BarangayConnect: A Web-Based Information Portal for Resident Data, Administrative Services, and Community Records Using Data Analytics and Linear Regression Algorithms

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ABSTRACT

The study developed a web-based application called BarangayConnect, specifically designed to streamline barangay operations through digital transformation. The system provides a centralized platform that allows residents to request services—such as barangay clearances, certificates of residency, and identification cards—without physically visiting the barangay hall. This innovation benefits residents by reducing the time and effort required for document processing and assists barangay staff by minimizing manual paperwork and improving service efficiency.

BarangayConnect was developed following the System Development Life Cycle (SDLC) Waterfall Model, ensuring a structured and systematic process across the stages of planning, analysis, design, development, testing, and deployment. The system is built using PHP, MySQL, HTML, CSS, and JavaScript, resulting in a responsive and user-friendly interface accessible on both computers and mobile devices. It features automated request handling, record management, and report generation, all accessible through an intuitive dashboard for barangay staff.

To support data-driven governance, the system integrates a Linear Regression Algorithm to analyze demographic and community data, allowing barangay officials to forecast population trends and predict service demands. This predictive component assists in strategic planning and resource allocation based on real-time data insights.

The study utilized a developmental research design focused on system creation, testing, and evaluation. The Waterfall Model guided the project's flow—starting with user requirement analysis, followed by system design using data flow and entity-relationship diagrams. The development phase involved coding and integration of both the front-end and back-end components using the chosen web technologies. During the testing phase, functionality and usability were verified through simulation of real barangay operations. The system's quality and performance were evaluated using the ISO 25010 Software Quality Model, which assessed functionality, reliability, efficiency, usability, and portability. Data were gathered from fifty (50) respondents, equally divided between barangay staff/residents and technical experts. Their feedback provided quantitative and qualitative insights into the system's effectiveness and areas for improvement.

The results revealed an overall mean rating of 3.0 (Agree), indicating that the system is effective, accessible, and reliable. Respondents strongly agreed on its efficiency, usability, and portability, though enhancements were recommended to further improve system functionality and reliability.

In conclusion, BarangayConnect successfully modernizes barangay operations through automation and analytics, fostering transparency, accessibility, and citizen engagement.

Keywords: Barangay, Web-Based Information System, Data Analytics, Linear Regression Algorithm, E-Governance, ISO 25010, System Development Life Cycle (SDLC), Waterfall Model, PHP, MySQL, Digital Governance, Resident Data Management

INTRODUCTION

The rise of digital technology has transformed how governments deliver services, emphasizing efficiency, transparency, and citizen engagement. In the Philippines, barangays, the smallest administrative units, remain at the forefront of local governance but many still rely on manual, paper-based systems for managing records and processing documents. This traditional approach often results in delays, inaccuracies, and limited data accessibility, making it difficult for barangay officials to make timely, data-driven decisions.

To address these issues, the study developed BarangayConnect, a web-based information system designed specifically for Barangay San Miguel. The system aims to digitize barangay operations, automate administrative services, and strengthen communication between residents and officials through a secure and accessible digital platform. By doing so, BarangayConnect supports the shift from manual to digital processes—improving operational efficiency and promoting accountability in local governance.

Barangay San Miguel, like many other barangays in the country, faces challenges such as inefficient record-keeping, repetitive paperwork, and limited access to demographic data. These constraints hinder effective decision-making and slow down public service delivery. Through BarangayConnect, the barangay can now centralize resident information, automate document requests, and generate real-time reports, thereby improving both workflow efficiency and citizen satisfaction.

According to related studies discussed in the Review of Related Literature (RRL), several researchers—including Santos (2021) and Reyes and Navarro (2022)—highlight that the implementation of e-governance in local government units significantly enhances service delivery, transparency, and citizen participation. International studies such as those by DeLone and McLean (2016) and the World Bank (2020) also support that digital governance initiatives improve administrative efficiency when combined with strong user-centered design and data security measures. These findings reinforce the relevance and necessity of BarangayConnect as a sustainable digital governance model at the barangay level.

The study aims to design and develop a web-based information system that modernizes barangay operations and enables data-driven decision-making for Barangay San Miguel.

The specific objectives are as follows:

To develop a user-friendly platform that centralizes resident data and automates barangay services.

To create real-time dashboards and analytics tools for efficient monitoring and planning.

To ensure compliance with ISO 25010 standards on functionality, usability, and reliability.

To promote digital governance that enhances accessibility, transparency, and service delivery in Barangay San Miguel.

SCOPE

The project covers Pasig City's Barangay San Miguel's administrative operations with a Local Area Network (LAN) setup. The system focuses on three key modules:

1. User Management Module – Centralizes resident and employee records, allowing staff to access and update user profiles efficiently.

2. Digital Service Processing – Automates the issuance of barangay documents such as clearances, residency and indigency certificates, business permits, and IDs, reducing manual work and processing time.

3. Interactive Dashboard and Analytics – Displays real-time demographic data, voter statistics, and household information to support data-driven decision-making.

Limitation

The study is limited to the residents and staff of Barangay San Miguel in Pasig City. There is no integration with external or higher-level government systems such as municipal or national databases. Its functionality is confined within the barangay's operational environment.

