Available Online at www.ijcsmc.com

International Journal of Computer Science and Mobile Computing

A Monthly Journal of Computer Science and Information Technology

ISSN 2320–088X
IMPACT FACTOR: 7.056

IJCSMC, Vol. 15, Issue. 3, March 2026, pg.134 – 145

A Digital Barangay Service Request Management System for Efficient Public Service Delivery

JunMark Giducos[1]; Kate Rosel Alontaga[2]; Anna Marei Manzanares[3]; Venz Harry Macellones[4]; Christine Joy Rebosit[5]; Kurt Bryan S. Alegre, MIT (c)[6]

[1,2,3,4,5,6]Department of Information Technology & Madridejos Community College, Philippines
[1] junmark1242004@gmail.com; [2] alontagakaterosel@gmail.com; [3] manzanaresannamarei@gmail.com; [4] mvenzharry@gmail.com; [5] ChristineJoyRebosit@gmail.com; [6] kurtbryan.alegre@mcclawis.edu.ph

DOI: https://doi.org/10.47760/ijcsmc.2026.v15i03.015

Abstract: The Digital Barangay Service Request Management System for Efficient Public Service Delivery is an original work by the authors mentioned above. We aim to develop this system to acquire substantial knowledge and improve our understanding of how to apply this study effectively, under the guidance of our respected instructor. It represents a valuable effort in enhancing public service delivery. A strong technological foundation is demonstrated through the use of PHP and MySQL in the system. With full dedication and teamwork, we aim to provide a well-designed system that offers an efficient and transparent barangay service request process, enabling users to access an easy-to-use platform and allowing workers to perform their tasks effectively. The barangays are the first level of government that directly serve the community. They handle various services such as issuing certificates, receiving complaints, providing assistance, and responding to local concerns. However, many barangays still rely on manual, paper-based systems to manage service requests. Because of this, requests may be delayed, records can be misplaced, and it becomes difficult for both residents and officials to track the status of concerns. This study aims to develop a Digital Barangay Service Request Management System to improve how service requests are handled. The proposed system allows residents to submit requests online and monitor their status without always going to the barangay office. On the other hand, barangay officials can use a dashboard to organize, monitor, and respond to requests more efficiently. The study focuses on improving efficiency, transparency, and organization in barangay operations. It is expected that the implementation of this digital system will reduce delays, improve communication between residents and officials, and provide better monitoring of community concerns.

Keywords: Admin Dashboard, Automation, Management System, Online Request, User Interface

I. INTRODUCTION

Local Government Units (LGUs) in the Philippines play a central role in public service delivery, with barangays acting as the smallest political and administrative units responsible for providing basic services to the community [1]. The term *barangay* originates from the pre-colonial *balangay*, a type of boat used by Austronesian settlers, reflecting the historical foundations of barangay governance [2].

During Spanish colonization, smaller communities were reorganized under the *Reducción* policy, and leaders became *cabezas de barangay*, tasked with local governance functions such as tax collection and peacekeeping [2]. The American colonial government formalized rural councils and administrative structures, laying the foundation for modern barangay administrative processes [1]. In 1974, Presidential Decree No. 557 replaced the term *barrio* with *barangay*, consolidating its role as the fundamental unit of local governance [1].

As of 2025, there are over 42,000 barangays, highlighting the scale and reach of barangay governance across the Philippines [1],[3]. A typical barangay structure includes a Punong Barangay, Sangguniang Barangay, Sangguniang Kabataan, and the Barangay Justice System, collectively overseeing peace and order, social services, and community development planning [3].

Local governance at the barangay level often faces challenges in delivering efficient services due to the continued reliance on manual paperwork, which can lead to processing delays and misplaced or incomplete records. These issues not only slow down the issuance of important documents but also affect the overall quality of service provided to residents. As the volume of requests increases, managing records manually becomes more difficult and prone to human error.

To address these concerns, implementing a computerized system can significantly improve the efficiency and accuracy of service delivery. Such a system enables faster processing of requests, organized record-keeping, and easy retrieval of information. Additionally, it enhances transparency and accountability within the barangay, ultimately providing residents with more reliable and timely services.

At the grassroots level, barangay services include issuing clearances and certificates, delivering basic health programs, and implementing small infrastructure projects, all of which directly support citizen service delivery efficiency [2],[3]. However, many barangays still rely on paper-based systems, which cause delays, tracking issues, and limited transparency in governance [4].

Studies show that digital platforms, such as Barangay Connect, enhance service efficiency, data accuracy, and citizen engagement [4],[5]. These systems enable real-time dashboards, streamline administrative workflows, and support evidence-based decision-making, improving trust in local governance [6],[7].

