, and implement queue management systems. Introducing booking or time-slot system.	Minimal downtime and consistent system performance during peak hours. Reduced congestion. Better preparation for high traffic.	IT Department, Infrastructure Team

			Use analytics for forecasting.		
Limited technical support delays issue resolution.	Establish a dedicated help desk and support channels. Implement 24/7 support or chatbot system. Develop knowledge base system.	To provide timely assistance for system-related concerns. To ensure continuous support. To allow self-service support.	Train IT personnel and set up online chat support and ticketing systems. Deploy AI chatbots or extended hours. Create FAQs and troubleshooting guides.	Faster issue resolution and fewer transaction interruptions. Immediate response to basic concerns. Reduced dependency on support staff.	Customer Support, IT Helpdesk
Problems Encountered	**Measures**	**Objective**	**Strategy**	**Outcome**	**Office Responsible**
Lack of timely updates causes uncertainty.	Implement real-time notifications and tracking dashboards. Email and SMS notification system. Assign status monitoring personnel.	To keep users informed about transaction status. To widen communication channels. To ensure updates are accurate.	Set up automated alerts, progress tracking tools, and regular update messages. Send automatic updates via SMS/email. Designate staff to monitor updates.	Users remain informed, reducing uncertainty and repeated follow-ups. Increased awareness. Reliable and timely information.	IT Department, Communication Team. Admin Office
Difficulty coordinating between offices affects service completion.	Integrate inter-office communication and workflows. Assign case managers per transaction. Conduct regular inter-office meetings.	To improve efficiency in multi-department transactions. To ensure accountability. To improve communication.	Develop integrated systems and assign responsible coordinators for monitoring requests. Designate focal persons. Schedule coordination meetings.	Faster processing of transactions that require coordination between offices. Improved coordination. Better collaboration.	Administration, Interdepartmental Coordination Team. All Departments
Limited system features affect service delivery.	Upgrade and expand system functionalities. Conduct periodic system evaluation. Benchmark with other LGUs.	To address the evolving needs of users. To identify missing features. To adopt best practices.	Collect feedback, prioritize necessary features, and regularly update system modules. Use surveys and analytics. Study successful systems.	A completer and more responsive digital platform. Continuous improvement. Improved service delivery.	IT Department, User Experience Team

Data privacy and security concerns are present.	Enhance security protocols and educate users. Conduct data privacy training. Implement multi-factor authentication.	To protect personal information and strengthen user trust. To educate users and staff. To strengthen system security.	Apply strong encryption, conduct regular security audits, and provide guidance on data privacy practices. Workshops and awareness programs. Require OTP and verification steps.	Increased user confidence and reduced risk of data breaches. Reduced risk of breaches. Improved protection.	IT Security, Legal and Compliance Department HR, Legal IT Security

E-governance is intended to make public service delivery more efficient, accessible, and responsive. However, when technical limitations, unclear user guidance, infrastructural barriers, and institutional constraints are present, the intended benefits may be diminished. The proposed measures outlined in Table 3.2 directly respond to the primary challenges identified through empirical evaluation of e-governance services in Central Luzon. These measures are not merely technical prescriptions; they reflect a citizen-centered commitment to fostering trust, inclusion, and consistent service quality.

The most frequently cited problem—slow system performance—undermines the very purpose of digital governance. Citizens expect e-governance platforms to expedite interactions with government, yet performance lags create frustration and reinforce reliance on offline channels. Research confirms that technical performance directly affects both user satisfaction and trust in digital systems (Aljohani et al., 2023). Slow systems increase cognitive and time burdens, discouraging use and diminishing perceived usefulness.

To respond to this, upgrading server capacity and optimizing system architecture are necessary steps. Regular performance monitoring allows administrators to identify bottlenecks before they affect users, which aligns with recommended practices in digital service management (Basri et al., 2023). A responsive back-end infrastructure reduces latency, enables simultaneous access by many users, and supports scalable growth as system usage increases.

A significant barrier to effective use of e-governance services is users' difficulty in understanding procedures and instructions. When system navigation is confusing, users expend effort deciphering steps that should be straightforward. This phenomenon is widely documented in studies on digital public services, which show that insufficient guidance undermines confidence and increases errors (Zhao et al., 2022).

