

Polytechnic University of the Philippines

Santa Rosa Campus

Program: Bachelor of Science in Information Technology

Course: Management Information Systems (IT Elective)



Management Information System

Final Research Project

Information Systems Strategic Plan (2025 – 2027) For Barangay Market Area of Santa Rosa, Laguna

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ABSTRACT: *Given the fast-paced changes in technology, it is important for organizations to create an Information System Strategic Plan (ISSP) to align their IT efforts with goals. Developing an ISSP is crucial for governance in barangays as it ensures that local administration can effectively manage resources, enhance service delivery, and improve community engagement through the strategic use of technology.*

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This study specifically focuses on crafting an ISSP tailored for the Barangay Market Area, covering the period from 2025 to 2027. The study begins by mapping out the current technological landscape within the market area, assessing Information Technology maturity through frameworks such as People, Process, Technology, and Information Technology Infrastructure Library, then conducting SWOT analysis to identify the strengths, weaknesses, opportunities, and threats related to the barangay's IT infrastructure and overall governance capabilities. The research uses a descriptive qualitative design to analyze data from local government personnel and IT experts.

Through evaluation of IT maturity and SWOT analysis, the study outlined strategic initiatives to enhance data management, transparency, technological infrastructure, cybersecurity practices, and staff training. The proposed plan aims to modernize barangay operations, improving decision-making, resource allocation, and overall service quality to create a more cohesive and effective community.

KEYWORDS: *Information Systems Strategic Plan; Barangay; IT Maturity Level; People, Process, Technology Framework; Information Technology Infrastructure Library Framework SWOT Analysis*

INTRODUCTION

Nature and Scope of the Problem Investigated

Acknowledging the importance of effective governance and technology improvement in community service delivery, the development of an Information System Strategic Plan (ISSP) for the Barangay Market Area in Santa Rosa, Laguna, is necessary. This strategic plan seeks to address current operational difficulties and leverage advanced technology to meet the changing demands of the barangay's people and businesses.

The Barangay Market focuses on local economic activities and community interaction. However, poor technological resources and outdated systems slow down its capacity to deliver efficient services. Technology, wisely selected, applied and accepted by the local culture, ensures improved economic and social infrastructure. It serves as an ideal support system that can jump across community development programs, for the betterment of society at large (Neelam, 2016). Addressing these challenges through digital transformation is necessary to align with national directives on ease of doing business and efficient governance.

The ISSP proposed herein is the result of intensive interactions with key stakeholders, a detailed study of existing processes, and strategic reengineering efforts.

It promotes the implementation of advanced computer applications and adjusts software solutions to optimize operations and enhance service delivery across various departments within the barangay. The SWOT analysis identified current strengths in community engagement and local economic activities, coupled with opportunities presented by supportive national directives and DTI's MSME initiatives. This informed the strategic emphasis on digital transformation to address weaknesses in technological resources and outdated systems, thereby mitigating threats to efficient governance and community service delivery. The benefits of introducing and designing user-friendly, relevant, and effective web-based technology to broaden people's access to community resources and supporting community-based quality of life transformation (Camarillo, 2023).

The plan outlines a framework for department specific information systems, such as the Barangay Governance and Administration Information System (BGAIS), Financial Management Information System (FMIS), and others, designed to cater to the unique needs of each office from governance and administration to public safety, education, and environmental management. This holistic approach integrates strong server infrastructure and centralized database management to create a cohesive digital ecosystem that improves operational efficiency and transparency.