Therefore, this study proposes the development of a Digital Barangay Service Request Management System, designed to enhance transparency, responsiveness, and citizen satisfaction by integrating online service requests and administrative dashboards. By leveraging digital tools at the barangay level, local officials can reduce delays, improve record-keeping, and facilitate community engagement, supporting the goals identified in prior studies on digital governance and barangay efficiency [1],[6],[7].

OBJECTIVES OF THE STUDY

This study aims to develop the DIGITAL BARANGAY SERVICE REQUEST MANAGEMENT SYSTEM FOR EFFICIENT PUBLIC SERVICE DELIVERY.

Specifically, it aims to:

1. To develop a system that can:
1.1. To collect the information of residents, such as gender, status, occupation, role in barangay, type of services, and how long they have been living in that particular barangay.
1.2. To approve, update, and manage the residents' requests.
1.3. To provide barangay officials with a centralized platform for receiving, reviewing, and managing service requests efficiently.
1.4. To reduce manual paperwork and improve accuracy in recording and processing barangay service requests.
2. To evaluate the usability, efficiency, and user satisfaction of the developed system using the USE (Usability, Satisfaction, Efficiency, and Effectiveness) questionnaire [8].
3. To determine the system's quality characteristics based on the ISO 25010 software and system quality model, focusing on performance, reliability, flexibility, safety, and maintainability to ensure optimal functionality and user trust.

II. METHODOLOGY

A. *Study Design*

This study employed a Developmental Research Design, which focuses on the systematic design, development, and evaluation of programs, processes, and products to establish an empirical basis for the creation of effective tools and systems. Developmental research is commonly used in system development studies where the goal is to design, improve, and validate technological solutions [9].

The sample consists of 30 respondents, including barangay security officers, barangay justice council, barangay health workers, barangay officials, and residents, and was selected through purposive sampling. These individuals were involved in testing the system and providing feedback on its efficiency, functionality, and usability.

B. *Equipment, Tools, and Materials*

The study utilized the following tools and resources:
Hardware: Personal Computers (PC), laptops, and cellphones to access and test the digital system.

Software:
Front-end development tools: HTML, CSS, and JavaScript for the user interface.
Back-end developmental tools: PHP and MySQL for database management.
Testing environment: Infinity Free server to run and simulate the system online.

Customized Questionnaire and Standardized Questionnaire: Used for collecting user feedback/ratings on system performance and usability.

C. *Data Collection Procedures*

1. System Development: The digital barangay service request management system was designed, coded, and deployed using observation-based problem identification.

2. User Testing: Selected respondents were asked to use the system over 2 days. They submitted simulated and real service requests, navigated the system interface, and accessed reporting features.

3. Feedback/Ratings Collection: After testing, respondents completed structured questionnaires assessing system usability, efficiency, and satisfaction through the standardized questionnaires.

D. *Software Development Life Cycle*

This study uses the Prototype Development Approach (PDA) to develop software.

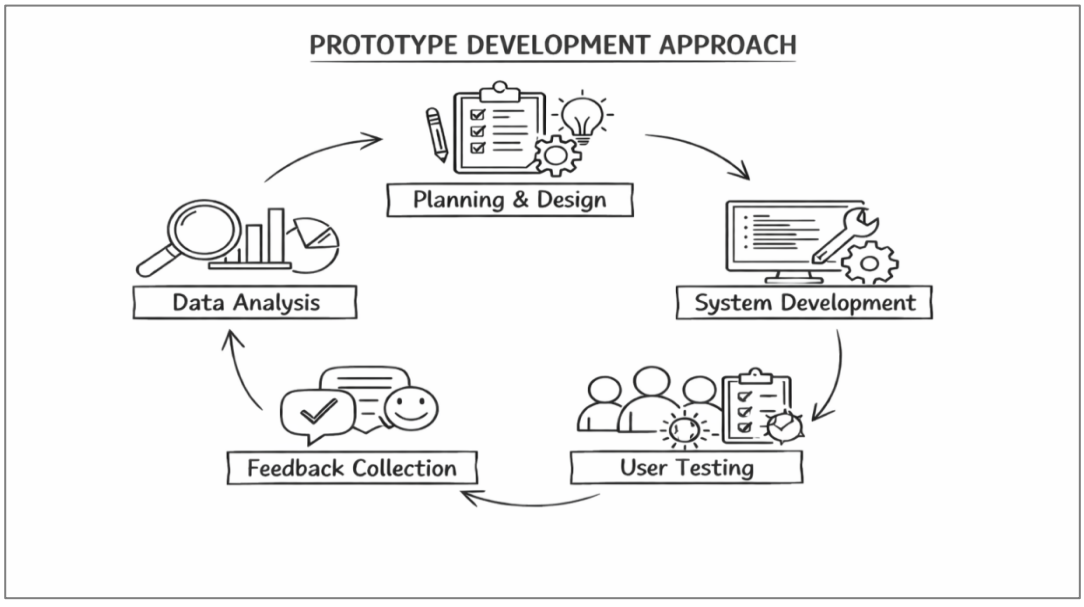

Figure 1. Prototype Development Approach

Figure 1 shows the Prototype Development Approach, which is a cycle used to improve a system step by step. The process starts with Planning and Design, where the idea and structure of the system are prepared. After that, System Development is done to build the initial version of the system. The next step is User Testing, where users try the system to see if it works properly. Then, Feedback Collection is gathered from users about their experience. Lastly, Data Analysis is done to review the feedback and results. The information collected helps improve the system, and the process repeats until the system becomes better and meets the users' needs [10].

