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Evaluating the Effectiveness of SkillLink to Barangay Secretaries of San Nicolas, Ilocos Norte

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ABSTRACT

The accelerating shift to digital governance poses ongoing challenges for rural communities in the Philippines, especially at the barangay level, where administrative tasks now rely heavily on digital tools. Barangay Secretaries key agents of local governance often face limitations in digital skills and training opportunities. This study investigates how SkillLink, a purpose-built digital learning platform for barangay administration, can strengthen their digital competencies and improve work efficiency. Using a descriptive mixed-methods approach, the research engaged all 24 Barangay Secretaries of San Nicolas, Ilocos Norte, through pre- and post-assessments, surveys, expert evaluations, and thematic analysis. Prior to using SkillLink, most participants possessed only basic to intermediate proficiency, mainly in Microsoft Excel and Google Workspace applications crucial for administrative reporting and communication. After the intervention, their overall digital competence increased markedly, from Intermediate ($M = 2.80$) to Proficient ($M = 4.47$), with statistical tests confirming highly significant improvements ($p < .01$) across all skill domains. Beyond measurable outcomes, qualitative feedback revealed enhanced confidence, empowerment, and efficiency among the participants. Many described their tasks as now being “easier,” “less intimidating,” and “more organized.” They commended SkillLink’s intuitive interface, accessible content, and practical relevance. Expert evaluators further validated its strong instructional design and usability. While minor connectivity and navigation issues occurred, most users reported a positive and productive experience. The findings demonstrate that SkillLink is more than a training tool it is an effective digital empowerment initiative that enhances barangay governance capacity and supports the Philippines’ broader e-governance objectives.

INTRODUCTION

In the context of public administration, the use of Information and Communication Technology (ICT) is an important tool in facilitating transparency, improving service delivery, and increasing public participation. In the Philippines, barangays are the basic units of government in the implementation of government projects (Republic Act No. 7160, 1991) Appropriate use of remote administrative systems is vital in managing effective local governance. Digital governance is still a challenge in the context of barangays, particularly in rural and remote areas. There seems to be a lack of basic rural digital competency which is a barrier to the use of ICT in governance (Anayan, 2021; Bona & Camara, 2021; Santiago *et al.*, 2021). These gaps are attributed to the lack of policies such as provision of computers, internet facilities, and proper training (Gloria, 2024; Valera & Briones, 2024).

Particularly, management-level tasks like maintaining electronic records, preparing reports, and other documents need the use of appropriate and relevant digital systems and software applications. However, many studies suggest the computer and software skills of the respondents fell under the developing and beginner categories and came to the same conclusions (Salazar,

2022; Nodado *et al.*, 2024). Gloria (2024) ascertains that the application of the ICT-Skills Enhancement Short Course focused the level of the barangay functionaries’ skills from developing to proficient and emphasizes the rapid shift in the level of skill that can be attained from targeted digital training. Likewise, Briones and Valera (2024) noted advancements in the level of computer literacy that could be attributed to the training designed and targeted to the barangay secretaries and treasurers in Davao de Oro. All of the above underscore the need in ICT as the solution to the profound deficiency in the twenty-first-century skill gap of local administrators. Digital transformation in local governance continues to face significant challenges at the barangay level. Espiritu *et al.* (2023) situate barangay-level digital initiatives within broader LGU digital transformation efforts, emphasizing that local administrative capacity is critical to the success of such programs. Villaseñor (2024) highlights the importance of capacitating digital frontliners, noting that frontline personnel must possess sufficient ICT skills to support sustainable national digitalization initiatives. Studies at the barangay level further reveal persistent gaps in ICT access, technical skills, and technology adoption. Santiago *et al.* (2021) document these limitations among barangay officials, demonstrating how they hinder

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effective e-governance implementation. At the national level, Andaya *et al.* (2025) identify broader challenges, including digital literacy gaps and structural barriers that affect digital governance outcomes across communities. Supporting these findings, Agapen Jr. (2024) confirms the need to assess and develop computer literacy in barangay contexts, linking ICT competence directly to improved administrative efficiency and transparency. Collectively, these studies underscore the relevance of interventions such as SkillLink to enhance digital competencies of barangay officials and support effective, technology-enabled local governance.

In spite of these results, some scholars (Estevez & Janowski, 2022; Singh & Patel, 2024; Zhang *et al.*, 2023) have underscored the persistent challenges for sustaining digital competence over time. A number of these existing programs provide workshops and short training sessions, yet there is no guarantee that the training will be applied and integrated into the daily governance functions of the organization over time. Furthermore, digital readiness and acceptance of technology by barangay officials is often inconsistent caused by age, educational level, and access to reliable technology (Bilan *et al.*, 2023; Lopes *et al.*, 2023). Meeting these requirements is not just another training event, but rather, sustaining learning and digital empowerment through innovative, context-appropriate, and easily accessible responsive learning systems.

In an attempt to bridge the gap, it was decided to develop the SkillLink Digital Learning Platform as an intermediate tool to help barangay secretaries improve their skills on the productivity tools. SkillLink offers tutorials, activities and learning materials about productivity tools. Also, it contains additional resources on basic computer operations, document preparation, data management, and the internet, and other related skills commensurate with the local governance administrative functions.