THEORETICAL FRAMEWORK

The theoretical foundation for understanding this study is based on the following theories, conceptions, ideas, and presumptions:

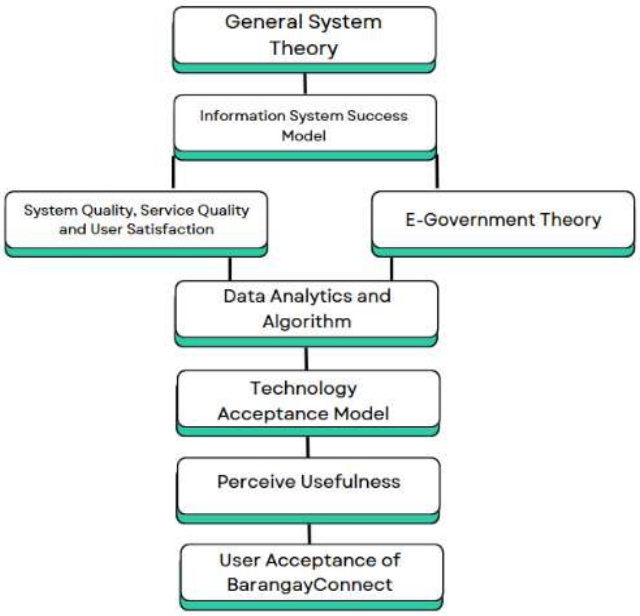

Figure 1: Theoretical Framework

The development of BarangayConnect is grounded in several key theories and models that guide its design, functionality, and role in promoting digital governance. These frameworks ensure that the system is efficient, user-friendly, and effective in improving local service delivery:

1. Linear Regression Algorithm – Used to predict population growth and service demand by analyzing data trends, helping barangay officials make data-driven decisions.

2. General Systems Theory – Views BarangayConnect as an interconnected system where users, data, and services must work harmoniously for consistent performance.

3. Information System Success Model (DeLone & McLean) – Evaluates system effectiveness through System Quality (performance and reliability), Service Quality (responsiveness), and User Satisfaction (meeting user needs).

4. E-Government Theory – Promotes digital transformation by enabling online transactions and remote access to barangay services, reducing manual workload and in-person interactions.

5. Data Analytics Framework – Utilizes visualization tools to present key statistics on population, households, and voters, supporting evidence-based decision-making.

By integrating these frameworks, BarangayConnect achieves a balance between technical performance, user satisfaction, and governance efficiency, establishing a data-driven platform that enhances public service delivery and supports sustainable digital transformation at the barangay level.

Conceptual Framework

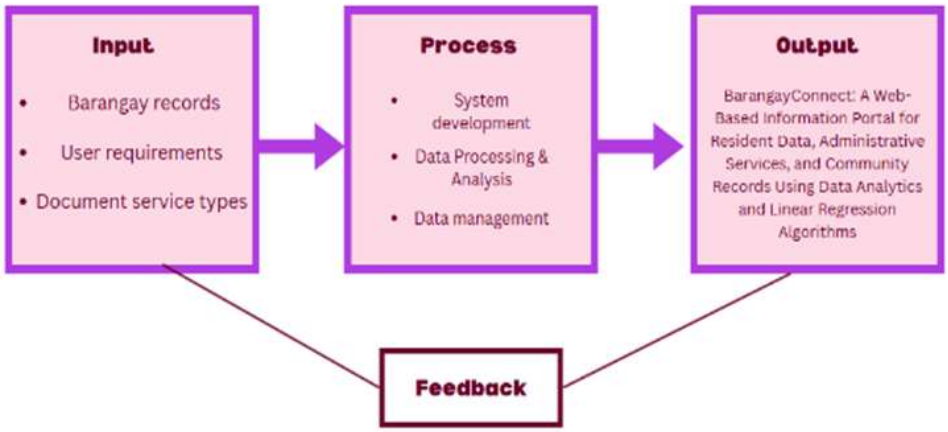

Figure 2: Input–Process–Output (IPO) Model

The BarangayConnect project study follows an Input–Process–Output (IPO) Model, showing how research data moves through different stages of the study. This model outlines how information from residents and staff is processed into useful outputs such as digital services, reports, and analytics for governance improvement.

Input:

1. Barangay Records – Resident profiles, household data, voter lists, and official documents that serve as the system's core information.
2. User Requirements – Feedback and needs from barangay staff and residents to ensure system features match real workflows.
3. Service Categories – Covers barangay services like certificate issuance, ID applications, permits, and peace and order reports.
4. Process:
5. System Development – Defines user roles, technical design, and architecture to ensure smooth and reliable system operation.
6. Data Processing and Analysis – Organizes and updates records, identifies active residents, and automates document generation for faster service delivery.
7. Output:
8. Web-Based Barangay System – A functional online platform for managing and accessing services in real time.
9. Real-Time Reports – Provides instant access to data and summaries for informed decision-making.
10. Feedback Feature – Allows users to suggest improvements for system functionality and performance.

Overall, the IPO model illustrates how organized data are absorb for systematic processing that leads to reliable output enhancing efficiency, transparency, and residents' satisfaction in barangay governance.

Significance Of the Study

The development of BarangayConnect holds great importance as it contributes to improving public service delivery, promoting transparency, and strengthening the digital transformation efforts of local governance. The system benefits multiple stakeholders, each playing a vital role in ensuring its success and long-term sustainability.

1. Barangay Officials and Staff – The system helps officials make informed and data-driven decisions by providing easy access to updated resident information, real-time reports, and digital records.

2. Residents – Pasig citizens benefit from faster, more convenient access to barangay services such as requesting certificates, permits, and clearances.