E. System Architecture

The Request Management System architecture provides a visual presentation of the system implementation, including the tools and technologies that were employed.

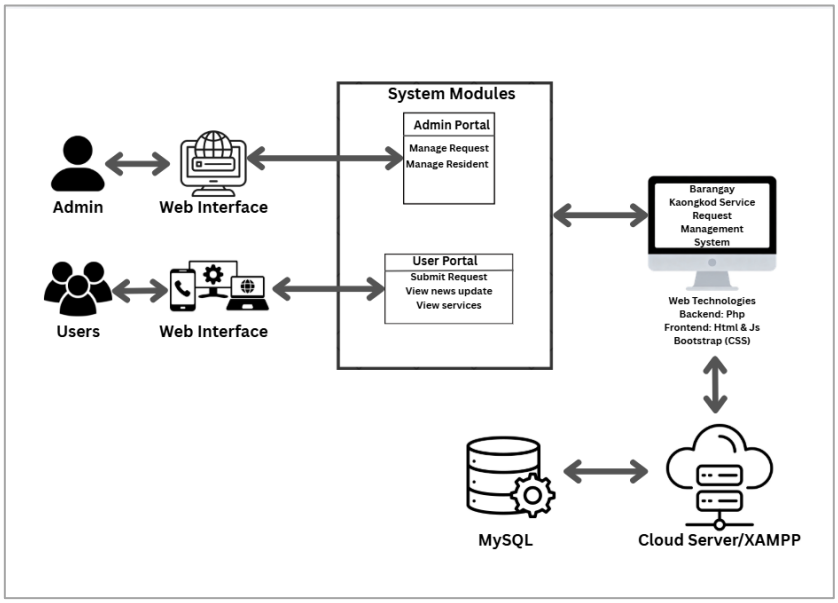

Figure 2. System Architecture

Figure 2 shows the system architecture of the Barangay Kaongkod Service Request Management System. The system is accessible through a web interface by two types of actors: the Admin and the Users. The admin interacts with the system through the Admin Portal, which provides functionalities for managing requests and managing residents. Users access the system through the User Portal using multiple devices, including a mobile phone, tablet, and desktop computer, where they can submit service requests, view news updates, and view available services. Both portals are organized within the System Modules, which serve as the core processing layer of the application.

The system is built using web technologies, with PHP as the backend language and HTML, JavaScript, and Bootstrap (CSS) for the frontend, ensuring a responsive and accessible interface across different devices [11]. The System Modules communicate with the Barangay Kaongkod Service Request Management System, which is hosted and operated through a Cloud Server using XAMPP as the local server environment. The Cloud Server maintains a bidirectional connection with a MySQL database, where all system data, including resident records and service requests, are stored and managed [12].

F. Controlling Residents' Requests

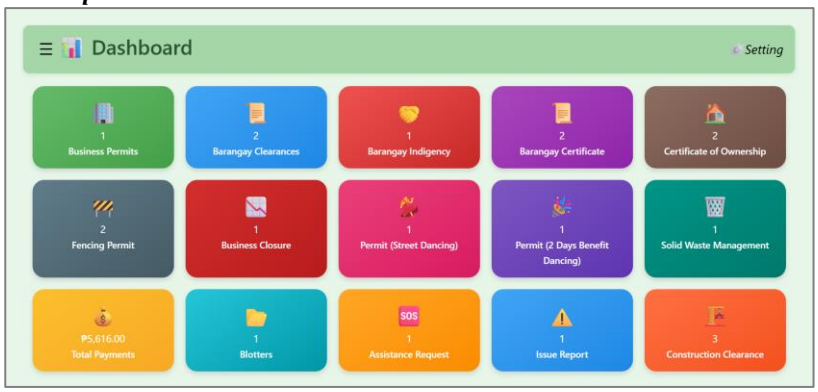

Figure 3. Controlling Residents' Requests

Figure 3 shows a component of the Barangay Service Request Management System, where administrators or assigned officials can easily track and manage requests. Administrators can view residents' information after user submit their request. Admin will see how many requests are in every type of services.