This study, “Evaluating the Effectiveness of SkillLink in Enhancing Barangay Secretaries’ Skills in Using Productivity Tools in San Nicolas, Ilocos Norte,” targets to find out whether or not SkillLink could help in improving productivity tool utilization and overall job performance of barangay secretaries. More specifically, it attempted to: (1) evaluate the digital competencies of barangay secretaries prior to SkillLink utilization; (2) assess their levels of competencies after undergoing the training; (3) assess the impact of the training program in terms of pre and post training statistical test results; (4) determine the overall satisfaction of the users of SkillLink with regard to content, ease of access, and relevance; (5) assess barangay secretaries’ attitude towards the platform in terms of the usefulness and impact of learning; and (6) document the constraints faced in the process of using the system.

This particular study employed as its theoretical framework the Technology Acceptance Model TAM, as well as the Digital Competence Framework, which advocates that the perceived value, availability, and applicability of digital resources influence adoption and acquisition of learning

beta outcomes (Nguyen *et al.*, 2024). This research employed a combination of quantitative pre- and post-assessments and qualitative feedback as a mixed-method approach to determine learning gains and to document the experiences of the participants.

The research addresses the discourse on e-governance and the digital transformation of rural areas. As cited in several studies, digitization enhances the delivery of services at the barangay level and improves the accuracy of data and administration as a whole (Dela Cerna, 2023; Gasmido *et al.*, 2025). The positive outcomes of such initiatives, however, depend on local staff absorption, deployment, and sustained use of the systems. This research with SkillLink works to address these gaps by focusing on the training of barangay secretaries skill in using productivity tools for the competent and proactive administration at the local level.

The project’s outcome is likely to confer both theoretical and practical advancements. On the practical side, it offers evidence-based advice to policymakers, especially planners, and the ICT Sector, including the Department of ICT, on the formulation and implementation strategies of an ICT training program on sustainability aimed at grassroots leaders. On the other hand, it contributes to the body of research examining the role of ICT training in the local governance and development of the Philippines. This study is about the achievement of a digitized barangay system, which improves governance in terms of the effectiveness, accountability, and transparency. system which improves governance in terms of the effectiveness, accountability, and transparency.

LITERATURE REVIEW

The necessity for digital competence in public administration is fundamentally driven by global e-governance initiatives, which aim to improve service efficiency, transparency, and citizen engagement, particularly at the local level where services are delivered (Ni Luh Yulyana Dewi *et al.*, 2024; Levesque *et al.*, 2024). This transformation, however, requires more than just technology; it hinges on robust institutional capacity, process reengineering, and, critically, the competence of frontline staff (Alcaide Muñoz & Rodríguez Bolívar, 2018; Villaseñor, 2024). Digital readiness is a strategic investment, as the digital competence of public servants directly correlates with improved service outcomes and performance (Matvejiuci & Polovyi, 2025; Bilan *et al.*, 2023).

Research focused on Philippine barangay administration consistently documents a digital skills gap among officials, particularly in essential job-relevant competencies like office productivity tools (Santiago *et al.*, 2021; Salazar, 2022). Constraints such as uneven skill levels, limited access, and contextual barriers like slow internet connectivity impede the consistent and effective use of digital tools (Santiago *et al.*, 2021; Gapasin *et al.*, 2023). This low digital literacy necessitates structured interventions, as confirmed by studies showing that targeted training programs and workshops—especially those focusing on

office productivity software—can successfully transition officials from developing to proficient levels, leading to demonstrable improvements in service delivery and administrative efficiency (Valera & Briones, 2024; Tablang, 2025; Ferranco *et al.*, 2025).

The literature on technology adoption emphasizes that the success of any digital training platform is governed by design principles related to usability, transfer, and acceptance. Models like the Technology Acceptance Model (TAM) stress that adoption is sustained when the platform is perceived as useful and easy to use (Nguyen *et al.*, 2024). For resource-constrained and rural environments, this translates into a critical need for mobile-forward, low-bandwidth designs, and intuitive interfaces that reduce cognitive load and enhance accessibility for users with developing skills (Lopes *et al.*, 2023; Wahyuni *et al.*, 2024). Competency frameworks like DigComp further imply that training must be contextually relevant and structured to account for the heterogeneous baseline skills of public servants (Pham & Vu, 2024).

In summary, while the imperative for digital government and the effectiveness of targeted ICT training are established, a critical research gap remains in evaluating how specific, job-aligned digital training platforms—focused on core office productivity competencies and adapted for rural conditions—perform in improving practical administrative outcomes and sustained digital competence within specific local governance contexts, such as a barangay in Ilocos Norte. The literature mandates that any effective intervention must prioritize job relevance, robust measurement of outcomes, and resilient instructional design to close the identified digital skills gap (Alhassan & Adam, 2022; Singh & Patel, 2024).

MATERIALS AND METHODS

Research Design

This study used a descriptive mixed-method research design to examine both the quantitative data and qualitative experiences of Barangay Secretaries in San Nicolas, Ilocos Norte regarding their use of the SkillLink platform. It focused on their mastery over word processing and editing, basic and advanced spreadsheets, and presentation software in the context of reporting, recording, and organizational communication at the community and higher office levels.

Locale of the Study

The study was conducted in San Nicolas Ilocos Norte, which is a significantly classified municipality located in the northwestern part of the island of Luzon, in the Philippines. San Nicolas includes 24 subdivided communities, each governed by a self-governing leader at the community level. These communities exhibit a range of geographical features from semi-urban to rural which makes the municipality a good candidate for case studies to assess the challenges of Information and Computer technology use in local governance.

Population and Sampling

This research involved 24 Barangay Secretaries from San Nicolas, Ilocos Norte. The participants were selected through convenience sampling, as they were readily accessible and available during the conduct of the study. This approach allowed the researcher to gather data efficiently from those who could be reached without difficulty, while still obtaining insights into the views and skills of the Barangay Secretaries in the municipality.