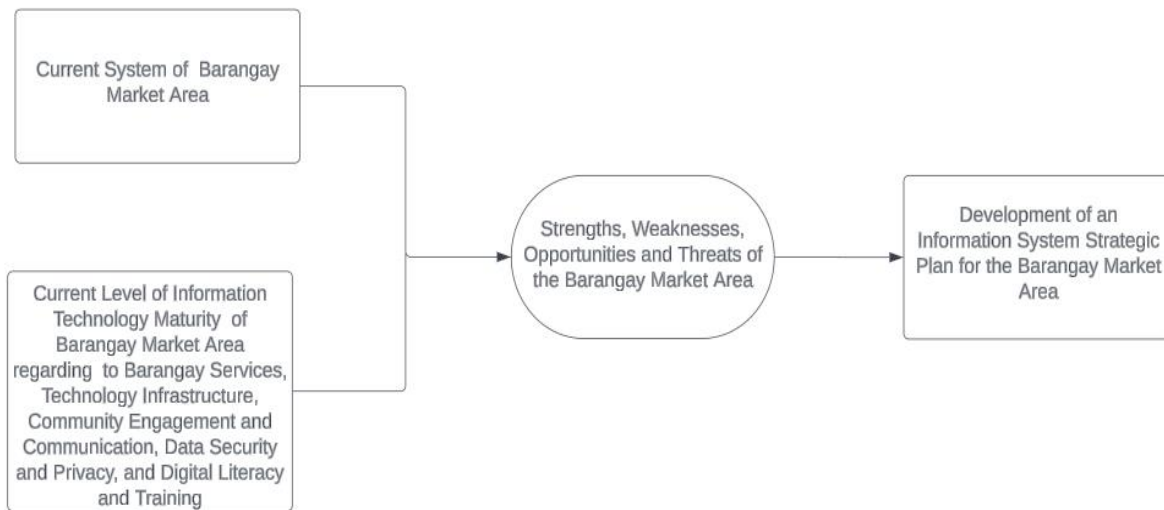
By enhancing Information Technology (IT) maturity, the ISSP aims to not only modernize the Barangay Market Area's information systems but also empower its offices with the tools needed to advance sustainable development and better serve the community.

Research Problem and Objectives

1. Understand the current systems, find out how the Barangay Market Area currently uses technology and manages its processes.
2. Assessing technology maturity evaluates how advanced the Barangay Market Area's technology is in planning, managing information, collaborating with businesses, and improving processes.
3. Identify strengths, weaknesses, opportunities, and threats, discover what the Barangay Market Area does well and where it needs to improve in terms of technology and how people work with it.
4. Create a strategic plan and develop a clear plan to upgrade the Barangay Market Area's information systems. A plan will outline steps to use technology better, improve services, and engage more effectively with the community.

Research Framework

Figure 1. Conceptual Framework



The conceptual framework for the Barangay Market Area Information System Strategic Plan (ISSP) for the City of Santa Rosa, Laguna, begins with a detailed evaluation of the present system's personnel, processes, and technologies. This initial stage assesses stakeholders' responsibilities and competencies, existing workflows and procedures, and the technology instruments that enable market operations. Additionally, the IT maturity of the Barangay Market Area is evaluated, with an emphasis on technology infrastructure, community engagement and communication, data security and privacy, and digital literacy and training. This comprehensive examination gives a thorough grasp of the current system's technological capabilities.

Following this evaluation, a SWOT analysis is performed to determine the Sangguniang Barangay's strengths, weaknesses, opportunities, and threats. This study focuses on internal strengths and areas for progress, as well as external opportunities and challenges. Based on these findings, the ISSP is designed to provide a plan of action for improving information systems in the Barangay Market Area. The ISSP strives to integrate technical solutions with market objectives, hence increasing overall operational efficiency and effectiveness. This systematic strategy assures that the information systems are strong, responsive, and capable of supporting the market's expansion and development.

Research Significance

Understanding the significance of this study is important to appreciating its potential impact on the Barangay Market Area in Santa Rosa, Laguna. This research aims to significantly enhance service quality, improve economic growth, and support local development initiatives through improved information systems and strategic planning. By implementing an Information System Strategic Plan (ISSP), the Barangay Market Area can modernize its operations, improve service delivery, and better meet the needs of its residents and businesses. For student researchers involved, this study provides practical experience in information systems management, improving their professional growth in IT. The insights gained from this study will contribute to the broader field of local governance and IT strategy, serving as a foundation for future research and development in similar community contexts. This study lays the foundation for enhancing operational efficiency and service effectiveness within the Barangay Market Area, paving the way for continued progress and innovation in local government IT strategies.