Figure 3.1. Monitoring Population, Gender, Civil Status

Figure 3.1 shows a part of the Barangay Service Request Management System, where the admin monitors the population of the residents per year, residents' gender, and residents' civil status. The line graph shows the population per year starting in 2022. The pie graph shows the residents by gender, such as male and female. The bar graph shows the residents by civil status, such as single, married, widowed, and divorced.

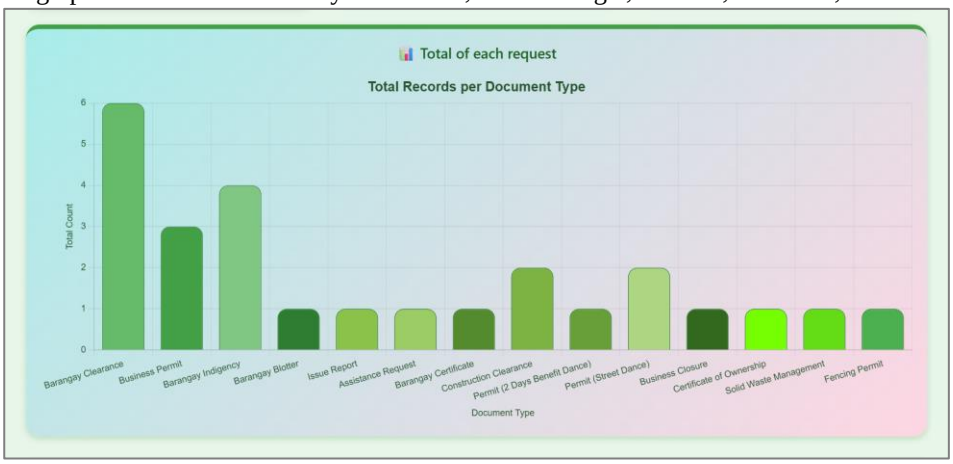

Figure 3.2. Monitoring Total Records per Services Type

Figure 3.2 shows a part of the Barangay Service Request Management System where the admin can monitor the total number of requests submitted by barangay residents. The graph presents the total records per services type, allowing the administrator to easily identify which services are most frequently requested and to track the overall activity of the system.

G. *Sample Record of the System*

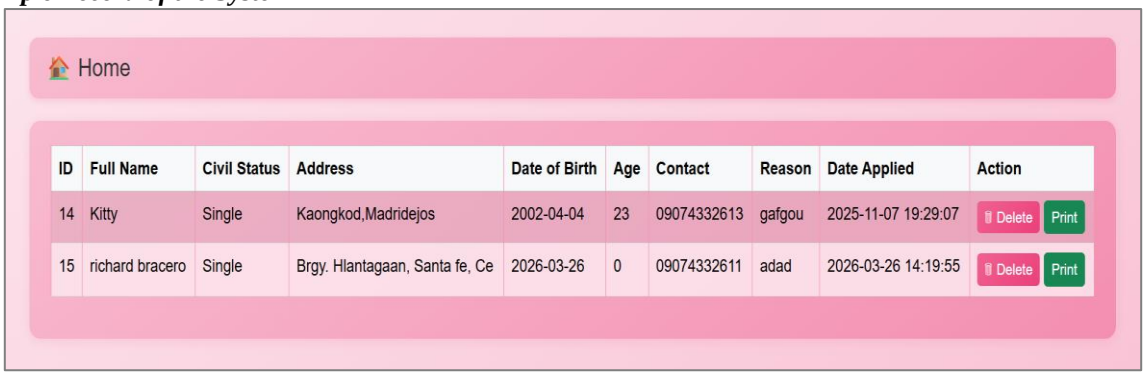

Figure 4. Sample record of the system

Figure 4 shows a portion of the Barangay Service Request Management System, in which the administrator can view information submitted by residents. The table was a barangay indigency as a sample

record, and it displays important details such as full name, civil status, address, date of birth, age, contact number, reason of the request, and date applied, allowing the administrator to easily manage and monitor resident request records. Admin will directly press the print button to print the resident request.

H. Printing the Document Request

Figure 5. Generation of the report of the system

Figure 5 shows a component of the Barangay Service Request Management System, where the administrator can print the document requested by residents; this function generates a system report. It helps to reduce manual paperwork. The generation of the report involves displaying a print preview of the requested document, selecting the printer (such as Microsoft Print to PDF), setting options like number of copies, layout (portrait or landscape), pages, color mode, and then printing the finalized Certificate of Business with complete barangay details and officials' information.