Research Instrument

The study used a range of the research tools to thoroughly assess SkillLink's application and impact on Barangay Secretaries. Initially measuring the baseline skills in using productivity tools of the participants was done through a validated researcher-made pre-test. Their baseline skill in using productivity tools were evaluated through descriptive statistics: mean and standard deviation and frequency. When the program was conducted, a post-test was administered utilizing the same instrument and a paired sample t-test was used to determine the improvement and potential significance of the difference of the post-test and pre-test scores.

To maintain SkillLink's high standard, an analyzed Validation Checklist was evaluated by specialists in IT, education, and the design of instruction. Then, the acceptability of the platform was assessed using a 5-point Likert scale on ease of use, appropriateness of the information, and relevance, and the results were interpreted through descriptive statistics. In addition, a Perception Survey Questionnaire which comprises statistics and open-ended questions was analyzed for the participants' perception on SkillLink's impact on learning, the design, and its integration of the proposed approach to instruction, and the results will be evaluated using descriptive statistics and thematic analysis.

In the end, issues faced by the Barangay Secretaries while using SkillLink were gathered using open ended questions, and the responses were analyzed using thematic content. In this case, the use of both qualitative and quantitative methods guaranteed a comprehensive evaluation of SkillLink on its effectiveness, validity, acceptance, and its role in the improvement of Barangay Secretaries' skills in using productivity tools.

Data Gathering Procedure

The study's data collection phase first involved obtaining formal consent from the Municipal Mayor of San Nicolas and the appropriate Punong Barangays in order to ensure appropriate collaboration and permissions for the execution of the study. After the approval, the secretaries of the Barangays were contacted for the scheduling of the meeting wherein the objectives and logistics of the study were summarized and discussed. After the meeting, the participants were provided with pre-test and post-test, survey questionnaires which were disseminated accordingly. The participants were provided with a specific time frame to complete and submit the forms, and

in due time the data were collected based on the timelines coordinated. Once all of the responses were gathered, the succeeding phase was data processing which began at that time. The quantitative data were organized and assessed through various statistical tools and measures, while the qualitative data were organized into separate codes in order to recognize the most pertinent themes and insights that are relevant to the overall purpose of the study.

Statistical Treatment of Data

Weighted mean and standard deviation were used to measure the levels of digital and technical competency across the different indicators. The computed means were interpreted using the following descriptive scale: 4.50–5.00 (Advanced), 3.50–4.49 (Proficient), 2.50–3.49 (Intermediate), 1.50–2.49 (Basic), and 1.00–1.49 (Novice). To determine the effectiveness of SkillLink in improving the secretaries’ skills in using productivity tools, a paired-sample t-test was employed. For the level of acceptability, weighted mean was likewise utilized and interpreted based on the scale: 4.50–5.00 (Highly Acceptable), 3.50–4.49 (Acceptable), 2.50–3.49 (Neutral), 1.50–2.49 (Unacceptable), and 1.00–1.49 (Very Unacceptable). In addition, participants’ feedback was also interpreted using a sentiment scale where 4.50–5.00 indicated Very Positive, 3.50–4.49 Positive, 2.50–3.49 Neutral, 1.50–2.49 Negative, and 1.00–1.49 Very Negative. For all significance tests, the level of significance was set at the 0.5 probability level. Descriptive statistics and t-test computations were processed using Microsoft Excel and IBM SPSS Statistics. Qualitative responses were analyzed through thematic analysis, which organized recurring patterns into

themes such as connectivity concerns, training needs, and resource gaps. Overall, this combined approach enabled both a numerical evaluation of outcomes and a deeper interpretive understanding of the research problem.

Ethical Considerations

Ethical compliance during this research for the study is necessary to guarantee that the rights and welfare of the participants are respected. All the Barangay Secretaries received the objectives of the study and the associated procedures, as well as the voluntary nature of their participation. Thus, written consent was acquired prior to data collection. The participants were guaranteed anonymity and confidentiality. The names of participants, as well as the names of the barangays, were not included in the final report and all data were provided in aggregate form. The participants were not required to justify their withdrawal from the study at any point. All data collected from them were used for other academic purposes and this warranted their privacy. They were stored in a manner which other data were not associated. Participants in the study were treated with dignity.

RESULTS AND DISCUSSION

The findings presented herein contribute significantly to both theory and practice by examining whether targeted digital learning platforms can sustain competence development in local governance and by providing evidence-based recommendations to policymakers on sustainable ICT training initiatives for grassroots administrators.

Before participating in the training, the barangay

Table 1: Level of Skills in Using Productivity Tools of Barangay Secretaries Prior to SkillLink Utilization

Skills in Using Productivity Tools		Mean	DI
Microsoft Word			
1.	Adjust alignment, spacing, and indents	4.08	P
2.	Use styles (Heading levels)	3.54	P
3.	Modify page layout (margins, orientation)	3.46	I
4.	Insert images and adjust wrapping	3.69	P
5.	Create and format tables	3.69	P
6.	Use Track Changes and comments	3.00	I
7.	Protect a document with password	2.85	I
8.	Perform mail merge	3.08	I
9.	Convert document to PDF	3.46	I
10.	Restore previous versions (version history)	2.85	I
Composite Mean		3.37	I
Microsoft Excel			
1.	Create multi-sheet databases with proper data validation	2.15	B
2.	Use advanced formulas (If, VLookup/XLookup, Index-Match)	2.23	B
3.	Apply conditional formatting	2.38	B
4.	Design automated trackers (attendance, records)	2.62	I
5.	Clean and structure raw data (Flash Fill, Text to Columns)	2.62	I
6.	Protect sheets and workbooks	2.38	B