3. IT Developers and Practitioners – This project serves as a reference model for developing localized e-governance systems.

4. Researchers and Academicians – The study contributes to academic discussions on e-governance, information systems, and data-driven community management.

5. Community and Government Institutions – BarangayConnect fosters trust and accountability between citizens and the local government by promoting digitalization and transparency.

Overall, the study's significance lies in its ability to bridge the gap between technology and governance, offering a sustainable and practical solution that enhances operational efficiency, public satisfaction, and data integrity at the barangay level.

REVIEW OF RELATED LITERATURE

Santos (2021) conducted a study on the digital transformation of local government units (LGUs) in the Philippines, focusing on the implementation of e-governance systems in barangays and municipalities. The research highlighted how digital platforms have begun replacing manual, paper-based processes for handling certificates, permits, and clearances. The shift toward digital systems was further accelerated by the COVID-19 pandemic, which emphasized the need for contactless and efficient service delivery. However, challenges such as unstable internet connections, lack of technological infrastructure, and limited digital literacy among staff still hinder full implementation. Santos emphasized the importance of developing user-friendly and reliable systems and ensuring that barangay personnel receive continuous training to maintain effective digital operations. These findings support the objectives of BarangayConnect, which aims to streamline barangay services, improve record management, and strengthen public trust through transparent and efficient online processes.

DeLone and McLean (2016) developed the Information System Success Model, which serves as a key theoretical framework for evaluating digital platforms like BarangayConnect. Their model identifies six dimensions of system success: system quality, information quality, service quality, user satisfaction, use, and net benefits. According to their research, a system's success should be measured not only by its technical performance but also by how effectively it meets user needs and enhances organizational efficiency. In the context of e-governance, this means that system usability, reliability, and accessibility directly influence citizen satisfaction and long-term adoption. The BarangayConnect system applies this model through the ISO 25010 software quality standards, which assess similar criteria such as functionality, reliability, usability, and efficiency. By aligning with these principles, BarangayConnect ensures that its design and performance contribute to both administrative effectiveness and citizen empowerment.

SUMMARY

Both studies emphasize the importance of system quality, user satisfaction, and technological adaptability in implementing digital governance platforms. Locally, Santos (2021) highlights the need for digital transformation in barangays, while internationally, DeLone and McLean (2016) provide a framework for measuring system success. Together, they form the foundation for the BarangayConnect system, which aims to improve service delivery, data management, and transparency through efficient, citizen-centered e-governance.

Synthesis

The reviewed literature and studies, both local and international, emphasize the significance of system quality, usability, efficiency, and trust in ensuring the success of digital governance platforms. Local findings reveal that community participation, user-friendly design, and training are vital for technology acceptance, while global research underscores the role of reliability, transparency, and strong institutional support. Together, these insights validate the conceptual foundation of BarangayConnect**,** confirming that digital transformation at the barangay level can greatly improve efficiency, residents' satisfaction, and governance transparency when guided by sound theoretical frameworks and user-centered design principles.

METHODOLOGY OF THE STUDY

The study applied a Descriptive–Developmental Research Design, which combines descriptive analysis with system development. The descriptive part focuses on identifying current issues and inefficiencies in barangay operations, while the developmental part involves building and testing the BarangayConnect system as a technological solution to these problems.

Data for the study came from both primary and secondary sources to ensure a well-rounded understanding of user needs and technical requirements.

Primary Data:

1. Evaluation forms are distributed to fifty (50) respondents, twenty-five (25) barangay residents and twenty-five (25) technical experts**.**
2. Residents shared their experiences with existing manual systems and their preferences for digital alternatives.
3. Technical experts evaluated the system's design, usability, and performance, providing technical input for improvement.
4. Barangay officials are interviewed to identify day-to-day administrative challenges and validate the proposed solution.

Secondary Data:

1. Supporting literature from journals, government publications, and online resources on e-governance, ICT systems, and local digital initiatives are reviewed.
2. References from the DILG, United Nations E-Government Survey, and other studies provided a foundation for system standards and quality measures.

By combining these data sources, the study ensured that the BarangayConnect system is technically sound, practical, and responsive to user needs.

An Agile development method is used to ensure continuous collaboration between the researchers and barangay personnel. This iterative process allowed frequent feedback and adjustments, ensuring that the final system met user expectations and real operational needs. The design aimed to improve service delivery, information accuracy, and administrative efficiency within the barangay.

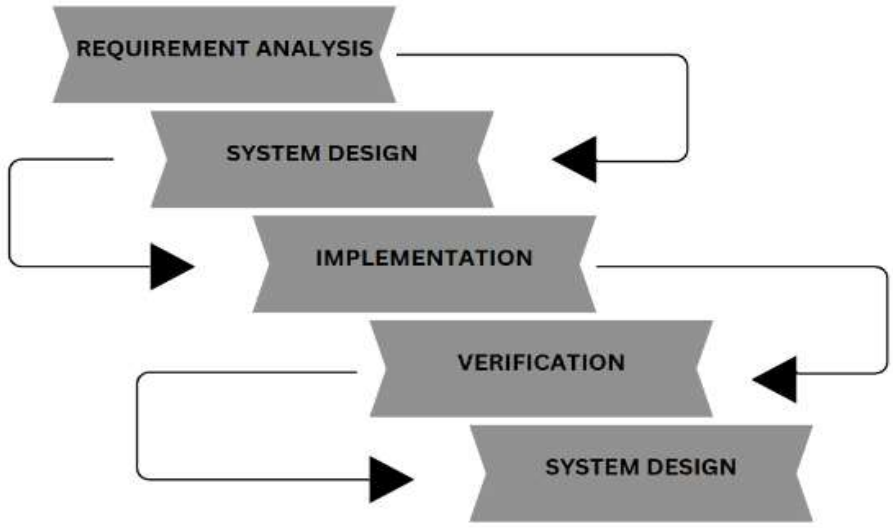

Figure 3: System Development Life Cycle (SDLC)