Scope and Limitation

The Information Systems Strategic Plan (ISSP) for the Barangay Market Area, Santa Rosa, Laguna (2025-2027) defined a comprehensive strategy to address the technological needs of the market area community over a three-year period. This plan aims to advance technology to improve data management, enhance community involvement, and strengthen governance within the barangay market area. Through research and analysis of the specific needs of the market area, several key areas of focus have been identified, including the development of data management systems, the implementation of digital governance practices, the creation of community interaction platforms, and the advancement of ICT infrastructure. Despite its potential to significantly benefit the market area community, the implementation of this plan is not without its challenges. Budget constraints are a primary concern, as the allocation of funds for ICT infrastructure and services may be limited. The availability of technological devices and resources is another critical issue. The differences in digital knowledge among market area staff pose a barrier to the effective utilization of new technologies. To address these limitations, the ISSP emphasizes the need for adaptability and flexibility. The phased implementation and prioritization of critical components will help manage budget constraints and resource availability. The plan aims to make progress towards its goals, setting a precedent for similar initiatives in other barangays. It acknowledges the challenges and limitations. Through strategic planning, continuous learning, and contributing to the sustainable growth and accomplishment of the barangay market community.

Definition of Terms

The following terms were defined operationally and conceptually to provide readers with a clear understanding of the study.

- **Barangay:** (in the Philippines) a small territorial and administrative district forming the most local level of government.**Information System (IS).** An interconnected set of components to collect, store, process, and transmit data and digital information.
- **Information Systems:** It refers to a structured system used for collecting, storing, processing, and distributing data and information..
- **Information System Strategic Plan (ISSP):** Refers to a three (3) to five (5) year computerization framework of an agency which describes how the organization intends to strategically use ICT in pursuit of its mission and functions.
- **Technological Maturity:** The level of advancement and sophistication of an organization's technology infrastructure and processes, assessed through frameworks such as ITIL..
- **SWOT Analysis:** A strategic planning technique used to identify Strengths, Weaknesses, Opportunities, and Threats related to a project or business venture.

Review of Pertinent Literature

Information systems (IS) play an important role in providing organizations with up-to-date, high-quality information, enabling them to gain a competitive advantage, drive success, and adapt to rapid technological changes. According to Costa (2022), the implementation of IS positively impacts organizational strategy by enhancing decision-making processes and improving business operations, essential for survival in the digital economy. The benefit of adopting IS including increased efficiency, productivity, and business growth, while also supporting risk management across technical, operational, and strategic domains. As market competition intensifies, effective IS implementation across all departments has become crucial for companies to manage information, make better decisions, and execute business processes efficiently. Research concludes that IS are not just technological tools but strategic assets that significantly contribute to a firm's competitive position and long-term success.

Aligning IS with strategic governance objectives empowers local leaders in barangays to better address community needs and achieve developmental goals effectively. Strategic information system planning (SISP) ensures that IS initiatives are strategically aligned with governance strategies, thereby enhancing service delivery performance and fostering a competitive advantage. The rapid adoption of IS enhances

productivity, value generation, and innovation, benefiting barangays by improving transparency and accountability. Integrating informatization with local governance practices enhances operational efficiency and community engagement, providing citizens accessible means to interact with public services (Kasim et al., 2024).

In the context of barangay governance, IS plays a crucial role in enhancing governance through accurate data provision for effective decision-making, as emphasized by Zheng (2024). IS improve transparency in decision-making processes, facilitate efficient resource allocation, and enable comprehensive monitoring and evaluation of community projects. By centralizing data collection, storage, and analysis, IS empowers governance structures to understand complex issues and make informed decisions. Analyzing the role of information systems in governance from existing literature provides insights into applying a comparable approach to information systems strategic planning (ISSP) for the Barangay Market Area, enabling local authorities to strategically align technology investments with community needs. This alignment facilitates the development of a meticulous plan to minimize operational losses and maximize sustainable, long-term benefits. Such a plan leverages data-driven insights to optimize service delivery, improve transparency, and foster greater accountability within the barangay's administrative framework.

