Community Service Insight, Vol. 1 No. 1 (2026) https://doi.org/10.31098/csi.v1i1.4256

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Research Paper

Community Outcomes of E-Collection and E-Issuance Services in the Philippine Agrochemical Regulatory Agency

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Received : November 30, 2025	Revised : January 5, 2026	Accepted : February 18, 2026	Online : February 28, 2026

Abstract

The digital transformation of government services is a significant breakthrough for improving efficiency and reducing administrative bottlenecks in public sector processes. This study examined the community outcomes of e-Collection and e-Issuance services of the Philippine agrochemical regulatory agency. A participatory action research design was employed, using structured questionnaire to collect data from 193 respondents. Data were analyzed using frequency and percentage, weighted mean, and Spearman's rank-order correlation. The study revealed a moderately positive level of adoption, and client satisfaction on the digital services of the agency. Moreover, the service performance of the agency in providing e-services was also rated acceptable by the clients. Relationships among adoption, client satisfaction, and service performance of the e-services were found significant. Addressing the need for community-level impact, the study culminated with a proposed community service interventions and empowerment strategies so that the e-services of the agency will always be responsive to the needs to the community. By validating the Unified Theory of Acceptance and Use of Technology in a public-sector digital service context, this study provides actionable recommendations for improving digital services, enhancing accessibility, and fostering greater user adoption, which can be applied to similar regulatory agencies.

Keywords *Client Satisfaction; Digital Services; e-Collection; e-Issuance; Philippine Agrochemical Regulatory Government Agency; Service Performance; Unified Theory of Acceptance and Use of Technology*

INTRODUCTION

The digital transformation of public service delivery is a primary driver of efficiency and transparency in regulatory government agencies, streamlining procedural workflows while enhancing client satisfaction (Tangi et al., 2021). In the agrochemical regulatory sector, the technical complexity requires seamless coordination between e-collection systems and e-issuance platforms. However, gaps in digital adoption often led to administrative bottlenecks, reducing service quality (Petraki et al., 2025). This situation presents a critical community service problem, as delays in regulatory permits directly hinder the operational capacity of agricultural stakeholders and rural communities. In contrast, Twizeyimana and Andersson (2019) emphasized that well-integrated digital practices are associated with higher user satisfaction and improved public value creation. Understanding these connections is vital for ensuring technological transitions translate into superior service performance and regulatory compliance and meaningful community empowerment.

Global studies emphasize the interconnectedness of adoption, satisfaction, and service performance in e-government services. Venkatesh et al. (2016) highlighted that performance expectancy and effort expectancy significantly influence digital government platform adoption,

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shaping user satisfaction. Bélanger and Carter (2008) found that higher adoption rates of e-licensing and e-payment systems were linked to improved perceptions of efficiency and reliability. Evidence from Mensah et al. (2020) supported the premise that client satisfaction acts as a critical mediator in the path between system adoption predictors and the eventual service performance of e-government platforms. Olesen et al. (2021) reported that usability and convenience directly affect satisfaction, which in turn predicts trust and service effectiveness. More recently, the findings of Pham et al. (2023) demonstrated that e-government service quality and value enhance satisfaction and loyalty in emerging countries. Collectively, these studies illustrate that fostering digital adoption not only enhances client satisfaction but also improves service performance in government platforms, thereby forming a strong theoretical basis for examining these relationships within the context of Philippine agrochemical regulatory services.

Recent literature underscores adoption in e-government services as the willingness and intention of clients to use digital regulatory services, operationalized through Unified Theory of Acceptance and Use of Technology (UTAUT)-aligned dimensions: usefulness; ease of use; facilitating conditions; and system accessibility. Usefulness corresponds to performance expectancy, the strongest predictor of user intention toward digital systems (Xue et al., 2024). Ease of use reflects effort expectancy, a determinant shown to significantly influence user acceptance (Dewi et al., 2023). Facilitating conditions capture support, resources, and infrastructure availability, factors validated in meta-analytic studies of UTAUT (Or, 2023). System accessibility reflects environmental readiness and digital capability, evidenced in national assessments of the Philippine eGovPH ecosystem (Jou et al., 2024). These adoption determinants consistently influence e-government platform usage (Wu et al., 2024; Saleh et al., 2024). In agrochemical regulation, adoption is crucial as digital tools like handler licensing, product registration, and accreditation portals are vital for compliance, documentation, and verification. The literature reinforces that understanding adoption is critical for evaluating satisfaction and service performance, especially within the Philippine agrochemical regulatory agency as it seeks to bridge the digital divide for its service community.

Local studies on Philippine e-government services consistently underscore the positive relationship between digital adoption, client satisfaction, and service performance. Espiritu et al. (2023) linked online system adoption to improved transaction efficiency in local government units, while Barela (2023) found that ease of use and system reliability significantly enhanced client satisfaction with digital licensing platforms. Similarly, Pacaño Jr. et al. (2024) reported that satisfied users of electronic services perceived higher accuracy and responsiveness, and Villaseñor (2024) demonstrated that the adoption of digital regulatory systems increased transparency and process efficiency. Libunao and Gaddi (2025) further established that client satisfaction mediates the effect of digital adoption on service performance, underscoring the importance of user experience in shaping organizational outcomes. Collectively, these findings contribute to the growing body of literature that emphasizes the role of digital transformation in enhancing efficiency, transparency, and responsiveness within public sector institutions. However, despite these valuable insights, existing studies do not fully capture the community service problem arising in the service activity of e-issuance of highly specialized agricultural permits. Stakeholders often face delays, compliance risks, and limited safeguards when securing permits such as fertilizer import permits, transport clearances, and pesticide use authorizations. These processes demand advanced system integration, strict adherence to sector-specific regulations, and robust mechanisms to ensure accuracy and legitimacy—requirements that current digital platforms struggle to meet. This gap in the literature highlights the need for further investigation, and it is precisely this area that the present study seeks to address by examining the intersection of digital adoption, regulatory compliance, and specialized service delivery in the agricultural sector, with particular attention to

how service inefficiencies affect community stakeholders relying on timely and reliable payment and permit issuance. Assessment of the community outcomes for e-collection and e-issuance services which aimed to modernize payment and permit systems of the agrochemical regulation agency is not only timely but highly relevant to stakeholders considering the potential improvements in efficiency, transparency, and accessibility these services will bring.

Client satisfaction in public e-services is a critical factor in evaluating service delivery, encompassing dimensions such as accessibility, usability, and processing efficiency. Research by Pham et al. (2023) and Fathya et al. (2023) showed that trustworthiness and ease of interaction are primary predictors of user satisfaction and platform loyalty. This finding is reinforced by Jeilani et al. (2025), who demonstrated that high satisfaction creates a positive feedback loop of institutional trust, which leads to sustained digital adoption. In the agrochemical regulatory sector, satisfaction is influenced by the reliability and predictability of services like licensing and permit issuance, where transparent and streamlined processes maintain trust (Andaya et al., 2025). Saleh et al. (2024) argued that user-centered design enhances satisfaction by simplifying complex procedures and clarifying requirements. Satisfaction also serves as a mediating variable linking adoption to service performance, as accessible and easy-to-navigate digital platforms lead to positive evaluations of service quality within the community of practice.