7.	Create dashboards with charts and indicators	2.38	B
8.	Link Excel data to Word or PowerPoint	2.38	B
9.	Create attendance/monitoring templates	2.85	I
10.	Prepare barangay budget spreadsheets	2.85	I
Composite Mean		2.48	B
Microsoft PowerPoint			
1.	Create branded templates with Master Slides	2.77	I
2.	Customize Slide Master layouts	2.77	I
3.	Apply advanced animations (timing, triggers)	2.69	I
4.	Use slide transitions for professional presentations	2.85	I
5.	Create hyperlink-based navigation	2.85	I
6.	Use charts imported from Excel	2.62	I
7.	Create org charts and flow diagrams	2.77	I
8.	Rehearse and record slideshow timings	2.62	I
9.	Design certificates or event slides	2.85	I
10.	Use Presenter View effectively	2.62	I
Composite Mean		2.74	I
Google Workspace			
1.	Use Gmail professionally (labels, filters, signatures)	3.00	I
2.	Schedule emails and manage inbox	2.92	I
3.	Create Calendar events and invite participants	2.62	I
4.	Manage shared calendars	2.54	I
5.	Manage meeting features (host controls, breakout rooms)	2.46	B
6.	Collaborate on Google Docs (comments, suggestions, version history)	2.62	I
7.	Prepare formatted reports and minutes using Docs	2.62	I
8.	Create and use Google Sheets for records	2.62	I
9.	Use formulas, filters, and data validation in Sheets	2.31	B
10.	Create charts and link Sheets data to Slides or Docs	2.77	I
11.	Design collaborative presentations in Google Slides	2.54	I
12.	Collaborating on Slides in real time	2.54	I
13.	Create Google Forms for surveys, registrations, feedback	2.54	I
14.	Managing sharing permissions	2.31	B
15.	Recover deleted files or previous versions	2.69	I
Composite Mean		2.61	I
Overall Mean		2.80	I

Note. DI = Descriptive Interpretation. 1.00 – 1.49 = Novice (N); 1.50 – 2.49 = Basic (B); 2.50 – 3.49 = Intermediate (I); 3.50 – 4.49 = Proficient (P); 4.50 – 5.00 = Advanced (A).

Table 2: Level of Skills in Using Productivity Tools of Barangay Secretaries After SkillLink Utilization

Skills in Using Productivity Tools		Mean	DI
Microsoft Word			
1.	Adjust alignment, spacing, and indents	4.69	A
2.	Use styles (Heading levels)	4.69	A
3.	Modify page layout (margins, orientation)	4.69	A
4.	Insert images and adjust wrapping	4.69	A
5.	Create and format tables	4.69	A
6.	Use Track Changes and comments	4.54	A
7.	Protect a document with password	4.62	A

8.	Perform mail merge	4.62	A
9.	Convert document to PDF	4.69	A
10.	Restore previous versions (version history)	4.69	A
Composite Mean		4.66	A
Microsoft Excel			
1.	Create multi-sheet databases with proper data validation	4.31	P
2.	Use advanced formulas (If, VLookup/XLookup, Index-Match)	4.38	P
3.	Apply conditional formatting	4.38	P
4.	Design automated trackers (attendance, records)	4.31	P
5.	Clean and structure raw data (Flash Fill, Text to Columns)	4.38	P
6.	Protect sheets and workbooks	4.46	P
7.	Create dashboards with charts and indicators	4.38	P
8.	Link Excel data to Word or PowerPoint	4.38	P
9.	Create attendance/monitoring templates	4.46	P
10.	Prepare barangay budget spreadsheets	4.46	P
Composite Mean		4.39	P
Microsoft PowerPoint			
1.	Create branded templates with Master Slides	4.38	P
2.	Customize Slide Master layouts	4.31	P
3.	Apply advanced animations (timing, triggers)	4.38	P
4.	Use slide transitions for professional presentations	4.23	P
5.	Create hyperlink-based navigation	4.31	P
6.	Use charts imported from Excel	4.38	P
7.	Create org charts and flow diagrams	4.38	P
8.	Rehearse and record slideshow timings	4.46	P
9.	Design certificates or event slides	4.54	A
10.	Use Presenter View effectively	4.31	P
Composite Mean		4.37	P
Google Workspace			
1.	Use Gmail professionally (labels, filters, signatures)	4.46	P
2.	Schedule emails and manage inbox	4.46	P
3.	Create Calendar events and invite participants	4.38	P
4.	Manage shared calendars	4.38	P
5.	Manage meeting features (host controls, breakout rooms)	4.38	P
6.	Collaborate on Google Docs (comments, suggestions, version history)	4.38	P
7.	Prepare formatted reports and minutes using Docs	4.54	A
8.	Create and use Google Sheets for records	4.46	P
9.	Use formulas, filters, and data validation in Sheets	4.54	A
10.	Create charts and link Sheets data to Slides or Docs	4.54	A
11.	Design collaborative presentations in Google Slides	4.54	A
12.	Collaborating on Slides in real time	4.46	P
13.	Create Google Forms for surveys, registrations, feedback	4.54	A
14.	Managing sharing permissions	4.38	P
15.	Recover deleted files or previous versions	4.31	P
Composite Mean		4.45	P
Overall Mean		4.47	P

Note. DI = Descriptive Interpretation. 1.00 – 1.49 = Novice (N); 1.50 – 2.49 = Basic (B); 2.50 – 3.49 = Intermediate (I); 3.50 – 4.49 = Proficient (P); 4.50 – 5.00 = Advanced (A).