METHODOLOGY

Research Design

The student researchers utilized a combination of descriptive design and quantitative research to conduct a comprehensive assessment of the current systems and IT maturity level of the Barangay. Their study also aimed to evaluate the strengths, weaknesses, opportunities, and threats of the barangay, and to design a plan based on these findings. Interviews were conducted to identify the current IT infrastructure, while questionnaires were employed to assess its IT maturity level. The results from these data collection methods formed the basis for a SWOT analysis. Subsequently, all gathered information was used to develop an Information Systems Strategic Plan (ISSP) for the Barangay Market Area.

Research Locale

The research was conducted within Santa Rosa City of Laguna, specifically in the Barangay Market Area. This locale was chosen because of its direct relevance to the study's objectives and its importance within the Santa Rosa community. The study focused on addressing the digital needs and challenges specific to the Barangay Market Area to develop an Information Systems Strategic Plan (ISSP) customized for the community.

Population and Sampling Design

The study's population comprised five (5) personnel from the Barangay Market Area in Santa Rosa, Laguna, responsible for delivering services within the barangay. These individuals play crucial roles in daily operations, handling tasks such as legislative duties, community representation, administrative management, financial oversight, and community relations. Their insights were crucial for assessing the current systems and IT maturity level of the barangay, as well as identifying opportunities for improvement through the development of an Information Systems Strategic Plan (ISSP) tailored for the Barangay Market Area for 2025-2027. The selection of these personnel employed a total enumeration process, aiming to leverage existing technology to foster advancement and ensure long-term success.

Research Instrument

To gather meaningful data for the study, the researchers employed a combination of surveys, observations, and interviews with the key stakeholders of the Barangay Market Area. This multi-faceted approach aimed to ensure the efficacy and relevance of the data collection process. The survey questionnaires were designed to assess the current IT infrastructure and its maturity level, while the interviews provided in-depth insights into the people, processes, and technology contributing to the implementation of the information systems. Additionally, observations were conducted to understand the day-to-day operations and challenges faced by the barangay personnel. This comprehensive approach enabled a thorough evaluation of the current IT situation and operational challenges, forming a solid foundation for the ISSP.

Data Gathering Procedure

The data gathering process began with the researchers outlining clear objectives and obtaining necessary permissions and ethical approvals from the relevant authorities. This included formalizing the steps through a letter addressed to the barangay officials. The researchers then established and tested the data collection tools, such as surveys and interview guides, with a small sample group to identify and rectify any issues in the questions or methodology. During the actual data collection phase, the respondents were informed about the study's purpose and provided with guidance on how to respond accurately. The researchers conducted surveys, made observations, and held interviews with the stakeholders, ensuring a comprehensive collection of data. Following data collection, the information was organized and categorized for analysis. Statistical methods, including the use of weighted mean, were employed to analyze the data, facilitating the development of meaningful conclusions and recommendations for the ISSP.

Management and Treatment of Data

The study employed weighted mean to summarize and describe the gathered data, particularly in analyzing the current IT maturity level of the Barangay Market Area. This statistical method enabled the researchers to develop a nuanced understanding of the various aspects of the information systems and their significance in the overall strategic plan. The data management process involved integrating comprehensive planning, robust server infrastructure, and centralized database management to ensure a cohesive and effective digital ecosystem for the barangay government. By utilizing these techniques, the researchers were able to emphasize the importance and relevance of the collected data, supporting the formulation of informed recommendations within the Information System Strategic Plan (ISSP). The thorough management and treatment of data ensured that the findings were accurate, reliable, and applicable to enhancing the barangay's information systems.

RESULTS AND DISCUSSION

Current Systems of Barangay Market Area

The investigation of the present IT setup in the Barangay Market Area found various degrees of digital literacy among employees, who rely on manual techniques owing to a lack of training and technology. The system comprises a variety of software tools, with staff using Microsoft Office apps such as Excel for daily activities. However, the existing system is largely used to gather data, which limits its applicability for other activities that may enhance efficiency. Financial constraints prevent the purchase of new technology or system improvements, resulting in obsolete infrastructure, additional paperwork, and operational inefficiencies. These problems highlight the importance of developing a complete Information Systems Strategic Plan to improve digital literacy, automate procedures, and upgrade technology in order to provide greater service and efficiency.