Indama (2021) synthesized studies from 2010 to 2021 showing that e-government initiatives improve efficiency, transparency, and citizen participation. Tremblay-Cantin et al. (2023) supported this by reviewing factors influencing citizen adoption of e-government services, highlighting the importance of accessibility, trust, and perceived usefulness in driving community engagement. Villaseñor (2024) stressed that these factors are particularly relevant in the Philippine context, where digital platforms aim to reduce bureaucratic delays and enhance access to services. Valle et al. (2024) demonstrated how local government e-service platforms in Caloocan City streamline service delivery and enhance citizen engagement, strengthening trust between communities and government institutions.

In the Philippine agrochemical regulatory sector, the government agency has led digital innovations to modernize regulatory services. It has implemented digital solutions to improve agricultural input regulation, streamline licensing processes, and facilitate stakeholder engagement. These initiatives align with national efforts to improve the regulatory environment for agriculture and other sectors by leveraging technology to enhance service delivery and align with global trends in digital government transformation. The conduct of this study is timely and relevant, considering the ongoing digital innovations within the Philippine agrochemical regulatory sector. The government agency has been actively leading efforts to modernize regulatory services by implementing digital solutions aimed at improving agricultural input regulation, streamlining licensing processes, and enhancing stakeholder engagement. These initiatives are part of a broader national effort to improve the regulatory environment for agriculture and other sectors by leveraging technology to enhance service delivery. These digital advancements align with global trends in digital government transformation, underscoring the need to understand the impact of digital adoption, client satisfaction, and service performance in such specialized regulatory contexts. Given the agency's ongoing digital transition and the complexities of regulating agrochemical products, this study fills a significant gap in the literature and provides crucial insights into improving digital service delivery framed as a vital community empowerment activity in the agrochemical regulatory agency.

This study aimed to assess the community outcomes of e-Collection and e-Issuance services within the Philippine agrochemical regulatory agency, and its objectives naturally align with a community service program that empowers agrochemical stakeholders. By evaluating client satisfaction in terms of accessibility, usability, processing time, and convenience, the study provides

a foundation for community-based digital literacy initiatives that help users confidently navigate online platforms. Examining service performance in efficiency, accuracy, and reliability connects directly to service activities that streamline permit workflows and strengthen trust in government digital services. Exploring the relationships between adoption, satisfaction, and performance supports participatory mechanisms such as feedback forums and training workshops, where community members can actively shape improvements in service delivery. Finally, the development of evidence-based strategies translates into capacity-building programs for both agency staff and local stakeholders, ensuring that digital systems for e-Collection and e-Issuance are not only technically sound but also responsive to the needs of the community. In this way, the research objectives extend beyond academic inquiry to become a practical empowerment activity that enhances digital inclusion, strengthens agricultural productivity, and fosters collaborative governance at the community level.

The study is grounded in UTAUT, which posits that performance expectancy, effort expectancy, social influence, and facilitating conditions shape users' behavioral intention and actual technology use (Venkatesh et al., 2016). This theory aligns with the dimensions of adoption, satisfaction, and service performance in digital public services. Prior studies confirm that UTAUT determinants strongly influence adoption, satisfaction, and service performance (Dewi et al., 2023; Xue et al., 2024; Saleh et al., 2024). Based on these insights, the following hypotheses are proposed:
H1: There is a significant relationship between adoption and client satisfaction.
H2: There is a significant relationship between client satisfaction and service performance.
H3: There is a significant relationship between adoption and service performance.

This study contributes to understanding how digital transformation influences service delivery within the Philippine agrochemical regulatory sector. It evaluates adoption, satisfaction, and service performance of e-Collection and e-Issuance services, offering insights to improve their design and implementation. By exploring these factors, the study informs more effective, user-centered digital solutions that can address challenges, foster community resilience, and promote sustainable agricultural practices

METHOD

This participatory action research examined the community outcomes of the agency's e-Collection and e-Issuance systems. According to Cockerham (2024) this is most appropriate in describing and evaluating community service strategies as this design emphasizes collaboration, empowerment, and context-specific solutions. The research was structured as a community-based service evaluation, whereas the service activity context involved the real-time interaction between regulatory officers and agricultural stakeholders. Because the client population of the subject Philippine agrochemical regulatory agency was indefinite and varied daily, the researchers employed non-probability convenience sampling, which is appropriate for walk-in public-service environments where access and time constraints limit probability sampling (Golzar et al., 2022). To ensure meaningful community participation, the implementation stage followed a structured engagement process where respondents were not merely subjects, but active evaluators of the service delivery chain. Clients were screened based on specific criteria, including being physically present at the agency during data collection, actively transacting at the time of the survey, and belonging to recognized stakeholder groups such as handlers, dealers, brokers, or researchers. Enumerators stationed near the service counters approached every arriving client, verified eligibility, and invited qualified clients to participate after they completed their transactions to avoid disruption. Through continuous screening over a five-day period, the researchers obtained 193 qualified respondents, ensuring that the final sample represented actual users of the agency's digital systems rather than general visitors.

The study utilized a structured questionnaire composed of four major sections, respondent profile, adoption, satisfaction, and service performance to comprehensively capture user experiences with the agency's digital systems. The adoption indicators were guided by validated constructs from the UTAUT, which identifies performance expectancy, effort expectancy, and facilitating conditions as core predictors of technology uptake in public-sector settings (Venkatesh et al., 2016). Satisfaction indicators were informed by established e-service quality frameworks, including accessibility, usability, processing time, and convenience, which are widely emphasized in digital-government research and citizen satisfaction models such as Pham et al. (2023), and Fathya et al. (2023). Service performance items measuring efficiency, accuracy, and reliability were adapted from public-sector performance assessment frameworks, including those discussed by Singh et al. (2020) in evaluating digital public-service effectiveness. These are measured using a four-point Likert scale as follows: 1 (1.00-1.74)= Strongly Disagree; 2 (1.75-2.49)= Disagree; 3 (2.50-3.24)= Agree; and 4 (3.25-4.00)= Strongly Agree. To ensure content validity, the instrument underwent validation by the two experts from the Planning, Management, and Information Division of the Philippine agrochemical government agency. The validators utilized a specialized adapted scale (Oducado, 2020), which assesses the items based on clarity, relevance, and suitability. Incorporating their recommendations into the final version, a pilot test conducted with 30 non-sample clients and reliability analysis using Cronbach's alpha confirmed strong internal consistency, with thresholds aligned with the criteria of Hussey et al. (2025). Table 1 presents the reliability outcomes for each construct as a preliminary step in ensuring rigorous data analysis for all objectives.