Table 3: Results of the t-test for Paired Samples of Barangay Secretaries

Skills in Using Productivity Tools	Mean	DI	Paired Differences		
			Mean	t-value	P
Microsoft Word					
Pre-Training	3.37	I	1.29	4.50**	.001
Post-Training	4.66	A			
Microsoft Excel					
Pre-Training	2.48	B	1.91	6.32**	.000
Post-Training	4.39	P			
Microsoft PowerPoint					
Pre-Training	2.74	I	1.63	7.90**	.000
Post-Training	4.37	P			
Google Workspace					
Pre-Training	2.61	I	1.84	6.56**	.000
Post-Training	4.45	P			
Overall Digital Competency					
Pre-Training	2.80	I	1.67	12.26**	.000
Post-Training	4.47	P			

Note. DI = Descriptive Interpretation. 1.00 – 1.49 = Novice (N); 1.50 – 2.49 = Basic (B); 2.50 – 3.49 = Intermediate (I); 3.50 – 4.49 = Proficient (P); 4.50 – 5.00 = Advanced (A).

** The difference is significant at the .01 level.

secretaries in San Nicolas demonstrated intermediate levels of competency in Microsoft Word (M = 3.37), PowerPoint (M = 2.74), and Google Workspace (M = 2.61), while their proficiency in Microsoft Excel was at the basic level only (M = 2.48). These findings suggest that although many of them had some familiarity with commonly used office applications, their skills were not yet strong enough to fully support the increasing digital demands of administrative work at the barangay level.

These findings is strongly supported by earlier Philippine studies. Salazar (2022) found that newly appointed barangay secretaries often begin their roles with incomplete or insufficient digital skills. Similarly, Santiago *et al.* (2021) reported persistent gaps in ICT access and skills among barangay functionaries, particularly in tasks involving spreadsheets, multi-sheet recordkeeping, and digital reporting. International research echoes this challenge, with Bilan *et al.* (2023) emphasizing that civil servants’ readiness for e-governance is often hindered by limited digital competence and uneven ICT exposure.

After completing the SkillLink program, the barangay secretaries showed marked improvement in all domains. Competency levels rose to advanced for Microsoft Word (M = 4.66) and proficient for Excel (M = 4.39), PowerPoint (M = 4.37), and Google Workspace (M = 4.45). The increases in mean scores—ranging from 1.29 to 1.91—indicate substantial skill development. The largest improvement was observed in Microsoft Excel, which shifted from basic to proficient, suggesting that the training addressed a previously identified weakness. Because Excel is frequently used for data management, reporting, and recordkeeping, this improvement may

have important implications for barangay operations.

These improvements directly support multiple findings in the literature. Gloria (2024) documented that targeted ICT short courses elevate skill levels from “developing” to “proficient” among barangay functionaries. Similarly, Valera & Briones (2024) demonstrated that structured computer workshops significantly enhance the productivity and digital literacy of barangay secretaries and treasurers.

Internationally, Alhassan & Adam (2022) assert that ICT training has measurable impacts on government employees’ performance, especially when training is job-specific—mirroring SkillLink’s design. Moreover, research by Heri Mulianto *et al.* (2024) confirms that digital competency development strengthens administrative performance when integrated into workflow tasks, which was the approach applied in this study.

The overall digital competency score of the barangay secretaries increased from intermediate (M = 2.80) to proficient (M = 4.47), supported by a highly significant t-value [t(12) = 15.71, p < .01]. This shift reflects not only improvements in specific software applications but also a general strengthening of the participants’ confidence and ability to work efficiently in digital environments. The hands-on and applied nature of SkillLink may have contributed to these gains, as participants were able to practice tasks directly related to their regular responsibilities.

The statistically significant differences across all competencies (p < .01) affirm the effectiveness of the training program. These results align with existing literature highlighting the role of targeted ICT training

in improving job performance and productivity among personnel (Alhassan, I., & Adam, I., 2022). As more administrative processes transition to digital formats, enhancing the digital skills of frontline workers becomes increasingly essential.

Overall, the findings suggest that SkillLink helped bridge existing digital competency gaps among barangay secretaries of San Nicolas. The improvements observed in this study indicate that structured and context-specific training programs can play a meaningful role in strengthening administrative efficiency and supporting more responsive local governance. Continued

investment in digital upskilling initiatives may further empower barangay secretaries as they carry out their roles in an increasingly technology-driven public service environment.

These significant results align with Singh & Patel (2024), who emphasized the importance of evaluating ICT training using pre-post statistical measures to capture genuine learning impact. The improvements also reinforce Kusni Ingsih *et al.* (2024), who found that digital competence improvements directly enhance performance outcomes and service quality in public organizations.

Table 4: Expert Validation Results

Category	Indicator	Mean	DI
Content	Accuracy, relevance, appropriateness	4.33	H
	Alignment with objectives	4.33	H
	Updated and credible content	4.33	H
Design	Structure and accessibility	5.00	VH
	Navigation flow	4.67	VH
	Layout and usability	4.67	VH
Quality	Cross-device functionality	4.33	H
	Visual appeal and consistency	4.67	VH
	User-friendliness	4.67	VH

Note. DI = Descriptive Interpretation. 1.00 – 1.49 = Poor (P); 1.50 – 2.49 = Fair (F); 2.50 – 3.49 = Acceptable (A); 3.50 – 4.49 = Highly Acceptable (H); 4.50 – 5.00 = Very Highly Acceptable (VH).