The Waterfall Model of the System Development Life Cycle (SDLC) guided the development process. This linear and structured method ensured that each stage is completed before moving on to the next, resulting in a stable and well-documented system. The stages included:

1. Requirement Analysis – Gathering user needs and identifying system objectives through interviews and consultations.

2. System Design – Creating blueprints of the interface, database, and overall architecture to visualize the system's workflow.

3. Implementation – Developing the system using HTML, CSS, JavaScript, PHP, and MySQL to build a fully functional web application.

4. Testing and Verification – Conducting multiple tests, including unit, integration, and user acceptance testing, to ensure functionality and reliability.

5. Maintenance – Performing continuous updates, debugging, and performance enhancements after deployment to maintain system efficiency.

This systematic approach provided a clear framework for project development, ensuring quality and reliability at every stage.

The database design defines how all data such as resident profiles, staff information, and service requests are organized, stored, and retrieved efficiently. It ensures accuracy, consistency, and data security throughout the system.

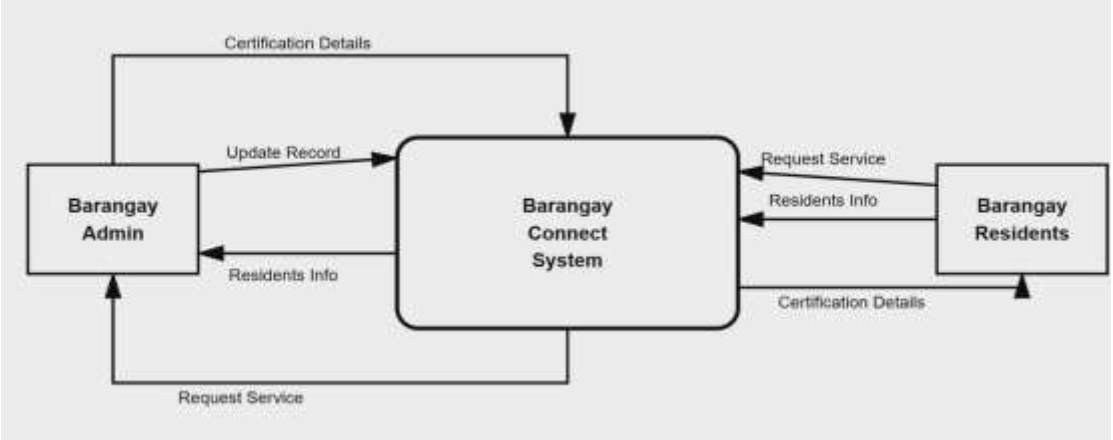

Figure 4: Context Diagram of BarangayConnect System

The Context Diagram gives an overview of how the BarangayConnect System interacts with external users. It identifies three main entities:

1. Residents – Can log in, register, and request services like clearances, IDs, and certificates.
2. Barangay Staff/Admins – Oversee records, approve or reject requests, post updates, and generate reports.
3. Public Users – Access general information and announcements.

RESPONDENTS OF THE STUDY

The study engaged two categories of participants—user respondents and technical experts who contributed valuable feedback in assessing the overall performance and usability of the BarangayConnect system. Their perspectives provided a balanced evaluation that considered both user experiences and system functionality.

1. The user respondents consisted of 192 residents from Barangay San Miguel, Pasig City, who regularly use barangay services such as certificates, IDs, and permits. They were selected because of their direct

experience with these transactions and their ability to evaluate the system's usability. Their role was to assess the interface, navigation, accessibility, and convenience of BarangayConnect. Their feedback determined if the system successfully reduced waiting times and improved access to local government services.

2. Technical Respondents (IT professionals) - Another set of twenty-five (25) respondents came from the field of information technology, including web developers, system analysts, and computer technicians. They are selected for their technical knowledge and experience in evaluating software systems. This group assessed the technical performance of BarangayConnect—focusing on aspects such as reliability, data management, functionality, and system security. Their insights are used to enhance the technical design and ensure that the system meets software quality standards.

Altogether, there were 217 respondents, equally divided between barangay residents and IT experts. This balanced composition ensured that the evaluation covered both user satisfaction and technical efficiency. The feedback gathered from these participants is analyzed using the ISO 25010 Software Quality Model, allowing the researchers to assess BarangayConnect in terms of functionality, reliability, usability, efficiency, and portability. The combined perspectives of users and technical experts are instrumental in validating the system's quality, practicality, and readiness for real-world implementation.

DEVELOPMENT AND EVALUATION PROCEDURE

The BarangayConnect system was developed using a combination of web technologies designed to create a responsive, secure, and efficient platform. Each tool served a specific role in the system's functionality:

1. HTML (HyperText Markup Language) – Structured the content and layout of web pages, defining forms, tables, and interface elements.
2. CSS (Cascading Style Sheets) – Enhanced visual design, ensuring a consistent color scheme, typography, and overall user-friendly interface.
3. JavaScript – Added interactivity by enabling dynamic updates, input validation, and responsive dashboard functions.
4. PHP (Hypertext Preprocessor) – Acted as the back-end language managing server-side operations such as login authentication, data processing, and communication with the database.
5. MySQL – Served as the database management system for securely storing and organizing resident profiles, service records, and barangay statistics.