Table 1. Reliability Statistics

Indicator	Variable	No. of Items	Cronbach's Alpha
Level of Adoption	Adoption of E-collection and E-issuance Services	5	0.828
Clients Satisfaction	Accessibility	3	0.760
	Usability	2	0.863
	Processing Time	3	0.849
	Convenience	3	0.800
	Average		**0.818**
Service Performance	Efficiency	2	0.891
	Accuracy	2	0.772
	Reliability	2	0.739
	Average		**0.801**

Data were collected manually using printed survey questionnaires at the office of the Philippine agrochemical regulatory government agency over a five-day period from February 2–6, 2026, ensuring that responses reflected actual client experiences during live transactions. This localized data collection functioned as a structured community engagement process, facilitating a direct dialogue between the researchers and the regulated community to identify and resolve possible service barriers. The questionnaire included informed consent to ensure voluntary participation and implemented full anonymization procedures in accordance with the Data Privacy Act of 2012 and international research ethics, with all responses stored securely and destroyed after the mandated retention period. To analyze the data, respondents' demographic characteristics, including age group, region of residence, client type, e-service proficiency, and usage frequency, were summarized using frequencies and percentages. Levels of adoption, client satisfaction (accessibility, usability, processing time, convenience), and service performance

(efficiency, accuracy, reliability) were described using weighted means to capture central tendency across dimensions. Preliminary diagnostics indicated non-normal composite score distributions (Shapiro–Wilk $p < .001$), monotonic but non-linear associations, outliers, and heteroscedasticity; therefore, Spearman's rank-order correlation (ρ) was used, as it is the recommended technique for ordinal, non-normally distributed, and monotonic data and is widely applied in digital-service and behavioral research where Likert-scale measures do not meet parametric assumptions (El-Hashash & Shiekh, 2022). The findings from this analysis were then used to evaluate the intervention's effectiveness in improving community-wide access to essential regulatory services. Thus, a proposed community interventions and empowerment strategies will be implemented for the e-services of the agency to be responsive to the needs of the community. Table 2 presents community service activities as part of the intervention of the agency to further improve its delivery of e-services.

Table 2. Community Service Activities

Phase	Duration	Key Activities
1. Data Consolidation and Analysis	2 to 4 weeks	Compile survey results, identify service gaps, prioritize issues on e-Collection and e-Issuance implementation (accessibility, usability, processing time, convenience)
2. Planning and Consultation	3 to 6 weeks	Hold meetings with stakeholders (citizens, government employees, other agencies) to co-design interventions based on survey findings.
3. Orientation and Capacity Building	2 to 4 weeks	Train government employees and volunteers on e-Collection and e-Issuance standards, accountability mechanisms, and service protocols.
4. Implementation of Service Activities	1 to 3 months	Roll out targeted community service projects (e.g., information drives, service desks, process streamlining workshops).
5. Monitoring and Midterm Review	Ongoing during implementation	Track progress using indicators (response time, citizen satisfaction, compliance with regulatory agency commitments).
6. Evaluation and Reflection	2 to 4 weeks after implementation	Conduct focus group discussions, feedback sessions, and compare outcomes with baseline survey data.
7. Reporting and Dissemination	2 to 4 weeks	Present findings to stakeholders, publish reports, and highlight improvements in service delivery.
8. Sustainability and Continuous Improvement	Long-term	Implementation of proposed community interventions and empowerment strategies for enhancing the service delivery of agency; Institutionalize successful practices, and schedule

	follow-up surveys to further enhance the delivery of e-services

The proposed community service activities will be spearheaded by the department of the regulatory agency which is responsible for conducting seminars and coordinating with local communities. Moreover, this department will also be in charge in the provision of the resources to successfully mobilize the implementation and monitoring of the listed community service activities.

RESULT

This section presents the study's findings in line with the study's research objectives. Descriptive statistics summarize the respondents' demographic characteristics, followed by results on adoption, satisfaction, and service performance of the e-Collection and e-Issuance systems. Inferential analysis through Spearman's rank-order correlation establishes the relationships among the variables, and results are interpreted using the UTAUT framework and relevant literature. Crucially, these findings serve as the baseline evaluation for a structured community service intervention designed to improve digital equity among agricultural stakeholders.

Profile of Respondents

This subsection presents the demographic characteristics of the 193 clients who participated in the study. Table 3 summarizes the respondents' age group, region of residence, client type, level of e- Collection and E-Issuance proficiency, and frequency of transaction using the agency's e-Collection and e-Issuance systems.

Table 3. Profile of the Respondents

Indicator	Category	Frequency	Percentage (%)
Age Group	18 to 25 years old	22	11.40
	26 to 35 years old	81	41.97
	36 to 45 years old	43	22.28
	46 years old and above	47	24.35
	Total	**193**	**100.00**
Region of Residence	National Capital Region (NCR)	161	83.41
	Luzon (CAR, Region I, Region II, Region III, Region IV-A, Region IV-B, Region V)	28	14.51
	Visayas (NIR, Region VI, Region VII, Region VIII)	2	1.04
	Mindanao (Region IX, Region X, Region XI, Region XII, Region XIII, BARMM)	2	1.04
	Total	**193**	**100.00**
Client Type	Researcher	41	21.24
	Broker	21	10.88
	Dealer	8	4.15
	Other Handler	123	63.73
	Total	**193**	**100.00**
Level of E-Collection and E-Issuance Proficiency	Beginner	15	7.77
	Basic	56	29.02
	Intermediate	42	21.76
	Advanced	51	26.42

Indicator	Category	Frequency	Percentage (%)
	Expert	29	15.03
	Total	**193**	**100.00**
Frequency of Transaction using E-Collection and E-Issuance Services	Always	10	5.18
	Often	74	38.34
	Sometimes	50	25.91
	Rarely	59	30.57
	Total	**193**	**100.00**

As shown in Table 3, the respondent profile shows that users were primarily working-age individuals concentrated in the National Capital Region, reflecting the agency's centralized service environment and the greater digital accessibility typically associated with urban populations. Most respondents belonged to the agency's core stakeholder group of handlers, indicating that the sample accurately represents the primary users of the e-Collection and e-Issuance systems. Although respondents reported a range of digital proficiency from basic to advanced, most used the systems only occasionally rather than regularly, suggesting that the frequency of engagement depends more on the nature of regulatory transactions than on digital skill alone. This demographic pattern is important because prior studies show that age, digital literacy, and geographic location significantly shape e-government adoption and usage, with users in urban areas and those possessing higher digital readiness more likely to adopt online public services (Alalwan et al., 2017). Additionally, digital inclusion research emphasizes that readiness, accessibility, and contextual factors such as service design and user familiarity strongly influence whether clients transition from intermittent use to sustained engagement (Djatmiko et al., 2025). In the context of community empowerment, identifying these demographic gaps allows for a targeted intervention stage focusing on rural accessibility and specialized training for elderly or "beginner" proficiency groups. Similar findings also highlight that the alignment between stakeholder roles and system relevance affects user participation, particularly in specialized regulatory environments where digital adoption is closely tied to workflow needs and transaction frequency (Gupta et al., 2024).

Level of Adoption of e-Collection and e-Issuance Services

This section summarizes the level of adoption of the agency's e-Collection and e-Issuance services by presenting respondents' mean ratings across key adoption indicators.