IT Maturity Level of the Barangay Market Area

Figure 2. IT Maturity Level Overall Results

Area	Mean	Level
Area 1. Barangay Services	1.15	Level 1 – Initial
Area 2. Technology Infrastructure	1.83	Level 2 – Managed
Area 3. Community Engagement and Communication	1.06	Level 1 – Initial
Area 4. Digital Literacy and Privacy	1	Level 1 – Initial
Area 5. Digital Literacy and Training	0.94	Level 0 – Unidentified

The barangay's technology and services are at an early stage, with an overall IT maturity score of 1.20, placing it at the 'Initial' level. The barangay website provides basic information and limited services, and accessibility features for disabled residents, as well as mobile app usage, are in the early stages. The website is rarely updated, the budget for e-services is low, and staff training and resident feedback collection have just

started. In terms of technology infrastructure, some systems are in place, but they need significant improvement. The computer hardware and internet connections are unreliable, the technology upgrade plan is unclear, and cybersecurity measures and disaster recovery plans are weak. The budget for maintaining this infrastructure is also insufficient.

For community engagement and communication, the barangay uses various communication channels, but they are ineffective and do not reach everyone. There is little effort to gather resident feedback or involve them in decision-making, information sharing lacks transparency, and complaints are not addressed promptly. The barangay does not use technology effectively to engage with residents. Regarding data security and privacy, while some basic elements are in place, many practices are underdeveloped. Regular staff training, secure data handling, and security audits are lacking, and there is no strong plan for responding to breaches or budgeting for privacy measures.

Lastly, digital literacy and training are almost nonexistent, with few or no programs to promote digital skills among residents. Training in computer skills and digital tools is minimal, resources like tablets for learning are unavailable, and there are no assessments to measure effectiveness or collaborations with other organizations. Programs are not continuously evaluated or adapted based on feedback. Overall, the barangay needs significant improvements in all areas to better serve residents and enhance their IT capabilities.

Strengths, Weaknesses, Opportunities, and Threats Analysis

The student researchers carried out a SWOT analysis to identify and evaluate the information system's strengths, weaknesses, opportunities, and threats. The People, Process, and Technology framework, as well as the research question results, were utilized to identify and create the SWOT in this study. The insights acquired from this study helped to improve the strategy plan. The SWOT Analysis Table is presented below.

Strengths	Weaknesses	Opportunities	Threats
Awareness of Current Status – The barangay is aware of its existing IT maturity level and the areas for development. Initial Infrastructure in Place – Basic technical infrastructure and procedures are already in place, laying the	Low Maturity Level – Overall IT maturity score of 1.20, indicating that many processes and systems are in their infancy or non-existent. Limited Budget for E-Services –	Funding and Grants – Seek additional funding, grants, and partnerships to enhance IT infrastructure and services. Community Involvement –	Resistance to Change – Potential resistance from residents and staff to adopt new technologies and processes. Budget Constraints – Continued limited budget may hinder

<p>groundwork for future development.</p> <p>Starting Community Engagement – Some communication channels exist, however ineffective, and may be enhanced and maximized.</p> <p>Initiative for Staff Training – Efforts to train personnel and gather resident input have begun and can be enhanced.</p>	<p>Insufficient finance limits the capacity to enhance and extend e-services.</p> <p>Unreliable Technology Infrastructure – Current hardware and internet connections are unstable, with uncertain upgrading plans and ineffective cybersecurity safeguards.</p> <p>Ineffective Communication Channels – Existing routes do not reach all residents, and there is no attempt to solicit comments or engage the community in decision-making.</p> <p>Poor Data Security and Privacy Measures – Lack of frequent staff training, safe data management methods, and effective breach response plans.</p> <p>Minimal Digital Literacy and Training Programs – Few initiatives exist to improve digital skills among residents, and there are no tools or assessments to quantify efficacy.</p>	<p>Increase efforts to collect citizen opinion, include them in decision-making, and promote information openness.</p> <p>Technology Upgrades – Invest in reliable hardware, better internet connections, and clear technology upgrade plans.</p> <p>Digital Literacy Programs – Develop and execute comprehensive digital literacy and training programs in partnership with educational institutions and organizations.</p> <p>Enhanced Cybersecurity – Strengthen cybersecurity measures, disaster recovery plans, and regular security audits to protect data and privacy.</p> <p>Modern Communication – Utilize modern communication tools and social media platforms to engage with residents more effectively.</p>	<p>the implementation of necessary improvements and expansions.</p> <p>Cybersecurity Risks – Increasing threats to data security and privacy as technology adoption grows without adequate protections.</p> <p>Digital Divide – Risk of exacerbating the digital divide if digital literacy programs are not effectively implemented and inclusive.</p> <p>Technological Obsolescence – Rapid technological advancements may outpace the barangay's ability to keep up, leading to outdated systems and practices.</p>
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Strategies in Developing the Information System Strategic Plan