Together, these technologies produced a robust and accessible system compatible with different devices—smartphones, laptops, and desktops—allowing both staff and residents to use it efficiently.

For system assessment, BarangayConnect was evaluated based on the ISO 25010 Software Quality Model, ensuring accurate measurement of software performance and user satisfaction. Two respondent groups participated: users and technical experts. The evaluation focused on five key criteria:

1. Functionality: Ability to perform intended tasks effectively.
2. Reliability: Stable performance with minimal errors or downtime.
3. Efficiency: Speed and responsiveness under various conditions.
4. Usability: Ease of use and overall user satisfaction.
5. Portability: Compatibility across multiple devices and platforms.

Data Analysis Plan

The researchers employed appropriate statistical techniques to analyze the information gathered from respondents in order to assess and confirm the system's functionality and user satisfaction levels. The following methods are used to quantitatively assess the data gathered from evaluation responses:

1. Weighted Mean – This statistical tool is used to identify the average rating given by respondents to each

quality criterion under ISO 25010. It helped quantify the overall level of user satisfaction and system performance.

2. Frequency Percentage – This tool displayed how frequently each rating appeared in the responses, allowing the researchers to determine which features are most appreciated or needed improvement.

Likewise, a 4-point Likert Scale is utilized in the evaluation to assess the system according to the ISO 25010 quality attributes. The scale ranged from "1" (Strongly Disagree) to **"**4" (Strongly Agree)**,** allowing respondents to express varying levels of agreement with each statement in the questionnaire.

This rating method made it possible to convert feedback into quantitative data for easier analysis. High mean scores indicated that respondents found the system effective, reliable, and user-friendly, while lower scores highlighted areas needing refinement. The results gathered through this process provided a strong basis for assessing BarangayConnect's overall quality and identifying opportunities for further improvement.

The System

The outcome of this research is a web-based system called BarangayConnect, designed to enhance and simplify barangay operations by offering a centralized online platform for community services. Through this system, residents can conveniently request barangay documents such as clearances, certificates of residency, and barangay identification cards without the need to visit the barangay office in person. This digital solution not only saves residents time and effort but also assists barangay staff by reducing paperwork, minimizing human errors, and improving the overall speed and accuracy of administrative processes.

BarangayConnect is developed using PHP for its back-end programming, HTML, CSS, and JavaScript for creating an interactive and responsive front-end interface, and MySQL for managing and organizing its database. The system is accessible through standard web browsers, making it compatible with a wide range of devices such as laptops, tablets, and smartphones. Its intuitive interface ensures that even users with limited technical experience can navigate and use the platform with ease.

To ensure quality and reliability, the system is evaluated using the ISO 25010 Software Quality Model, which measures software performance across several key attributes including functionality, reliability, usability, efficiency, maintainability, and portability. From the users' viewpoint, this evaluation confirmed that the system is accurate, easy to operate, and capable of addressing the needs of the barangay community. From the technical standpoint, it demonstrated that BarangayConnect is stable, efficient, and capable of processing multiple service requests simultaneously without system errors or downtime. This combination of user accessibility and technical performance ensures that BarangayConnect provides a dependable and effective solution for modernizing barangay service delivery. The following images show some of the user interfaces:

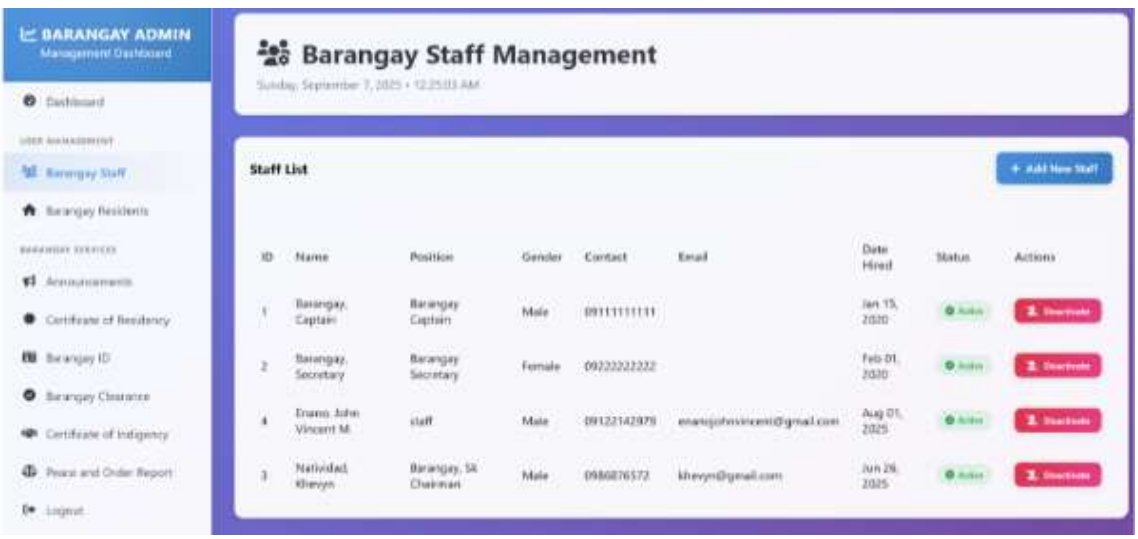

Figure 5. Barangay Staff Management Interface

The Barangay Staff Management interface shown in the image demonstrates how BarangayConnect applies data-driven and digital governance principles. It reflects the integration of E-Government Theory and the Information System Success Model by enabling efficient staff monitoring, online data access, and reduced manual processing. Through these frameworks, the system enhances administrative efficiency, ensures reliable information management, and promotes transparency in barangay operations.