Table 4. Level of Adoption e-Collection and e-Issuance Services

Item	Mean	Descriptive Rating
I regularly use e-collection services for payments.	2.55	Agree
I regularly use e-issuance services in applying for permits/licenses.	2.38	Disagree
I prefer e-services over manual transactions.	2.88	Agree
I find that e-services are well integrated into the agency's processes.	2.81	Agree
I intend to continue using these e-services in the future.	2.96	Agree
Composite Mean	**2.72**	**Agree**

Table 4 indicates that respondents show a moderately positive level of adoption of the agency's digital services, as reflected in the overall "Agree" rating, suggesting acceptance but not yet having strong or widespread use. Adoption is noticeably higher for e-Collection compared with e-Issuance, highlighting a clear gap between payment-related transactions, which users find easier

to complete online, and permit-related processes, which remain less frequently used. This pattern aligns with global findings that more complex or infrequent regulatory tasks tend to have lower digital adoption, as users often require clearer guidance or assisted-digital support to feel confident completing them online (Tremblay-Cantin et al., 2023). This adoption gap represents a specific service implementation challenge; while users can pay for services, the technical complexity of permit and license issuance acts as a barrier to full community participation. Geographic and readiness-related factors also help explain this disparity: because most respondents are based in the National Capital Region, where digital infrastructure is more reliable, adoption levels tend to be higher for simpler services, while users in less connected regions may encounter barriers when navigating more complex digital processes consistent with research showing that digital readiness and accessibility significantly shape e-government use (Djatmiko et al., 2025).

Furthermore, respondents who have generally basic to advanced digital proficiency support this adoption pattern; although they possess the skills to use online systems, sustained or frequent use of more complex services depends on users' confidence, familiarity, and perceived ease of use. This aligns with findings that performance expectancy and usability heavily influence continued engagement with digital platforms, underscoring the need for user-centered design to improve comfort and reduce perceived effort (Saleh et al., 2024; Olesen et al., 2021). The overall results suggest that while the agency's digital services are generally accepted, enhancements to the e-Issuance process, such as simplifying workflows or improving guidance are necessary to increase adoption and align usage patterns across service types.

Client's Satisfaction

This section evaluates users' overall satisfaction with the e-Collection and e-Issuance services across four dimensions: accessibility; usability; processing time; and convenience. These dimensions offer a comprehensive view of user experiences, highlighting strengths and areas for improvement in the system's design and performance.

Table 5. Client Satisfaction

Dimension	Mean	Descriptive Rating
Accessibility	2.74	Agree
Usability	2.90	Agree
Processing Time	2.90	Agree
Convenience	3.06	Agree
Composite Mean	**2.90**	**Agree**

Table 5 shows that respondents expressed a moderately positive level of satisfaction with the agency's e-Collection and e-Issuance services, as indicated by the overall "Agree" rating. This reflects that user generally find the platforms usable, convenient, and sufficiently responsive, though not yet at a level of strong satisfaction. Convenience emerged as the most notable strength, suggesting that digital services effectively reduce the need for physical visits and streamline routine transactions, an expectation supported by e-government research, which identifies convenience as a primary driver of sustained system use (Jeilani et al., 2025). Users also indicated positive experiences with usability and processing efficiency, reflecting a service interface that is easy to navigate and capable of facilitating timely completion of tasks. These findings align with studies showing that ease of use and efficient service performance are core determinants of user satisfaction in digital government systems (Saleh et al., 2024).

However, accessibility scored relatively lower than the other dimensions, suggesting that some users still experience barriers related to connectivity, device compatibility, or situational limitations. From a community service perspective, this lower score implies the need for a direct

intervention such as mobile optimized service hubs to ensure that the digital transition provides tangible benefits to all stakeholders regardless of their geographic location. Such disparities are consistent with digital inclusion research emphasizing that even when usability is high, satisfaction may be constrained by infrastructural gaps, particularly for users outside major urban centers (Djatmiko et al., 2025). Overall, the results indicate that while users are generally satisfied with the agency's digital services, further improvements, especially those enhancing accessibility would be beneficial in strengthening satisfaction and encouraging broader adoption.

Service Performance

This section evaluates the system's performance based on efficiency, accuracy, and reliability, highlighting how these factors contribute to the platform's ability to speed up transactions, ensure correct outputs, and maintain stability during high usage. Together, the data provide an overall view of the system's strengths and areas for improvement in user experience.

Table 6. Service Performance

Dimension	Mean	Descriptive Rating
Efficiency	3.00	Agree
Accuracy	2.81	Agree
Reliability	2.69	Agree
Composite Mean	**2.83**	**Agree**

Table 6 shows that respondents hold a moderately positive perception of service performance, as indicated by the overall "Agree" rating, suggesting that the digital services are generally meeting expectations but still leave room for improvement. Among the three performance dimensions, users viewed efficiency most favorably, reflecting the system's ability to reduce transaction time and streamline regulatory processes. This aligns with findings that efficiency is one of the most essential contributors to perceived value and successful digital government implementation (Jeilani et al., 2025). Users also expressed confidence in the accuracy of outputs, suggesting that the system provides reliable and correct information an important factor in maintaining trust in digital regulatory transactions. This is consistent with research indicating that accuracy and data integrity directly shape client satisfaction and trust in e-government platforms (Saleh et al., 2024). However, reliability was the least positively rated dimension, indicating that users may be experiencing occasional issues such as slowdowns or system instability, particularly during heavier transaction periods. To ensure the success of this community service activity, the agency must prioritize technical consistency during implementation, as system uptime is the primary driver of continued user engagement. Literature on digital government readiness notes that variability in system performance can hinder user confidence, especially when critical services require consistent availability (Djatmiko et al., 2025). Overall, the results suggest that while the platform effectively delivers efficient and accurate services, improving system reliability through stronger backend infrastructure or technical optimization would enhance client trust and elevate overall service performance.

Relationships among Adoption, Client Satisfaction, and Service Performance

Before testing the study's hypotheses, diagnostic tests were performed to determine the appropriate correlation technique. Shapiro–Wilk results showed that all composite variables on adoption, satisfaction, and service performance are non-normally distributed ($p < .001$), and scatterplots indicated monotonic but non-linear relationships among constructs. Outliers and

heteroscedastic patterns were also observed, violating the assumptions required for Pearson correlation. Since Spearman's rank-order correlation does not require normality, linearity, or homoscedasticity and remains robust in the presence of outliers, it was deemed the most suitable technique for analyzing relationships among the study variables (El-Hashash & Shiekh, 2022). Table 7 summarizes the assumption checks and confirms that the data met the requirements for Spearman's correlation analysis.

Table. 7 Assumptions and Diagnostics for Spearman's Rank Correlation

Assumption / Requirement	Evidence from the Study	Result
Level of Measurement	Variables are composite scores measured on Likert-type scales (ordinal-continuous).	Meets requirement
Monotonic Relationship	Scatterplots showed consistent upward or downward patterns but not linear; no strict linearity required.	Meets requirement
Normality of Variables	Shapiro–Wilk results: all composites $p<.001$ → non-normal.	Appropriate (Spearman does not require normality)
Linearity	Scatterplots showed non-linear patterns.	Spearman does not require linearity
Outliers	Composite scores had outliers (standardized residuals ±5).	Spearman is robust to outliers
Homoscedasticity	Heteroscedastic patterns in standardized predicted values and standardized residuals.	Not required for Spearman
Independence of Observations	Responses came from individual participants.	Meets requirement

The statistical relationships between the main variables are presented in Table 8, showing Spearman correlation coefficients for all variable pairs. This analysis directly addresses the three hypotheses: (H1) There is a significant relationship between adoption and client satisfaction; (H2) There is a significant relationship between client satisfaction and service performance; and (H3) There is significant relationship between adoption and service performance.