I. Creating, Reading, Updating, and Deleting Residents

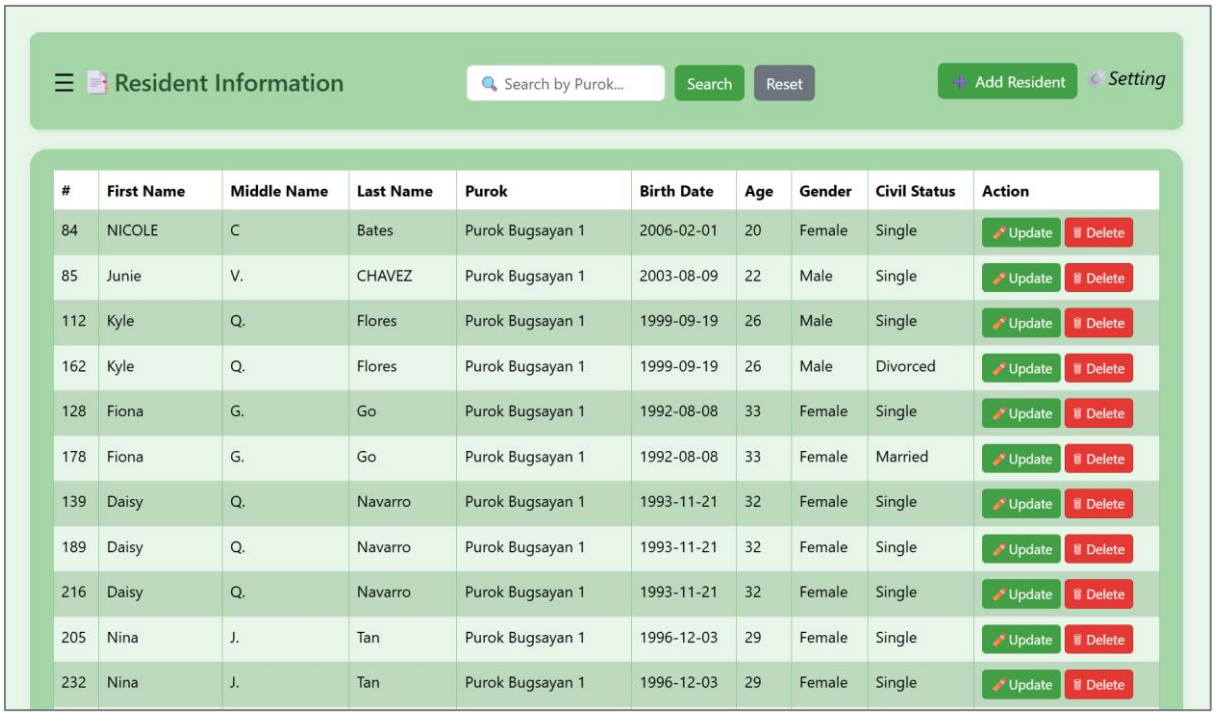

Figure 6: Creating, Reading, Updating, and Deleting Residents

Figure 6 shows a part of the Barangay Service Request Management System where admin or assigned officials can create, read, update, and delete the residents' information. This functionality makes it easier to verify and manage the request. The table displays a sample of important information about the residents, such as first name, middle name, last name, purok, birthdate, age, gender, civil status, and action. Admin can search the residents, add a resident, update the residents' information, and delete a resident.