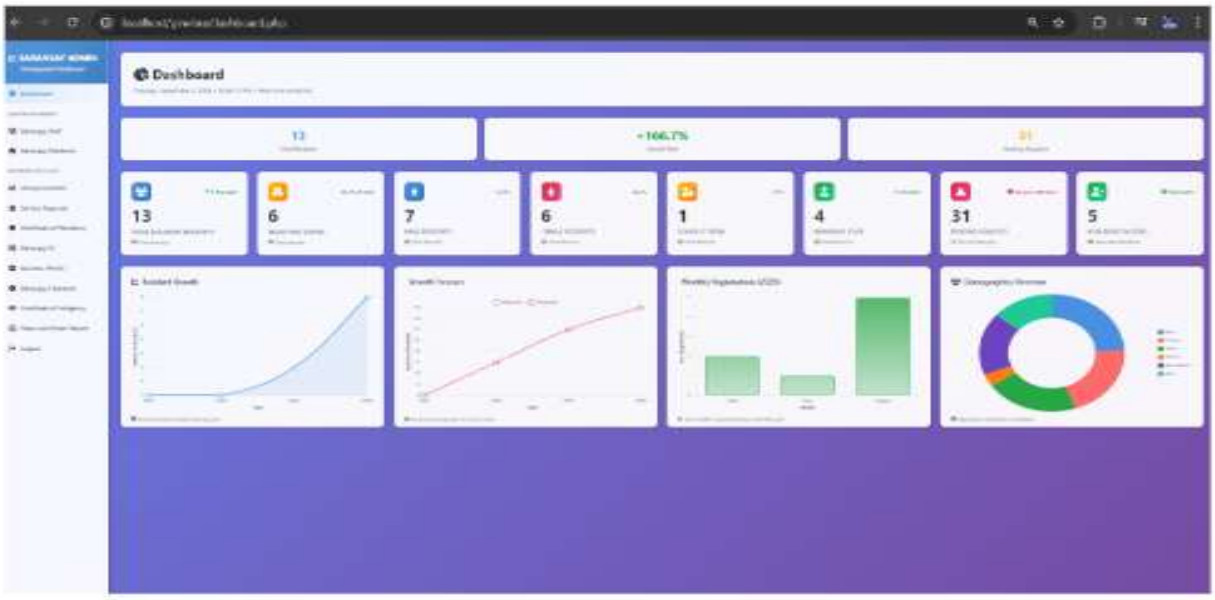

Figure 6. Barangay Admin Dashboard

The dashboard graph visually represents how BarangayConnect applies its conceptual and theoretical frameworks in real time. Through the Linear Regression Algorithm, the system predicts population growth and service demand, which can be seen in the charts showing upward trends in population and service requests. The Data Analytics Framework is reflected in the visual dashboards that present summarized data such as resident counts, voter statistics, and household distribution, helping barangay officials make informed decisions. The organized and responsive display also demonstrates the Information System Success Model, highlighting system quality, service quality, and user satisfaction. The dashboard is providing digital access to essential barangay services and reports, minimizing manual processes. In summary, the dashboard visualization serves as the Output in the IPO model, transforming barangay data inputs into meaningful, data-driven insights for governance improvement.

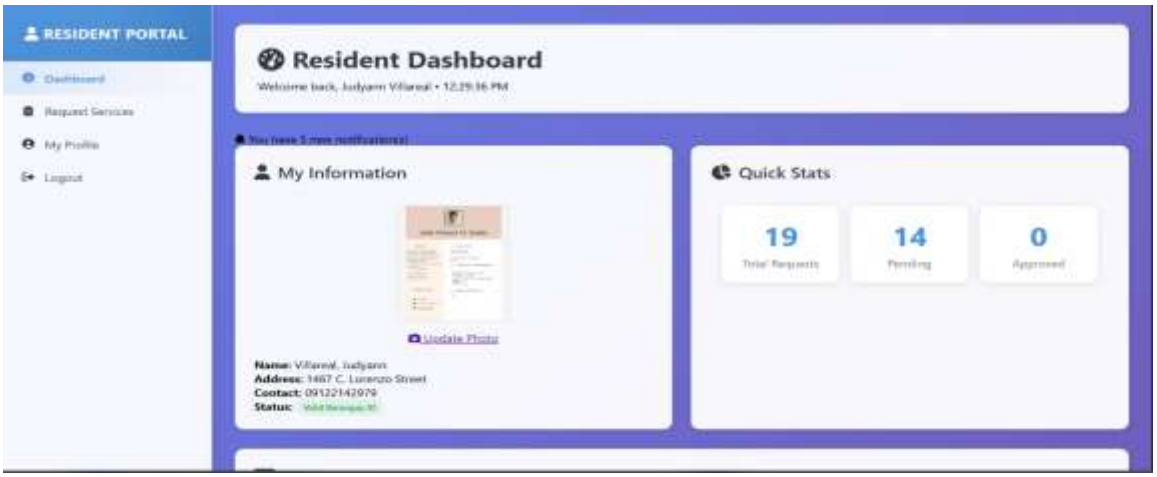

Figure 6. Resident Dashboard

the Resident Dashboard of the BarangayConnect system, a key feature that provides residents with a personalized and user-friendly interface for managing their barangay-related transactions. The dashboard welcomes the user by name and displays the current time, giving a sense of personalization and real-time engagement.