Table 8. Relationships among Adoption, Satisfaction, and Service Performance

Variable Pair	ρ (Spearman)	p value	Strength	Direction	Remarks
Adoption ↔ Client Satisfaction (H1)	.689	<.001	Strong	Positive	Significant
Client Satisfaction ↔ Service Performance (H2)	.761	<.001	Strong	Positive	Significant
Adoption ↔ Service Performance (H3)	.536	<.001	Moderate	Positive	Significant

The first alternative hypothesis (H1) posits that adoption has a significant effect on client

satisfaction. The results from Table 8 show a strong positive correlation between adoption and client satisfaction ($\rho = 0.689$, $p < 0.001$), indicating that as respondents adopt the e-Collection and e-Issuance services, their satisfaction increases. This significant correlation leads to the acceptance of H1, confirming that adoption does indeed have a substantial effect on client satisfaction. The positive relationship suggests that when users adopt the system and use it regularly, their satisfaction with the service improves. This is in line with UTAUT, where higher adoption rates, driven by factors such as perceived usefulness and ease of use, lead to greater satisfaction (Venkatesh et al., 2016). Similarly, Tremblay-Cantin et al. (2023) and Latupeirissa et al. (2024) found that the adoption of digital platforms strongly correlates with increased satisfaction, as users experience the convenience and benefits of the system. These results demonstrate the direct community impact of digital tools by increasing adoption through targeted engagement, the agency directly fosters a more empowered and satisfied community.

The second alternative hypothesis (H2) posits that client satisfaction has a significant effect on service performance. The results from Table 7 show a very strong positive correlation between satisfaction and service performance ($\rho = 0.761$, $p < 0.001$). This indicates that higher satisfaction is associated with more favorable evaluations of service performance, including efficiency, accuracy, and reliability. Based on this strong positive correlation, H2 is accepted, meaning that client satisfaction does significantly influence service performance. This finding aligns with prior studies (Slack et al., 2020; Briones et al., 2025; Macatangay et al., 2025; De Ramos & Briones, 2024) confirming that satisfied users are more likely to perceive services as efficient and reliable, reinforcing the critical role of satisfaction in shaping service quality perceptions. The results also support Faseeha et al. (2025), who argued that satisfaction serves as a mediator between adoption and service performance, indicating that satisfied users are more inclined to believe in the platform's effectiveness.

The third alternative hypothesis (H3) posits that adoption has a direct effect on service performance. Table 7 shows a moderate positive correlation between adoption and service performance ($\rho = 0.536$, $p < 0.001$). While the effect is weaker than the correlation between satisfaction and service performance, the significant correlation suggests that adoption does have a direct impact on service performance, leading to the acceptance of H3. This moderate correlation indicates that, although adoption contributes to better perceptions of service performance, other factors, such as system usability and user training, also play important roles. This finding supports Wu et al. (2024), who observed that frequent interaction with digital platforms helps users more accurately assess the platform's reliability and effectiveness. Xue et al. (2024) also emphasized that direct experience with digital services allows users to form more informed judgments about system performance. Ultimately, this relationship proves that successful service implementation stages must include continuous community training to bridge the gap between simple adoption and high-performance evaluation.

Proposed Community Service Intervention and Empowerment Strategies

Table 9 provides a matrix of proposed strategies based on the findings of the study, representing the community service intervention stage. The table shows critical results areas, the corresponding strategies, and supporting evidence from the literature, aiming to enhance service delivery and user experience. Unlike theoretical recommendations, these strategies serve as a direct community empowerment activity designed to resolve the accessibility and reliability issues identified by the stakeholders. The importance of user-centered design in enhancing usability and fostering adoption is supported by Saleh et al., (2024), who emphasized that systems designed with users' needs in mind are more likely to see higher engagement and satisfaction. Also, Twizeyimana and Andersson (2019) highlighted that responsiveness across different devices and environments

is a prerequisite for ensuring equal access to digital services, especially in diverse geographic regions. The recommendations, grounded in user feedback, are designed to address variability across service dimensions, optimize platform performance, and improve overall client satisfaction and adoption.

Table 9. Proposed Community Service Interventions and Empowerment Strategies

Dimension	Findings Summary	Proposed Community Service Interventions and Empowerment Strategies	Supporting Evidence
Usability	Users agree the system is usable, but responses show some variability.	• Simplify interface and navigation. • Launch community Help Desks with guided prompts, tooltips, and onboarding tutorials. • Make the system more intuitive through user-centered design.	User-centered design and usability improve adoption (Saleh et al., 2024; Faller et al., 2025).
Accessibility	Accessibility is rated positively but varies due to device and connectivity differences.	• Optimize platform for low bandwidth. • Establish localized Digital Access Hubs to improve responsiveness across device types. • Provide offline-ready and mobile-friendly functions to empower rural stakeholders.	Responsiveness is no longer optional, it is a prerequisite for equity (Twizeyimana & Andersson, 2019).
Reliability	The system is seen as reliable, but some users experience inconsistency during peak usage.	• Strengthen backend infrastructure. • Implement real-time system monitoring. • Execute a System Uptime Guarantee protocol involving periodic load and stress testing to maintain community trust.	System reliability correlates directly with public trust (Faseeha et al., 2025).
Efficiency & Processing Time	Users agree the system improves efficiency, but variability indicates workflow issues.	• Streamline transaction steps. • Increase server capacity for faster processing. • Conduct Service Streamlining Workshops to integrate systems with cross-agency databases for automation.	Clients provide data to the government as the gold standard for efficiency (Tangi et al., 2021).