J. *Choices for Residents Request*

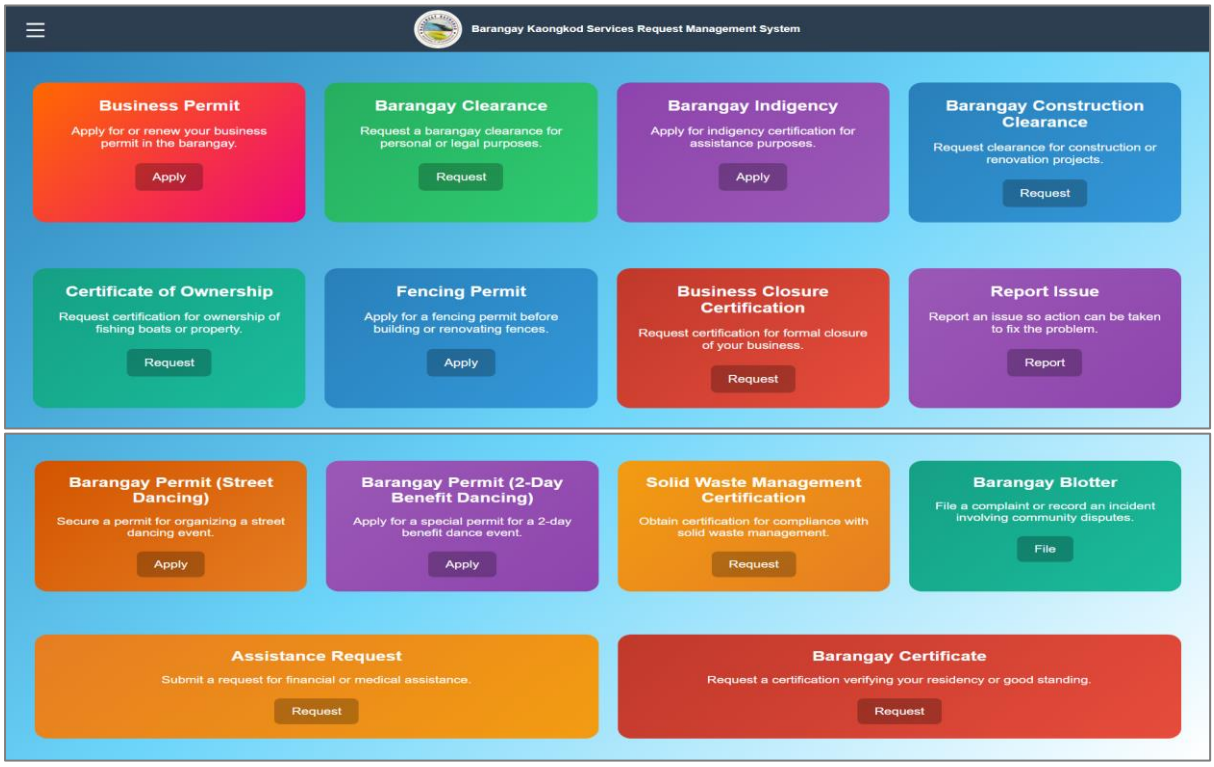

Figure 7: Choices for Residents Request

Figure 7 shows a part of the Barangay Service Request Management System where users can apply any type of service they need. Users can choose what type of services they want, which include business permit, barangay clearance, barangay indigency, barangay construction clearance, certificate of ownership, fencing permit, etc. This functionality is easier to request and submit, and after submitting, users will only wait for the news update.

K. *Fill up Form*

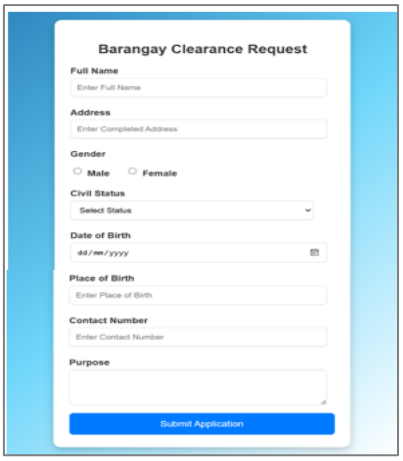

Figure 8: Barangay Indigency Form

Figure 8 shows a part of the Barangay Service Request Management System, where users will fill out the form to request a barangay indigency. Users will input their full name, address, gender, civil status, date of birth, place of birth, contact number, and purpose of requesting barangay clearance.

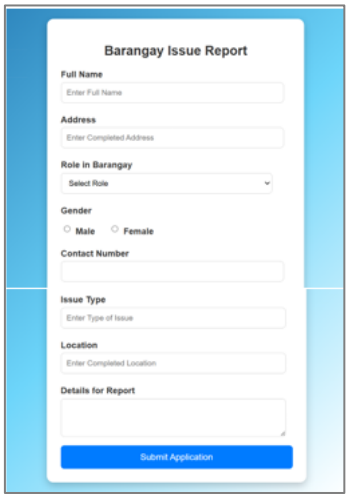

Figure 9. Report Issue Form

Figure 9 shows a part of the Barangay Service Request Management System, where users can fill out when reporting an issue. Users will input their full name, address, role in barangay, gender, contact number, issue type, location, and details for the report before submitting.

Figure 10. Barangay Clearance Form

Figure 10 shows a part of the Barangay Service Request Management System, where the user will fill out the form to request a barangay clearance. Users will input their full name, address, occupation, how long they have been living in that particular barangay, contact number, type of assistance, and reason for requesting assistance.

TABLE I

Likert Scale interpretation

Scale	Value	Range
Strongly Agree	5	4.21-5.00
Agree	4	3.41-4.20
Neither Agree nor Disagree	3	2.61-3.40
Disagree	2	1.81-2.60
Strongly Disagree	1	1.00-1.80

Table I presents the scoring range used in interpreting the responses gathered through the Likert scale. Each response option is assigned a numerical value from 1 to 5, where 5 corresponds to "Strongly Agree" and 1 corresponds to "Strongly Disagree". The computed mean scores are then interpreted based on their corresponding ranges: 4.21–5.00 indicates "Strongly Agree", 3.41–4.20 indicates "Agree", 2.61–3.40 represents "Neither Agree nor Disagree", 1.81–2.60 corresponds to "Disagree", and 1.00–1.80 signifies "Strongly Disagree". This scale serves as the basis for analyzing and describing the overall responses of the participants.