The three content indicators each obtained a mean score of 4.33, indicating strong agreement among experts that the application presents accurate, relevant, and well-referenced material. This suggests that the application meets expected standards for instructional content quality and alignment with its stated objectives.

Indicators under instructional design received some of the highest scores in the evaluation. The application’s structure and accessibility achieved a perfect mean of 5.00, reflecting unanimous expert agreement that the structure of the system is clear and allows users to easily locate materials. In addition, experts found the navigation and layout of the application highly effective in supporting learning and usability.

The technical quality indicators received mean scores ranging from 4.33 to 4.67, demonstrating that the application performs effectively across devices and presents a visually consistent and user-friendly interface. These results affirm that the technical aspects of the

system meet the expectations of expert reviewers.

This evaluation is strengthened by studies showing that usability and navigational clarity are essential in digital platforms for local governance. Nguyen *et al.* (2024) argue that perceived ease of use and interface clarity strongly influence user acceptance in e-government systems. Estevez & Janowski (2022) likewise highlight that high-quality instructional design contributes to sustained digital competence development in public administration. In conclusion, the expert validation confirmed that the developed application is well-designed, technically sound, and instructionally appropriate for its intended users. With mean scores ranging from 4.33 to 5.00, experts strongly agreed that the application meets acceptable standards in content quality, design structure, usability, and technical performance. The results support the application’s readiness for pilot implementation and further testing with actual end users.

Table 5: Level of Acceptability of SkillLink

Indicators		Mean	DI
Content			
1.	The content provided in SkillLink was relevant to my tasks as a Barangay Secretary.	4.92	H
2.	The information and topics covered in SkillLink were comprehensive and sufficient for my needs.	4.92	H

3.	SkillLink's content helped me improve my understanding of official document preparation.	4.69	H
Composite Mean		4.85	H
Usability			
1.	Using SkillLink has reduced the time it takes me to complete certain administrative tasks.	4.85	H
2.	The features and functionalities of SkillLink were user-friendly.	4.77	H
3.	I found SkillLink to be a convenient tool for accessing relevant information or training.	4.92	H
Composite Mean		4.85	H
Relevance			
1.	SkillLink directly contributed to the efficiency of my daily duties as a Barangay Secretary.	5.00	H
2.	The skills and knowledge gained from SkillLink are directly applicable to my work.	4.92	H
3.	SkillLink is a valuable tool that should be continuously used by Barangay Secretaries.	4.92	H
Composite Mean		4.95	H
Overall Mean		4.88	H

Note. DI = Descriptive Interpretation. 1.00 – 1.49 = Very Unacceptable (V); 1.50 – 2.49 = Unacceptable (U); 2.50 – 3.49 = Neutral (N); 3.50 – 4.49 = Acceptable (A); 4.50 – 5.00 = Highly Acceptable (H).

Table 5 evaluates the Level of Acceptability of SkillLink among Barangay Secretaries across three key dimensions: Content, Usability, and Relevance. The results indicate that the training program was exceptionally well-received, with an Overall Mean of 4.88, interpreted as Highly Acceptable.

The participants rated the content of the program highly, specifically noting its relevance and comprehensiveness. The indicators “content provided... was relevant to my tasks” and “information... covered... were comprehensive and sufficient” both received a mean score of 4.92. This suggests that the curriculum design was successfully aligned with the actual needs of Barangay Secretaries. The slightly lower but still high score for “improved understanding of official document preparation” (4.69) indicates that while the material was effective, the practical application of specific document types remains an area for continued practice.

The usability of the SkillLink platform was also rated as Highly Acceptable. The item “convenient tool for accessing relevant information” received a high mean of 4.92, reinforcing that the platform lowered barriers to access for training materials. Furthermore, participants agreed that the platform “reduced the time it takes... to complete administrative tasks” (4.85), providing evidence that the digital intervention had a tangible positive impact on operational efficiency.

This domain (Relevance) received the highest ratings in the table. Notably, the indicator “SkillLink directly contributed to the efficiency of my daily duties” received a perfect mean score of 5.00. This perfect score is a critical finding, as it implies unanimous agreement among participants that the program had a direct, positive effect

on their daily workflow. Additionally, the high rating for “should be continuously used” (4.92) suggests a strong demand for the sustainability of the program.

This finding reflects long-standing evidence that ICT tools improve administrative efficiency when aligned with job tasks (Gasmido Jr. *et al.*, 2025; Levesque *et al.*, 2024). Tablang (2025) specifically found that office productivity training improved barangay secretaries’ communication and task completion during the pandemic—parallel to the improvements observed in this study.

The consistent “Highly Acceptable” ratings across all indicators demonstrate that SkillLink was not just theoretically sound but practically valuable. The perfect score in efficiency contribution highlights that the program successfully bridged the gap between digital skills training and real-world application in barangay administration.

Table 6 presents the Perceptions of Barangay Secretaries toward SkillLink, focusing on Usefulness, Design, and Impact on Learning. The respondents expressed a Very Positive perception of the program, reflected in an Overall Mean of 4.86.