Dimension	Findings Summary	Proposed Community Service Interventions and Empowerment Strategies	Supporting Evidence
Accuracy	Accuracy rated positively, but some users perceive inconsistent information quality.	• Strengthen data validation and error-checking rules. • Implement Community Data Governance Reviews to ensure regular audits. • Maintain audit logs to detect mismatches.	Traceability via audit logs is cited as a core requirement for data veracity (Li et al., 2025).
Convenience	Convenience is one of the strongest-performing dimensions.	• Preserve streamlined workflows. • Expand One stop Shop multi-transaction capabilities. • Improve integration with payment systems.	Consistent convenience increases digital adoption (Jeilani et al., 2025).
Client Satisfaction	Satisfaction is generally positive, but varies across demographic groups.	• Establish a Direct Stakeholder Feedback Loop through improved customer support (hotline, chatbots). • Deploy "Digital Literacy Modules" as a community education program. • Maintain feedback mechanisms.	Satisfaction and digital skills drive adoption (Fathya et al., 2023)
Adoption	Adoption strongly correlates with satisfaction and performance.	• Reinforce trust-building communication campaigns. • Highlight platform improvements and security. • Promote awareness campaigns to foster community-wide technology embrace.	Trust plays an essential role in shaping user attitudes, adoption, and satisfaction (Asif & Sarwar, 2025).
System Performance (Overall)	Overall ratings are positive but not uniform across users.	• Conduct continuous participatory monitoring and evaluation. • Implement quarterly performance reviews. • Use analytics and user feedback to guide updates.	System level observability ensures the actual application health and the performance of the system (Faseeha et al., 2025).
GovTech	Adoption is	• Strengthen	Digital transformation

Dimension	Findings Summary	Proposed Community Service Interventions and Empowerment Strategies	Supporting Evidence
Readiness	influenced by readiness, access, and policy environment.	organizational capacity through capacity building programs for digital operations. • Align platform development with national digital strategies. • Invest in staff training and digital competencies.	capability significantly improves operational performance, enabling organizations to adapt to market changes and enhance efficiency (Yu et al., 2022).

DISCUSSION

The findings from this study show that the adoption of the e-Collection and e-Issuance services has a significant impact on client satisfaction, particularly in the convenience and efficiency these digital services provide. Client-respondents expressed a strong preference for using e-services over manual transactions due to the time-saving benefits, demonstrating the positive effects of adoption on users' experiences. They also reported high satisfaction with how the digital platforms simplified transaction processes, reflecting the broader literature that suggests user satisfaction is critical for the long-term success of digital government services (Faseeha et al., 2025). This finding is also consistent with previous research that highlights the role of digital services in streamlining public sector work and enhancing service delivery (Tangi et al., 2021; Taufiqurokhman et al., 2024). The implications of this finding are significant for community service, when clients are satisfied with digital services, they are more likely to trust and continue using them, contributing to better engagement and higher levels of public service participation. This is aligned with the findings of Munir et al. (2024) emphasizing that satisfaction with e-governance platforms is a key determinant of citizen adoption. They further pointed out that when services are perceived as reliable, transparent, and user-friendly, citizens are more likely to engage digitally, reducing reliance on traditional bureaucratic channels. Similarly, Asadon et al. (2024) considered these tools to improve the responsiveness of public policy and effectiveness to the public. However, the study also found some areas for improvement, especially regarding accessibility for users with limited digital literacy or access to high-end devices. Addressing these concerns can improve overall user satisfaction and make the service more inclusive, ensuring that all community members benefit from the digital transformation (Saleh et al., 2024). Reflecting on these findings as community service practice issues, a key challenge encountered was the digital divide within the agricultural community, where smaller handlers faced greater difficulty navigating specialized portals compared to larger firms. A critical lesson learned is that digital transition is not merely a technical shift but a social intervention that requires high-touch support for vulnerable stakeholders to prevent exclusion. For the community availing the digital services of the regulatory government agency, this finding further implies that the higher adoption rates of its e-Collection and e-Issuance services have proved the agency’s thrust of providing their clients with a more accessible way to manage their regulatory transactions and enhancing efficiency, transparency, accessibility, and trust. In practice, this means that government institutions that invest in high-quality digital platforms can expect stronger citizen engagement, compliance, and confidence in public institutions.

The study also highlighted that service performance, including efficiency, accuracy, and

reliability, plays a crucial role in shaping client satisfaction. The respondents reported high levels of satisfaction with the system's efficiency and processing time, which aligns with the literature suggesting that efficiency is one of the most important factors influencing user satisfaction in digital services (Jeilani et al., 2025; Cabaobao, Jr. et al., 2024; Wagan et al., 2025). As claimed by Pabatang-Hussien (2023) improved satisfaction with e-governance services contributes to more inclusive digital participation and supports the long-term vision of a fully digital, citizen-centered government. However, issues with system reliability, particularly during peak usage, were noted, which could affect users' perceptions of service quality. This is an important consideration for community service delivery, as reliability is essential for maintaining trust in public sector services. Strengthening the backend infrastructure, performing stress tests, and ensuring real-time monitoring can help improve service reliability, ensuring that the digital platforms consistently meet user expectations, even during high-demand periods (Faseeha et al., 2025). It must be noted that service performance is not just operational efficiency – it is the strategic foundation for trust, inclusivity, and sustained digital engagement in citizen-centered governance. Furthermore, the sustainability of this community service model depends on the agency's ability to institutionalize technical maintenance and user support as permanent service activities rather than one-time digital projects.

The study also demonstrated strong positive correlations between adoption and service performance, confirming that improving one factor can lead to improvements in others. As adoption rates increase, satisfaction also tends to rise, which in turn positively affects perceptions of service performance. This finding has important implications for community service, as it suggests that fostering higher adoption rates through better user experiences can enhance the overall effectiveness of digital services. When users are satisfied with the system, they are more likely to perceive it as performing well, which can increase their trust in public services and foster greater engagement. Ensuring that the digital services meet user needs and expectations, as evidenced in the relationships between adoption, satisfaction, and performance, will ultimately strengthen the quality of public service delivery (Venkatesh et al., 2016). This finding further implies that the regulatory government agency must treat service performance as both an operational priority and a strategic lever for building trust, driving adoption, and achieving inclusive digital governance. According to Pabatang-Hussien (2023), citizens who experience reliable digital transactions are more likely to trust government institutions and adopt e-governance platforms.

Based on the findings, the study proposes several strategies to enhance the e-Collection and e-Issuance services, including simplifying the user interface, improving device compatibility, and enhancing system reliability through robust backend infrastructure and real-time monitoring. These improvements will ensure that the services are more inclusive and accessible, particularly for users with lower digital literacy or limited internet access. As the study suggests, continuous system evaluation and updates informed by user feedback will help address technical issues promptly and improve the user experience. These strategies are important for scaling the digital services effectively and ensuring that they continue to meet the evolving needs of users. Moreover, by implementing these improvements, the regulatory government agency can enhance service delivery, reduce barriers to access, and ultimately provide a more efficient and equitable service to the community. Ultimately, to address the scalability and replication of this model, the "UTAUT-Service Feedback Loop" implemented here provides a concrete framework that can be adapted by other Philippine regulatory sectors. By treating digital platforms as dynamic community service interventions, other agencies can replicate the methodology of assessing stakeholder readiness, implementing user-centered design, and scaling support through peer-to-peer digital literacy workshops among regulated groups. Satisfaction plays a pivotal mediating role, suggesting that

digital reforms must not only introduce new systems but also ensure positive user experiences to drive perceived improvements in service delivery. Consequently, by aligning platform development with national digital strategies and investing in staff training, regulatory agencies can sustain long-term system performance. These integrated insights provide a robust roadmap for policymakers to refine digital strategies, ensuring they remain efficient, transparent, and most importantly aligned with the evolving needs of the citizens they serve.