III. RESULT AND DISCUSSION

This section presents the findings derived from the results of the study.

J. ***Objective Evaluation of Barangay Service Request Management System***

TABLE II

Objectives Questionnaire Results

Criteria	Mean	Verbal Interpretation
Collect the information of residents, such as gender, status, occupation, role in barangay, type of services, and how long they have been living in that particular barangay.	4.17	Agree
Approve, update, and manage the residents' requests.	4.17	Agree
Provide barangay officials with a centralized platform for receiving, reviewing, and managing service requests efficiently.	4.13	Agree
Reduce manual paperwork and improve accuracy in recording and processing barangay service requests.	4.22	Strongly Agree
Total	**4.17**	**Agree**

Table 2 shows that respondents generally have a favorable assessment of the system's key functions, with an overall mean of 4.17 interpreted as "Agree." This indicates that the system is effective in supporting barangay operations, particularly in handling resident information and service requests.

Both the collection of resident information and the ability to approve, update, and manage requests received the same mean score of 4.17, suggesting that users find these features reliable and useful in their daily tasks. The provision of a centralized platform for managing service requests also received a positive rating (4.13), showing that respondents appreciate having a more organized and accessible system.

Notably, the system's ability to reduce manual paperwork and improve accuracy in recording and processing requests obtained the highest mean of 4.22, interpreted as "Strongly Agree." This highlights that users strongly recognize the system's impact in minimizing errors and making processes more efficient.

Overall, the findings suggest that the system is well-accepted and performs effectively in improving the way barangay services are managed, while also reducing reliance on traditional manual methods.

*K. **Usability Evaluation***

TABLE III

USE Questionnaire Results

Criteria	Mean	Verbal Interpretation
Usefulness	4.37	Strongly Agree
Ease of Use	4.26	Strongly Agree
Ease of Learning	4.20	Agree
Satisfaction	4.12	Agree
Total	**4.24**	**Strongly Agree**

Table 3 indicates that users have a very positive overall perception of the system, with a total mean of 4.24 interpreted as "Strongly Agree". This suggests that the system performs well in terms of meeting user expectations and delivering its intended functions.

In particular, usefulness (4.37) received the highest rating, showing that respondents strongly believe the system is beneficial in accomplishing their tasks. Ease of use (4.26) also falls under "Strongly Agree," indicating that users find the system simple and convenient to operate. On the other hand, ease of learning (4.20) and satisfaction (4.12) are both interpreted as "Agree," which means that while users generally find the system easy to learn and are satisfied with it, there is still some room for improvement in these areas.

Overall, the results reflect that the system is effective, user-friendly, and valuable, with minor aspects that could be enhanced to further improve the user experience.

*L. **Software Quality Evaluation***

TABLE IV

ISO/IEC 25010 Software Quality Model Results

Criteria	Mean	Verbal Interpretation
Functional suitability	4.39	Strongly Agree
Performance Efficiency	4.22	Strongly Agree
Compatibility	4.04	Agree
Reliability	4.00	Agree
Security	4.11	Agree
Total	**4.15**	**Agree**

Table 4 shows that IT experts generally have a favorable evaluation of the system's quality, with an overall mean of 4.15 interpreted as "Agree." This indicates that the system meets the expected standards in terms of functionality, performance, and overall reliability.

Among the criteria, functional suitability obtained the highest mean (4.39), which suggests that users strongly believe the system effectively provides the functions they need. Performance efficiency (4.22) is also rated as "Strongly Agree," indicating that the system performs tasks smoothly and efficiently. Meanwhile, compatibility (4.04), reliability (4.00), and security (4.11) are all interpreted as "Agree," showing that users find these aspects acceptable, though not at the highest level of satisfaction.

Overall, the findings imply that the system is capable and dependable, particularly in delivering its core functions and performance. However, there is still room for improvement in areas such as compatibility, reliability, and security to further enhance the system's overall quality.

IV. CONCLUSION

This study successfully developed the Digital Barangay Service Request Management System for Efficient Public Service Delivery. The system provides a digital platform enabling residents to submit and track service requests online while allowing barangay officials to manage, monitor, and respond to requests through a centralized dashboard. Evaluation results showed an overall mean of 4.17 (Agree) for system objectives, 4.24 (Strongly Agree) for usability, and 4.15 (Agree) for expert evaluation, indicating that the system is functional, user-friendly, and technically sound.

The implementation of this digital system demonstrates how technology can significantly improve local governance at the barangay level. By replacing manual, paper-based processes with an organized digital solution,

the system reduces delays, minimizes misplaced records, and increases transparency and accountability in service delivery. Barangay officials can now allocate resources more effectively based on data-driven insights, while residents benefit from faster and more accessible public services.