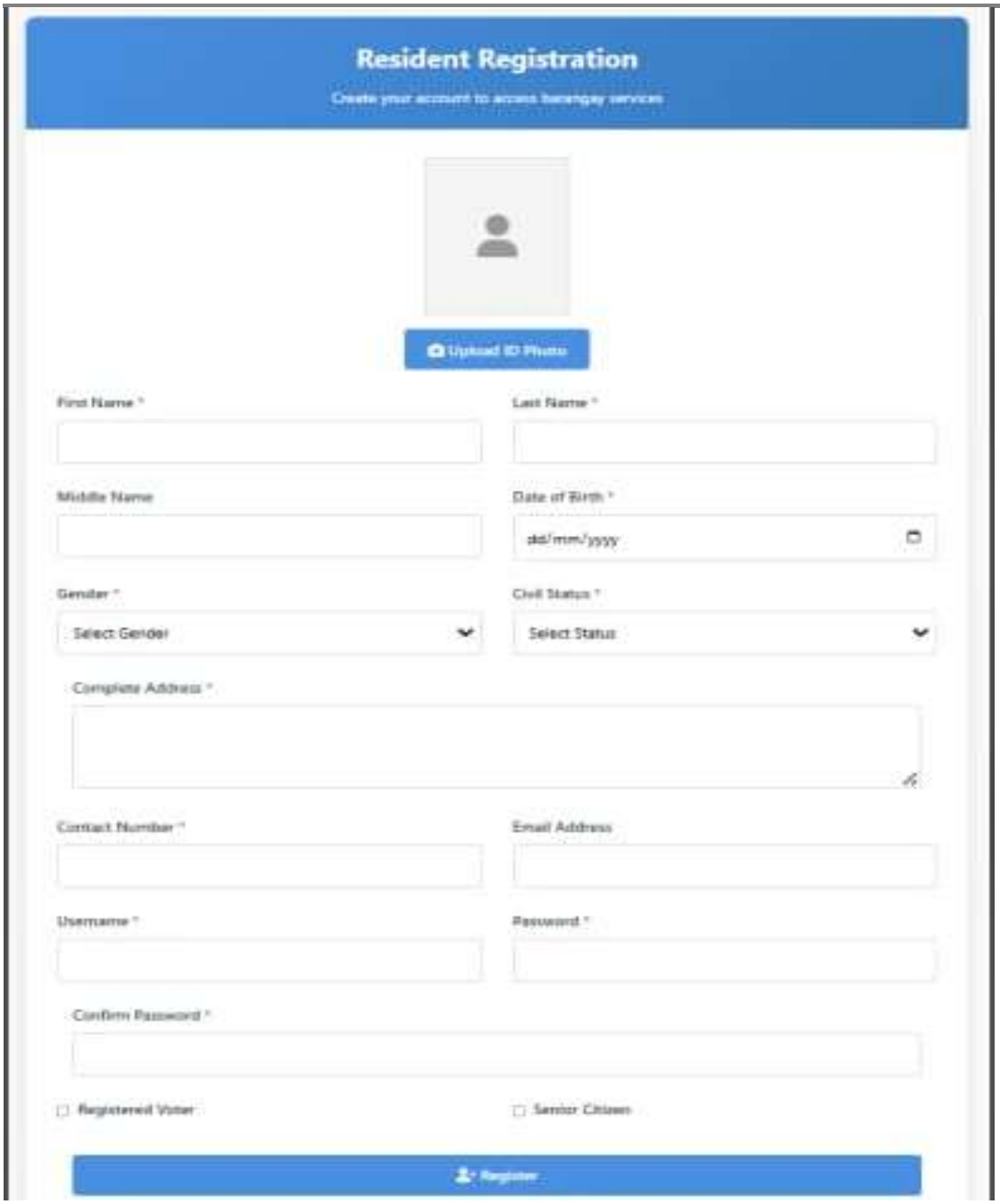

Figure 6. Resident Registration Form

the Resident Registration Form of the BarangayConnect system, which serves as the entry point for residents to create their accounts and gain access to barangay services online. The form is designed with a clean and structured layout to ensure ease of use, even for individuals with minimal technical experience.

ASSESSMENT: SUMMARY OF RESPONDENTS ON THE SYSTEM

The following tables present the distribution of respondents with its size (n) and percentage. The consolidated summary of responses from the participants is also presented.