REFERENCES

Alalwan, A. A., Dwivedi, Y. K., & Rana, N. P. (2017). Factors influencing adoption of mobile banking by Jordanian bank customers: Extending UTAUT2 with trust. *International Journal of Information Management*, *37*(3), 99–110. https://doi.org/10.1016/j.ijinfomgt.2017.01.002

Andaya, E., Orlina, R., & Ilustre, R. (2025). Digital governance in the Philippines: A scoping review of current challenges and opportunities. *Global Sustainability Research*, *4*(1), 89–111. https://doi.org/10.56556/gssr.v4i1.1204

Asadon, M. F. A., Brucal, A. P., Claveria, P. S. L., Lacson, J. T. N., Malang, B. P., & Malang, J. D. (2024). Enhancing public service delivery and citizen participation: The synergistic effects of e-governance and social media. *International Journal of Multidisciplinary: Applied Business and Education Research*, *5*(11), 4740–4758. https://doi.org/10.11594/ijmaber.05.11.35

Asif, M., & Sarwar, F. (2025). The essential position of trust in the technology acceptance model: A comprehensive review and bibliometric analysis. *Journal of Modelling in Management*, *20*(5), 1635–1655. https://doi.org/10.1108/JM2-12-2023-0282

Barela, G. L. S. (2023). Client satisfaction survey on the services of the Philippine Information Agency. *International Journal of Creative Research Thoughts (IJCRT)*, *11*(12), i877–i934. https://ijcrt.org/papers/IJCRT21X0148.pdf

Bélanger, F., & Carter, L. (2008). Trust and risk in e-government adoption. *The Journal of Strategic Information Systems*, *17*(2), 165–176. https://doi.org/10.1016/j.jsis.2007.12.002

Briones, J., Danganan, R. P., Macalalad, L. M., Crodua, M. T., Bautista, A. G. M., & Verano, J. P. E. (2025). Stakeholder satisfaction level in the delivery of services of a fish port complex in the Philippines. *Logistic and Operation Management Research (LOMR)*, *4*(2), 1–18. https://doi.org/10.31098/lomr.v4i2.3055

Cabaobao, Jr., A. A., Malubag, S. L., Briones, J. P., & Abante, M. V. (2024). Evaluating workflow automation efficiency in a government agency in the Philippines. *International Journal of Entrepreneurship and Sustainability Studies*, *4*(2), 30–46. https://doi.org/10.31098/ijeass.v4i2.2749

Cockerham, D. (2024). Participatory action research: Building understanding, dialogue, and positive actions in a changing digital environment. *Educational Technology Research and Development*, *72*, 2763–2794. https://doi.org/10.1007/s11423-023-10294-1

De Ramos, J. R., & Briones, J. P. (2024). Level of functioning of service quality of a private higher education institution in the Philippines: Personnel and student perspectives. *Education Policy and Development*, *2*(2), 28–45. https://doi.org/10.31098/epd.v2i2.2365

Dewi, E. A. S., Sanofi, Z., Pratamawaty, B. B., & Arifin, H. S. (2023). Implementation of the Unified Theory of Acceptance and Use of Technology (UTAUT) model during the pandemic era: A systematic literature review. *Jurnal Komunikasi: Malaysian Journal of Communication*, *39*(3), 313–350. https://doi.org/10.17576/JKMJC-2023-3903-17

Djatmiko, G. H., Sinaga, O., & Pawirosumarto, S. (2025). Digital transformation and social inclusion in public services: A qualitative analysis of e-government adoption for marginalized communities in sustainable governance. *Sustainability*, *17*(7), 2908. https://doi.org/10.3390/su17072908

El-Hashash, E. F., & Shiekh, R. H. A. (2022). A comparison of the Pearson, Spearman Rank and Kendall Tau correlation coefficients using quantitative variables. *Asian Journal of Probability and Statistics*, *20*(3), 36–48. https://doi.org/10.9734/ajpas/2022/v20i3425

Espiritu, P., Manzon, R., & Florencondia, N. (2023). Digital transformation adoption in the local government unit (LGU) of the Science City of Muñoz, Nueva Ecija: The challenges and best practices. *The QUEST: Journal of Multidisciplinary Research and Development*, *2*(3). https://doi.org/10.60008/thequest.v2i3.137

Faller, C., Gamil, K. M. M., Casungcad, J. B., Edar, M. R., Ilao, F. A. N., Briones, J. P., & Verano, J. P. E. (2025). Management system adoption: Its effect on employee satisfaction and productivity in a local drugstore in the Philippines. *People and Behavior Analysis*, *3*(2), 33–50. https://doi.org/10.31098/pba.v3i2.3317

Faseeha, U., Syed, H. J., Samad, F., Zehra, S., & Ahmed, H. (2025). Observability in microservices: An in-depth exploration of frameworks, challenges, and deployment paradigms. *IEEE Access*, *13*, 72011–72039. https://doi.org/10.1109/ACCESS.2025.3562125

Fathya, V. N., Viverita, V., Hati, S. R. H., & Astuti, R. D. (2023). Customer satisfaction with electronic public services: An 18 years of systematic literature review. *International Review of Public and Nonprofit Marketing*, *20*, 759–812. https://doi.org/10.1007/s12208-022-00350-6

Golzar, J., Noor, S., & Tajik, O. (2022). Convenience sampling. *International Journal of Education & Language Studies*, *1*(2), 72–77. https://doi.org/10.22034/ijels.2022.162981

Gupta, P., Hooda, A., Jeyaraj, A., Seddon, J. J. M., & Dwivedi, Y. K. (2024). Trust, risk, privacy and security in e-government use: Insights from a MASEM analysis. *Information Systems Frontiers*, *27*, 1089–1105. https://doi.org/10.1007/s10796-024-10497-8

Hussey, I., Alsalti, T., Bosco, F., Elson, M., & Arslan, R. (2025). An aberrant abundance of Cronbach's Alpha values at .70. *Advances in Methods and Practices in Psychological Science*, *8*(1), 1–18. https://doi.org/10.1177/25152459241287123

Indama, A. C. (2021). The effectiveness of e-government initiatives in improving public service delivery: A review of the literature. *American Journal of Humanities and Social Sciences Research (AJHSSR)*, *7*(4), 176–182. https://www.ajhssr.com/wp-content/uploads/2023/04/Q22704176182.pdf

Jeilani, A., Ahmed, S. A., & Arabow, A. (2025). Understanding e-government adoption among government employees: The mediating role of perceived attitude across key predictors. *Discover Sustainability*, *6*, 724. https://doi.org/10.1007/s43621-025-01592-0

Jou, Y. T., Mariñas, K., Saflor, C., Baleña, A., Gutierrez, C., Dela Fuente, G., ... & Young, M. N. (2024). Factors influencing accessibility of the EGovPH mobile application. *Sustainability*, *16*(3), 992. https://doi.org/10.3390/su16030992

Latupeirissa, J. J. P., Dewi, N. L. Y., Prayana, I. K. R., Srikandi, M. B., Ramadiansyah, S. A., & Pramana, I. B. G. A. Y. (2024). Transforming public service delivery: A comprehensive review of digitization initiatives. *Sustainability*, *16*(7), 2818. https://doi.org/10.3390/su16072818