Participants perceived the program as highly useful for their professional roles. The highest-rated item in this category was “provides practical knowledge I can apply in my daily work” (4.92). This aligns with the findings in Table 4 regarding relevance, as well as broader research emphasizing the critical need for practical, role-specific ICT training for barangay functionaries to ensure effective office operations (Gloria, 2024; Valera & Briones, 2024). The scores indicate that the secretaries viewed the program not as abstract training but as a practical toolkit for skill enhancement, a factor known to directly

Table 6: Perceptions of Barangay Secretaries toward SkillLink

Indicators		Mean	DI
Usefulness			
1.	SkillLink helps me improves my skills in using productivity tools.	4.85	VP
2.	The content in SkillLink is relevant to my tasks as a Barangay Secretary.	4.85	VP
3.	SkillLink provides practical knowledge I can apply in my daily work.	4.92	VP
4.	I can now perform my barangay-related tasks more effectively because of SkillLink.	4.69	VP
Composite Mean		4.83	VP
Design			
1.	The platform is easy to navigate and user-friendly.	4.92	VP
2.	The instructions on SkillLink are clear and easy to follow.	4.85	VP
3.	The layout and appearance of SkillLink are visually appealing.	4.92	VP
Composite Mean		4.90	VP
Impact on Learning			
1.	SkillLink enhanced my confidence in using productivity tools.	4.92	VP
2.	I have learned new skills that improved my work efficiency.	4.69	VP
3.	SkillLink contributes to my overall professional development.	4.92	VP
Composite Mean		4.85	VP
Overall Mean		4.86	VP

Note. DI = Descriptive Interpretation. 1.00 – 1.49 = Very Negative (VN); 1.50 – 2.49 = Negative (N); 2.50 – 3.49 = Neutral (N); 3.50 – 4.49 = Positive (P); 4.50 – 5.00 = Very Positive (VP).

influence service quality and employee performance in public sectors (Kusni Ingsih *et al.*, 2024).

The Design category garnered the highest composite mean in Table 5 (4.90), suggesting that the technical implementation of the SkillLink platform was a major success. Two indicators—“easy to navigate” and “visually appealing”—both received mean scores of 4.92. This high rating for User Experience (UX) is significant because digital literacy training can often be hindered by complex interfaces, which are known barriers to e-government adoption (Nguyen *et al.*, 2024). These results suggest SkillLink overcame that barrier effectively.

The program also had a strong psychological and developmental impact. Participants reported that it “enhanced my confidence in using productivity tools” (4.92) and “contributes to my overall professional development” (4.92). The confidence metric is particularly important for Barangay Secretaries, who frequently face pressure to digitize their workflows despite facing access and skills constraints (Salazar, 2022; Santiago Jr. *et al.*, 2021). The slightly lower score for “learned new skills that improved my work efficiency” (4.69) is still very positive but suggests that while confidence and development were high, some specific skill applications might still be in the consolidation phase, a common finding in proficiency assessments of office productivity tools (Olipas *et al.*, 2023).

The data in Table 6 confirms that the Barangay Secretaries viewed SkillLink as a well-designed, practical, and empowering tool. The exceptionally high marks for Design indicate that the platform was user-friendly,

which likely facilitated the high scores in Learning Impact by reducing friction in the learning process. Collectively, these perceptions validate the effectiveness of SkillLink as a digital intervention tool (Ferranco *et al.*, 2025; Tablang, 2025). Together, Table 5 and Table 6 provide strong evidence that the SkillLink program was a success. Table 5 establishes that the program was accepted as a highly relevant and efficient solution to administrative challenges (with a perfect 5.00 score for efficiency contribution). Table 6 confirms that the users’ internal experience (perception) was very positive, driven by an excellent platform design and a strong sense of professional empowerment. These findings support the conclusion that SkillLink is an effective, user-friendly, and highly relevant intervention for modernizing the administrative capabilities of Barangay Secretaries.

The thematic analysis of participant responses revealed three major themes that describe how barangay secretaries perceive their experience with SkillLink: Improved Efficiency in Barangay Work, User-Friendly and Accessible Design, and Skill Enhancement and Learning Development. These themes highlight SkillLink’s role not only as a digital tool but as a support system that enhances workplace productivity, usability, and professional growth.

Improved Efficiency in Barangay Work

The most prominent theme (38.46%) shows that SkillLink significantly contributes to the efficiency of barangay-related tasks. Participants repeatedly emphasized that the platform helped them organize documents, create reports, accomplish urgent tasks, and manage day-to-

Table 7: Participants’ Perceptions and Experiences while Using SkillLink: A Thematic Analysis

Themes	Codes	f	%	Rank
Improved Efficiency in Barangay Work	Supportive, Organized and make work easier	10	38.46%	1
User-Friendly and Accessible Design	Simple, Presentable, Organized and Accessible	10	38.46%	1
Skill Enhancement and Learning Development	Helps learn new skills and Improves skills and performance	6	23.08%	2

Notes: f = frequency, %=percentage

day responsibilities more smoothly. The presence of statements indicating that SkillLink “makes work easier,” “supports document creation,” and “helps with reporting and spreadsheets” indicates a clear improvement in workflow.

This aligns with findings in digital governance literature, which state that ICT tools increase administrative efficiency when they streamline repetitive processes and reduce manual workload. As seen in the participants’ responses, the platform effectively serves as an aid in managing clerical duties, demonstrating SkillLink’s relevance in grassroots administrative settings.

User-Friendly and Accessible Design

Another dominant theme (38.46%) pertains to the design and layout of the platform. Participants described SkillLink as simple, organized, presentable, impressive, accessible, and user-friendly, noting that its clear layout and informative presentation made it easy to navigate.

Ease of use is a critical factor in technology acceptance, especially for users with developing ICT skills. The positive remarks suggest that SkillLink’s interface successfully reduces cognitive load and supports intuitive

interaction. These observations support the principles of the Technology Acceptance Model (TAM), which emphasize that intuitive design directly influences user satisfaction and adoption. The high frequency of positive perceptions reflects the platform’s effectiveness in meeting users’ expectations for simplicity and clarity.