Simplifying user interfaces, standardizing instructions with clear language, and providing interactive help (such as FAQs, tutorials, or guided walkthroughs) directly responds to these issues. Such measures acknowledge diverse levels of digital literacy and reduce the likelihood of user errors, improving overall experience. By enabling citizens to complete transactions independently, the system becomes more inclusive and dependable.

Even with optimized interfaces and improved performance, internet connectivity remains a bottleneck for many users, particularly in rural or infrastructure-limited areas. Connectivity challenges are a well-documented barrier to equitable access in e-governance systems across developing contexts (Hasan et al., 2023). When citizens cannot reliably connect or complete transactions due to poor bandwidth, trust and participation decline.

Optimizing platforms for low-bandwidth environments, coordinating with Internet Service Providers (ISPs), and offering offline alternatives (such as downloadable forms) are pragmatic approaches that make services more inclusive. By acknowledging connectivity disparities, these measures reinforce the principle that digital public services must accommodate varied user environments rather than assume ideal conditions.

The proposed strategy to expand capacity and manage high user loads addresses the problem of system degradation during peak usage. This is particularly relevant in environments where demand fluctuates, for example, during tax deadlines or periodic service renewals. Research on scalable digital system design emphasizes the importance of load balancing and capacity planning to maintain performance under variable demand (Choudhury & Dutta, 2022).

Increasing server capacity, optimizing database queries, and implementing queue management not only reduce downtime but also make the user experience more reliable and predictable. This improves both perceived and functional reliability, which is crucial to sustaining long-term engagement with digital government services.

Limited technical support contributes to unresolved issues and user frustration, which in turn dampens overall confidence in the platform. Effective help desks and support structures serve not only as troubleshooting mechanisms but also as symbols of institutional accountability. A robust support system can reduce abandonment rates, elevate user confidence, and generate actionable feedback for continuous improvement (Wang et al., 2022). By training IT support personnel, implementing ticketing systems, and offering real-time support channels (e.g., chat), the system becomes more responsive to emergent problems and accessible to users with varying technological proficiency.

Uncertainty about transaction status is a common source of user dissatisfaction. When citizens are unsure whether their request has been received, processed, or completed, they may submit multiple follow-ups, burdening the system and undermining trust. The proposal for automated notifications and tracking dashboards aligns with research showing that transparency in public service delivery increases satisfaction, reduces redundant inquiries, and fosters a stronger sense of control among users (Smith et al., 2023). Automated alerts and progress updates serve not only informational functions but also psychological ones, reassuring users that their requests are being processed. Transparent workflows can strengthen institutional credibility and encourage continued engagement.

Coordinating services that span multiple departments often relies on siloed workflows and informal communication channels. Without system integration and defined responsibilities, multi-office transactions become fragmented and slow. Organizational theory on digital government underscores that interoperability and process integration are central to efficient service delivery (Park & Lee, 2024). Establishing integrated communication channels and assigning coordinators for cross-departmental requests can significantly reduce delays and prevent information loss between units.

Effective coordination not only expedites individual cases but also reduces administrative overhead, contributing to a more predictable and organized service environment.

E-governance is not a static undertaking but an evolving ecosystem. Citizen expectations and administrative needs change over time, requiring platforms that can adapt and expand feature sets. User feedback loops, iterative design, and modular system upgrades are widely recommended practices for maintaining service relevance and responsiveness. These approaches ensure that the platform remains attuned to emerging needs, integrating user experience research into system development cycles (Kushniruk & Borycki, 2023).

Continuous feature enhancement supports sustained engagement and allows the system to respond effectively to new challenges as they arise. Data security and privacy concerns, while ranked lower in priority by citizens, remain non-negotiable for long-term trust in digital government. Strong security protocols and user education around privacy enrich user confidence and protect the integrity of sensitive information. The literature consistently highlights that perceived risk of data misuse is a principal deterrent for digital participation, even among technically capable users (Alam & Khan, 2022).

Implementing encryption, regular security audits, and comprehensive user-privacy guidance communicates institutional commitment to safeguarding personal data—a foundational requirement for digital legitimacy.

The proposed measures in Table 3.3 are grounded in both user experience and institutional best practices. They address technical, organizational, and informational barriers that hinder the effectiveness of e-governance services in Central Luzon. When implemented cohesively, these strategies not only enhance operational performance but also strengthen public confidence, widen access, and sustain long-term engagement with digital public services.