Future work may focus on enhancing system security, improving cross-device compatibility, and extending the platform to support additional barangay services. Overall, the findings confirm that the proposed system is a viable and effective digital solution for strengthening public service delivery at the barangay level.

ACKNOWLEDGEMENT

We, the researchers, would like to extend our heartfelt thanks to everyone who helped make this study possible. To all individuals and institutions who contributed to the successful completion of this research entitled "A Digital Barangay Service Request Management System for Efficient Public Service Delivery".

First and foremost, we extend our deepest appreciation to Mr. Kurt Bryan S. Alegre, our research adviser, for his invaluable guidance, constructive feedback, and unwavering support throughout the research process. His expertise and insights were instrumental in shaping the direction and quality of the study. He demonstrated considerable understanding when we faced delays, endless patience as we learned new skills, and great perseverance as we kept going. His guidance and honest feedback shaped this work to improve our skills.

We thank one another as a team for consistently sharing our ideas, time, and skills without hesitation. We treated one another with respect, even when we had different opinions and challenges. We're truly thankful for how we worked together through every challenge.

We acknowledge the support of our Department Head, Dino L. Illustrisimo, PhD. for providing access to resources, facilities, and research materials necessary for this project. To our family members and friends, thank you for your patience, encouragement, and understanding during the course of this research. Your moral support kept us motivated through every challenge.

Finally, we dedicate this work to all the barangay residents who seek more efficient and accessible public services. I hope this system contributes to improving the quality of life in our communities and for the future.

REFERENCES

[1]. Pastorfide, D. D. (2026). Barangay official governance practices and challenges in public service: Basis for developing project for enhancing public office governance. International Journal of Research in Social Sciences and Innovation, 10(1), 240–255. https://doi.org/10.47772/ijriss.2026.10100022

[2]. Regondola-Baltazar, J. (2025). *Evaluation of public information system: A narrative review of objectives, vision, pillars, best practices and challenges with a case study of Barangay management information system in the Philippines*. SSRN. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5248917

[3]. Tayong, N. P. B., Sanoy, E. M. S., & Villamor, K. J. A. (2025). Linking budgeting knowledge to service delivery performance: A quantitative study of barangay officials. Psychology and Education: A Multidisciplinary Journal, 37(3), 292–303. https://doi.org/10.70838/pemj.370309

[4]. Bondoc, B. (2019). Towards digitization through e-Barangay: A web-based Barangay information system. Journal of Humanities and Education Development, 1(2), 88–91. https://doi.org/10.22161/jhed.1.2.5

[5]. Padilla, A. T. (2025). Enhancing local governance in Surigao del Norte through Barangay Connect: A total Management Information System for barangays. Journal of Information Systems Engineering & Management, 10(27s), 260–279. https://doi.org/10.52783/jisem.v10i27s.4405

[6]. Aliling, J. T., Santa Ana, B. B., & Soberano, K. T. (2025). Digitalizing governance: A transformation on the processes of one community in the Philippines. International Journal of Multidisciplinary Research and Analysis, 8(6), 3620–3625. https://doi.org/10.47191/ijmra/v8-i06-68

[7]. Pajarillo, D. S., Egar, D. W. B., Asuncion, A. G., & Beninsig, M. A. (2025). *Digital transformation in local governance: A blockchain framework for Barangay Awitan*. *International Journal on Recent and Innovation Trends in Computing and Communication, 13*(1), 243–247. Retrieved from https://ijritcc.org/index.php/ijritcc/article/view/11757

[8]. Arnold M. Lund. (2001). Measuring usability with the USE questionnaire. STC Usability SIG Newslet. https://www.researchgate.net/publication/230786746_Measuring_Usability_with_the_USE_Questionnaire

[9]. Richey, R. C., & Klein, J. D. (2007). *Design and development research: Methods, strategies, and issues*. Lawrence Erlbaum Associates. https://doi.org/10.4324/9780203826034

[10]. Pressman, R. S. (2014). *Software engineering: A practitioner's approach* (8th ed.). McGraw-Hill Education. https://books.google.com.ph/books/about/Software_Engineering_A_Practitioner_s_Ap.html?id=i8NmnAEACAAJ&redir_esc=y

[11]. Welling, L., & Thomson, L. (2016). *PHP and MySQL web development* (5th ed.). Addison-Wesley Professional. https://books.google.com.ph/books/about/PHP_and_MySQL_Web_Development.html?id=dgInDQAAQBAJ&redir_esc=y

[12]. DuBois, P. (2013). *MySQL* (5th ed.). Addison-Wesley Professional. https://books.google.com.ph/books/about/MySQL.html?id=JgFTUsIC0bUC&redir_esc=y

APPENDIX

The "Barangay Kaongkod Service Request Management System"

OR visit

Link: https://requestservices.kesug.com/