Skill Enhancement and Learning Development

The third theme (23.08%) highlights SkillLink’s contribution to learning and professional development. Participants mentioned gaining new skills, better understanding of previously challenging tasks, and increased confidence in completing barangay work. They also emphasized that the platform improved their performance and reduced workload difficulties.

These responses reflect the role of digital training tools in fostering ongoing skill development among local government workers. SkillLink not only assists with tasks but also serves as a learning platform that enhances digital literacy, aligns with workplace demands, and supports capacity building. This suggests that the system has a dual purpose: skill training and work support—both essential for modern barangay operations.

Table 8: Participants’ Challenges encountered while Using SkillLink: A Thematic Analysis

Themes	Codes	f	%	Rank
Connectivity and Technical Issues	Internet problems, slow loading, glitches	2	15.38%	2
Difficulties in navigation	Confusing navigation	2	15.38%	2
No Challenges Encountered	None, N/A, Smooth experience	9	69.24%	1

Notes: f = frequency, %=percentage

The analysis of participant responses resulted in three major themes: (1) Connectivity and Technical Issues, (2) Difficulties in Navigation, and (3) No Challenges Encountered. The frequency distribution shows that while most participants reported no problems, a notable proportion still experienced technical and usability-related concerns during SkillLink use.

Connectivity and Technical Issues

Participants reported experiencing internet-related problems that affected the platform’s smooth functioning. These included slow loading times, video lesson buffering, and occasional system glitches. Sample responses include: “Sometimes the internet connection affects smooth access, and a few lessons take time to load, but overall,

it’s manageable.”

“When the internet is slow, the videos buffer and it interrupts my focus, but with a stable connection the platform works really well.”

These findings support the study of Bona and Camara (2021) and Santiago *et al.* (2021) that highlights the poor ICT infrastructure remains a major barrier to digital engagement in barangays, resulting in interrupted learning experiences. Likewise, Bilan *et al.* (2023) found that unstable connectivity can hinder the effectiveness of digital platforms regardless of how well-designed the system is. This supports the participants’ experiences, suggesting that these technical difficulties are less about the platform itself and more about external infrastructure constraints.

Difficulties in Navigation

A portion of the participants noted challenges related to navigating the platform, especially when switching between modules and accessing certain features. An example response states:

“Yes, there were a few parts of SkillLink that I found difficult to understand. The navigation was sometimes confusing—especially when switching between learning modules, progress tracking, and job search features.”

This reflects the usability concerns identified in studies on digital learning platforms. According to Estevez and Janowski (2022), poor navigation structure can increase cognitive load and decrease user efficiency. Lopes *et al.* (2023) also emphasize that even minor navigation issues can discourage users with developing digital skills, such as barangay secretaries who may not be fully confident in ICT use. These findings reinforce the need for continuous interface refinement to ensure a more intuitive learning experience.

No Challenges Encountered

Despite the challenges noted above, many of the participants (69.24%) reported a smooth and problem-free experience while using SkillLink. Their responses reflect satisfaction with the platform’s interface, layout, and ease of use:

“So far, I haven’t faced any major challenges. Everything has been smooth and manageable, thanks to the clear layout and helpful features.”

The presence of this theme aligns with the Technology Acceptance Model (TAM), which emphasizes perceived ease of use as a critical factor in successful technology adoption. Nguyen *et al.* (2024) argue that when a platform is intuitive and straightforward, users are more likely to experience minimal difficulties. Further, Gloria (2024) found that digital training tools that provide step-by-step guidance reduce barriers among local government personnel with limited ICT backgrounds.

Additionally, Valera and Briones (2024) reveal that user-friendly learning systems significantly improve confidence and task performance among barangay secretaries and treasurers, reinforcing the positive experiences reported by the majority in this study.

The results indicate that while SkillLink is generally accessible, user-friendly, and effective for most barangay secretaries, external factors such as internet connectivity and minor navigation concerns still affect the experience of a limited number of users. These findings are consistent with literature on rural ICT adoption, which stresses that usability and infrastructure must work together for optimal digital learning outcomes (Anayan, 2021; Gasmido *et al.*, 2025).

Overall, the frequency of “No Challenges Encountered” demonstrates SkillLink’s general acceptability and functionality, although the presence of small challenges provides useful insights for system improvement.

CONCLUSION

The study found that the SkillLink Digital Learning

Platform significantly improved the digital competencies of barangay secretaries in San Nicolas, Ilocos Norte. Prior to implementation, participants demonstrated mostly intermediate skills in Word, PowerPoint, and Google Workspace, basic skills in Excel, and an overall intermediate competency level. After completing SkillLink, competencies rose markedly to advanced in Word and proficient across Excel, PowerPoint, and Google Workspace, with paired sample t-tests confirming statistically significant gains in all areas ($p < .01$). SkillLink also achieved very high ratings for acceptability and user perception, particularly for task relevance, usability, time savings, efficiency, ease of navigation, and increased confidence in preparing barangay records and reports. These outcomes underscore SkillLink’s effectiveness in addressing digital skills gaps, strengthening confidence, and supporting efficient local governance, suggesting its value as a scalable model for barangay-level e-governance. However, the study’s generalizability is limited by its focus on a single municipality, a small sample of 24 participants, reliance on self-reported measures, and the absence of long-term follow-up on skill retention. To enhance impact, the study recommends mobile and offline access, integrated help resources, practical templates, expanded content on data management and digital security, blended training approaches, and institutional adoption.

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