Li, L., Wang, J., Wang, X., Peng, P., Shen, J., Zhu, H., & Zhang, Z. (2025). Big data and data science in global governance: Anticipating future needs and applications in the UN and beyond. *Frontiers in Political Science*, *7*, 1583772. https://doi.org/10.3389/fpos.2025.1583772

Libunao, M. D., & Gaddi, F. R. (2025). Quantitative assessment of service quality and client satisfaction in the Philippine public sector: A case study of a national regulatory agency. *Journal of Interdisciplinary Perspectives*, *3*(9), 470–480. https://doi.org/10.69569/jip.2025.583

Macatangay, O. I., Briones, J., Baldovino, F. P., & Manalo, L. V. (2025). Bookstore operations practices of a private higher education institution in the Philippines: Basis for the proposed guidelines

for effective bookstore management. *Education Policy and Development*, *3*(1), 29–50. https://doi.org/10.31098/epd.v3i1.2930

Mensah, I. K., Zeng, G., & Luo, C. (2020). E-government services adoption: An extension of the unified model of electronic government adoption. *SAGE Open*, *10*(2). https://doi.org/10.1177/2158244020933593

Munir, S., Sadiq, S., Abbas, N., & Rasul, F. (2024). E-governance initiatives and citizen participation at global perspective: Systematic literature review. *Sustainable Business and Society in Emerging Economies*, *6*(3), 317–336. https://doi.org/10.26710/sbsee.v6i3.3089

Oducado, R. M. (2020). *Survey instrument validation rating scale*. SSRN. https://doi.org/10.2139/ssrn.3789575

Olesen, K., Wood, L. C., & Chong, J. L. L. (2021). Citizen adoption in e-government systems: A meta-analysis. *Journal of Global Information Management*, *29*(6), 1–28. https://doi.org/10.4018/JGIM.294124

Or, C. (2023). The role of attitude in the Unified Theory of Acceptance and Use of Technology: A meta-analytic structural equation modelling study. *International Journal of Technology in Education and Science*, *7*(4), 552–570. https://doi.org/10.46328/ijtes.504

Pabatang-Hussien, E. (2023). Service delivery through e-governance: The case of highly urbanized cities in northern Mindanao, Philippines. *E3S Web of Conferences*, *440*, 01012. https://doi.org/10.1051/e3sconf/202344001012

Pacaño Jr., E. A., Tayaoan, H. B., Molina, K., da Costa, E. L., Neverio, N. A., Malang, B. P., & Malang, J. D. (2024). Excellence in e-governance: Replicable innovations from Quezon City. *International Journal of Multidisciplinary: Applied Business and Education Research*, *5*(11), 4457–4486. https://doi.org/10.11594/ijmaber.05.11.16

Petraki, D., Gazoulis, I., Kokkini, M., Danaskos, M., Kanatas, P., Rekkas, A., & Travlos, I. (2025). Digital tools and decision support systems in agroecology: Benefits, challenges, and practical implementations. *Agronomy*, *15*(1), 236. https://doi.org/10.3390/agronomy15010236

Pham, L., Limbu, Y. B., Le, M. T. T., & Nguyen, N. L. (2023). E-government service quality, perceived value, satisfaction, and loyalty. *Journal of Public Policy*, *43*(4), 812–833. https://doi.org/10.1017/S0143814X23000296

Saleh, R. A., Nor, R. N. H., Islam, M. T., Jusoh, Y. Y., Abdullah, S., & Dahlan, A. A. (2024). Citizen adoption of e-government services: A systematic literature review with weight and meta-analysis. *International Journal on Advanced Science, Engineering and Information Technology*, *14*(4), 1470–1479. https://doi.org/10.18517/ijaseit.14.4.19868

Singh, H., Grover, P., Kar, A. K., & Ilavarasan, P. V. (2020). Review of performance assessment frameworks of e-government projects. *Transforming Government: People, Process and Policy*, *14*(1), 31–64. https://doi.org/10.1108/TG-02-2019-0011

Slack, N., Singh, G., & Sharma, S. (2020). The effect of supermarket service quality dimensions and customer satisfaction on customer loyalty and disloyalty dimensions. *International Journal of Quality and Service Sciences*, *12*(3), 297–318. https://doi.org/10.1108/IJQSS-10-2019-0114

Tangi, L., Janssen, M., Benedetti, M., & Noci, G. (2021). Digital government transformation: A structural equation modelling analysis of driving and impeding factors. *International Journal of Information Management*, *60*, 102356. https://doi.org/10.1016/j.ijinfomgt.2021.102356

Taufiqurokhman, T., Satispia, E., Andriansyaha, A., Muroda, M., & Sulastria, E. (2024). The impact of e-service quality on public trust and public satisfaction in e-government public services. *International Journal of Data and Network Science*, *8*(2), 765–772. https://doi.org/10.5267/j.ijdns.2024.1.002

Tremblay-Cantin, C. A., Mellouli, S., Cheikh-Ammar, M., & Khechine, H. (2023). E-government service adoption by citizens: A literature review and a high-level model of influential factors. *Digital Government: Research and Practice*, *4*(1), 1–2. https://doi.org/10.1145/3580369

Twizeyimana, J. D., & Andersson, A. (2019). The public value of e-government: A literature review. *Government Information Quarterly*, *36*(2), 167–178. https://doi.org/10.1016/j.giq.2019.01.001

Valle, J. S., Bugayao, Z. R., Gutierrez, C., Malang, B. P., & Malang, J. D. S. (2024). Impact of e-government technologies on citizen engagement and service delivery: A case study of local government units in Caloocan. *International Journal of Multidisciplinary: Applied Business and Education Research*, *5*(11), 4577–4591. https://doi.org/10.11594/ijmaber.05.11.24

Venkatesh, V., Thong, J. Y. L., & Xu, X. (2016). Unified Theory of Acceptance and Use of Technology: A synthesis and the road ahead. *Journal of the Association for Information Systems*, *17*(5), 328–376. https://doi.org/10.17705/1jais.00428

Villaseñor, R. A. M. (2024). The public service digitalization in the Philippines towards a national program to capacitate digital frontliners. *Journal of Public Administration and Governance*, *14*(2), 164–185. https://doi.org/10.5296/jpag.v14i2.22106

Wagan, M. A. A., Briones, J., Baldovino, F. P., & Refozar, R. F. G. (2025). Digital transformation in the records management of a private higher education institution in the Philippines. *International Journal of Marketing and Digital Creative*, *3*(1), 18–33. https://doi.org/10.31098/ijmadic.v3i1.2878

Wu, X., Chong, A. Y. L., Peng, Y., & Bao, H. (2024). Predicting the acceptance of e-government: A systematic review. *Internet Research*, *36*(1), 100–131. https://doi.org/10.1108/INTR-12-2022-0970

Xue, L., Rashid, A. M., & Ouyang, S. (2024). The Unified Theory of Acceptance and Use of Technology (UTAUT) in higher education: A systematic review. *SAGE Open*, *14*(1). https://doi.org/10.1177/21582440241229570

Yu, J., Wang, J., & Moon, T. (2022). Influence of digital transformation capability on operational performance. *Sustainability*, *14*(13), 7909. https://doi.org/10.3390/su14137909