Respondents	Size (n)	%
Users	192	88.43%
Technical	25	11.57%
total(n)	217	100.00%

Table 1. Distribution of Respondents

The table shows that out of 217 total respondents, 88.43% were users and 11.57% were technical experts, indicating that the majority of the feedback came from end-users

	Users(192)		Technical(25)	
	WM	VI	WM	VI
1. Functionality	3.6	SA	3.0	A
2. Reliability	3.2	SA	2.9	A
3. Efficiency	3.4	SA	3.0	A
4. Usability	3.7	SA	3.2	SA
5. Portability	3.7	SA	3.4	SA
Overall Average Mean	3.52	SA	3.1	SA

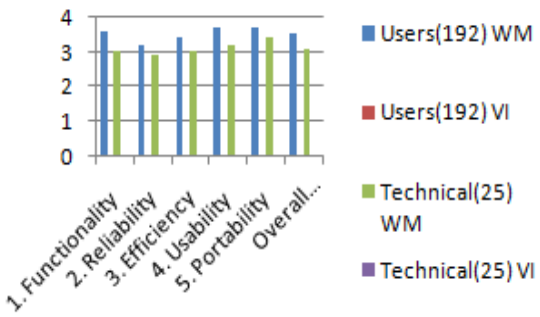

Table 2. Summary and Comparison of Respondents' Assessment Based on ISO 25010 Standards

The table shows the evaluation results of the system based on ISO 25010 software quality characteristics. It compares responses from 192 users and 25 technical experts. Users gave an overall average mean of 3.52, interpreted as Strongly Agree, showing high satisfaction with the system. They rated usability and portability the highest, meaning the system is easy to use and works well across different platforms. Technical experts, however, gave a slightly lower overall mean of 3.1, also Strongly Agree but closer to Agree, suggesting minor concerns in reliability and functionality. Overall, both groups found the system effective, though improvements can still be made in technical performance.

Ethical Considerations

The study guarantees that all data obtained from respondents are treated with the highest level of confidentiality and integrity. Personal information is securely protected, and no identifying details are shared without the participants' consent. The research follows ethical standards of voluntary participation, allowing respondents to withdraw from the study at any point without penalty. Strict data protection measures are implemented to safeguard against unauthorized access, alteration, or misuse of information. Moreover, all results are presented truthfully and accurately, ensuring that the study remains objective, transparent, and credible by avoiding any form of data manipulation or bias.

SUMMARY

BarangayConnect is created to modernize barangay operations by digitizing processes, consolidating resident records, and enhancing service delivery through the use of data analytics. The system is assessed by fifty (50) respondents based on the ISO 25010 software quality standards**.** Findings revealed that respondents expressed overall satisfaction with the system, reflected in an overall average mean rating of 3.0 (Agree)**,** suggesting that while the system performs effectively, it could still benefit from further technical improvements. The study holds importance for barangay officials, staff, and residents**,** as the system significantly supports efficient management and improved public service delivery within the community.

CONCLUSION

The findings verify that the system demonstrates strong functionality, reliability, efficiency, usability, and portability. Both the user and technical respondents recognized its notable advantages, particularly in terms of operational efficiency and accessibility across devices**.** Overall, all participants agreed that the system performs effectively, fulfills its intended goals, and is suitable for practical implementation.

RECOMMENDATION

Future enhancements for BarangayConnect should prioritize improving functionality and reliability, as these areas received slightly lower ratings. Key upgrades may include refining core features, boosting system stability, and adding tools for accessibility and clearer error messages to improve user experience. Regular training

sessions for barangay staff are recommended to maintain operational efficiency, alongside strong data backup and security measures to protect user information. Recommended actions include:

1. System Enhancement: Improve system performance, responsiveness, and error handling for smoother multi-user operations.

2. User Training: Provide regular orientations for barangay staff and residents to maximize proper system use.

3. System Maintenance: Schedule consistent updates and security checks to keep the platform stable and current.

4. Mobile App Development: Create a mobile version to make barangay services more accessible via smartphones.

5. System Integration: Link with municipal or regional platforms to promote better coordination and data sharing.

By applying these recommendations, BarangayConnect can further improve its service efficiency, promote transparency, and continue supporting digital transformation at the barangay level.

REFERENCES

1. Department of the Interior and Local Government (DILG). (2021). Barangay governance performance management system manual. https://dilg.gov.ph
2. National Economic and Development Authority (NEDA). (2023). Philippine Development Plan 2023–2028. Retrieved from https://neda.gov.ph
3. United Nations. (2022). United Nations E-Government Survey 2022: The Future of Digital Government. https://publicadministration.un.org/egovkb/
4. E-Governance at the Local Government Level in the Philippines https://www.researchgate.net/publication/313555878_E-governance_at_the_local_government_level_in_the_Philippines_An_assessment_of_city_government_websites
5. Digital Transformation of Philippine Higher Education https://documents1.worldbank.org/curated/en/099925001062333685/pdf/P17757402843a10c90b3e30308406a38304.pdf
6. Information Systems Success Measurement – DeLone & McLean Model. https://www.nowpublishers.com/article/DownloadSummary/ISY-005
7. Digital Transformation Overview – World Bank. https://www.worldbank.org/en/topic/digital/overview
8. Adoption of Artificial Intelligence (AI) in Local Governments. https://ovcre.uplb.edu.ph/journals-uplb/index.php/JPAD/article/download/798/723/
9. Exploring the Applicability of AI in Local Government Units. https://papers.ssrn.com/sol3/Delivery.cfm/SSRN_ID4506110_code6015336.pdf?abstractid=4506110&mirid=1
10. User Acceptance of E-Government Services in Malaysia. https://www.researchgate.net/publication/267711021_User_Acceptance_of_the_E-Government_Services_in_Malaysia_Structural_Equation_Modelling_Approach
11. Estonia's Digital Transformation: Mission Mystique and the Hiding Hand. https://www.ucl.ac.uk/bartlett/public-purpose/sites/public-purpose/files/iipp-wp-2018-09_estonias_digital_transformation.pdf