The development of the Information System Strategic Plan (ISSP) for the Barangay Market Area involved a thorough evaluation of current systems, including staff roles, processes, and technologies, to understand strengths and weaknesses. A SWOT analysis further identified areas for improvement and opportunities for growth. The ISSP aims to enhance information systems by creating tailored systems for each department and defining the roles and responsibilities of key staff members, focusing on detailed planning, strong server infrastructure, and centralized database management. Strategic recommendations include prioritizing funding to secure additional resources, upgrading faulty technological infrastructure, and improving cybersecurity measures. Enhancing communication channels and actively engaging citizens in planning and decision-making will ensure their needs and feedback are considered. Implementing comprehensive digital literacy and training programs for residents and staff will bridge the digital gap and equip the community with essential skills. Additionally, frequent security audits, data privacy assessments, and program evaluations will ensure ongoing development and adaptability. By addressing these strengths, weaknesses, opportunities, and threats, the barangay market area in Santa Rosa, Laguna, can develop a more comprehensive and successful information system strategic plan for 2025-2027.

CONCLUSION AND RECOMMENDATIONS

Conclusion

Based on the IT maturity level results and the SWOT analysis of the Barangay Market Area, Santa Rosa Laguna, it is clear that developing an Information System Strategic Plan (ISSP) is crucial for the area's future development and sustained progress. The assessment highlights several reasons necessitating an ISSP, including the imperative to enhance operational planning and management, facilitate ongoing training and skills development, and bolster technological infrastructure. While some information systems, like the barangay website and basic communication tools, are integrated into daily operations, deficiencies such as unreliable technology and inadequate digital literacy hinder optimal efficiency. Moreover, although there is foundational training and expertise among staff, challenges like human error and limited technological proficiency impact service delivery and resident satisfaction. Additionally, while existing technological tools like the barangay website and basic computer services support daily operations, ongoing advancements in technology necessitate continual upgrades to remain current. Addressing these identified challenges through the ISSP will ensure that the Barangay Market Area can provide consistent, high-quality services to its residents and effectively adapt to future technological advancements.

Recommendations

Based on the findings of the study of Barangay Market Area present systems and the assessment of its IT maturity, multiple strategies have been proposed to improve its information technology environment.

- **Training and Professional Development** – Conduct regular training sessions for barangay personnel and community members to keep them updated on emerging information systems and technologies and implement ongoing professional development programs focused on advanced IT capabilities to improve service delivery and resident involvement.
- **Resource Allocation and Funding** – Allocate sufficient resources for hardware updates and cybersecurity measures to support efficient operations and ensure adequate funding for infrastructure improvements to enhance service quality and increase resident satisfaction.
- **Comprehensive Management Strategy** – Develop a management strategy that examines current workflows and identifies solutions for operational bottlenecks to reduce delays and improve efficiency and create a tailored technology adoption strategy for the Barangay Market Area to promote self-sufficiency in technology management, ensuring adaptability to changing trends and maximizing service delivery.
- **Implement Integrated IT systems** – Implement integrated systems across departments to improve administrative procedures and eliminate inefficiencies caused by manual techniques.

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