The proposed measures in Table 3.3, taken as an integrated package, represent more than a list of corrective actions; they embody a vision of what citizen-centered digital governance in Central Luzon should aspire to become. Each measures is purposefully aligned with a specific problem from Table 3.2, creating a direct evidence-to-response chain that is grounded in empirical citizen feedback rather than generic policy prescriptions. This problem-measure alignment is methodologically significant because it demonstrates that the proposed interventions are not theoretical recommendations derived from international best practices alone but are instead directly calibrated to the locally documented experience of citizens interacting with e-governance systems in the region. This contextual grounding strengthens the practical relevance of the proposals and increases the likelihood that their implementation will produce meaningful improvements in the dimensions of service quality where citizens have expressed the greatest concerns.

An important consideration in the implementation of the proposed measures is the sequencing and interdependency of actions. The measures are not all equal in terms of foundational importance, and some must logically precede others to be effective. For example, upgrading system capacity and optimizing architecture to address slow performance is a prerequisite for many other improvements, because a system that runs slowly will frustrate users regardless of how clear its instructions are, how well-trained its support

staff are, or how real-time its notifications are. Similarly, improving internet access and providing offline alternatives must accompany any other usability improvement, because citizens who cannot reliably connect to the platform cannot benefit from clearer interfaces or faster processing. These infrastructure-level measures therefore represent the foundational layer that must be addressed first, while user experience and institutional capacity measures build upon that foundation. A phased implementation roadmap that prioritizes infrastructure, then user experience, then institutional coordination, and finally continuous feature enhancement and security improvement, would provide a logical and resource-efficient framework for LGUs to pursue these improvements over time.

The assignment of responsible offices in Table 3.3 also reflects an important governance principle: accountability for digital service quality should be distributed across multiple institutional actors rather than concentrated solely in IT departments. The inclusion of Content Management teams for instructional clarity, Communication Teams for notification systems, Customer Support units for help desks, Interdepartmental Coordination Teams for inter-office workflow integration, and Legal and Compliance Departments for data security illustrates that effective e-governance is an organization-wide responsibility. This multi-actor accountability structure aligns with the cross-cutting nature of e-governance observed in Table 1 to 13, where diverse city offices share responsibility for digital service delivery. Implementing the proposed measures will therefore require not only technical work but also organizational coordination, leadership commitment, and a culture of shared responsibility for digital service quality that extends beyond the ICT unit to encompass every department that interacts with citizens through digital channels. Building this culture of shared digital accountability is perhaps the most challenging but also the most transformative aspect of the e-governance improvement agenda for Central Luzon.

Successful implementation of the proposed measures will also require attention to resource mobilization and financing, particularly for smaller cities with more limited fiscal capacity. Several of the measures in Table 22, especially server capacity upgrades, dedicated help desk establishment, and real-time notification system development, require meaningful capital and operational expenditure that may strain the budgets of cities that are simultaneously managing multiple competing public investment priorities.

Exploring shared service models, in which groups of neighboring cities co-invest in shared digital infrastructure, support services, or platform development, could help distribute costs and achieve economies of scale that individual LGUs cannot reach on their own. Regional pooling arrangements facilitated by the DICT, the Provincial Government, or regional development authorities could provide a mechanism for this kind of collaborative investment. Alternatively, national government programs that provide matching grants or technical assistance for e-governance improvements could help cities that have strong improvement plans but limited financial capacity to translate those plans into action. Ensuring that the proposed measures are financially accessible to all thirteen cities, not just the most resourced ones, is essential for achieving region-wide improvement rather than further widening the digital governance gap between larger and smaller cities.

Ultimately, the proposed measures in Table 3.3 represent a call to action grounded in the voices of citizens who have directly experienced both the benefits and the limitations of e-governance in Central Luzon. The study's methodology, which combines quantitative evaluation across five service quality dimensions with documented problem identification and structured measure formulation, provides LGU administrators, national digital governance agencies, and policy researchers with a comprehensive, evidence-based roadmap for improving digital public services in the region.

The measures are not exhaustive, and implementation contexts will inevitably require adaptation to local conditions, resource realities, and emerging technological opportunities. But their core direction is clear: Central Luzon's e-governance systems must become faster, clearer, more accessible, more reliable, more responsive, more secure, and more fully supported if they are to fulfill the transformative potential of digital government and deliver genuinely citizen-centered public services to all residents of the region. The commitment to pursue these improvements, sustained across administrations and electoral cycles, is the ultimate measure of local government's dedication to serving the public good in the digital age.

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