WEB-BASED INTERCONNECTED BARANGAY MANAGEMENT INFORMATION SYSTEM

A Capstone Project Proposal
Presented to the Faculty of the
Information and Communications Technology Program
STI College Sta. Cruz

In Partial Fulfilment
of the Requirements for the Degree
Bachelor of Science in Information Technology

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EXECUTIVE SUMMARY

Acquiring technological processes does not mean dumping the traditional ones nor implying that their importance is not applicable, especially in this modern world. However, as the technology advances and caters to functions that denote better status for workplaces, the traditional processes will now become a training ground basis noting a direct intervention to the advantage side. Information and Communication Technology (ICT) was used to improve governance by expanding the government's role in delivering services, public administration, and the promotion of political community since the government administration has been challenged to satisfy expectations and deal with the growing complexities, trends, and changes—it is a strategy called "e-governance", "Digital Government", "e-government" or "information society".

Now, since organizations can be found in small chapters like local governments, it is also used for securing, acquiring, and storing important documents both vital for the residents and the officials. Management systems are like common industries present in different organizations and companies. Commonly, it is known as a process that consists of organized and standardized efforts used by a company during the deployment of a system or operation to find the ideal balance between costs, efficiency, and support of the system during its life cycle. With the presence of management systems, the users are few taps away from getting what they need. Meanwhile, web-based systems are like the trending types of systems during this time of pandemic making these run alongside the internet.

With the current state of processing, managing, and securing documents and files in a barangay, they are using Microsoft Excel to organize data like encoding barangay census or the barangay residents' profile. Barangay Census is the procedure of systematically acquiring and recording information about the members of a given population, and Microsoft Word to create reports like Barangay Case Records where it is a written account of those people who have violated the barangay laws. Also, to create different documents that residents can acquire in the Barangay such as Barangay Certificate, Barangay Residency, Barangay Indigency,

Barangay Indigency for Burial, Barangay Business Clearance for Franchise, Barangay Business Permit, Community Tax Certificate (CTC), Travel Pass, Construction Clearance, and such.

The project entitled "**Web-Based Interconnected Barangay Management Information System**" aims to provide a web-based management system that offers different online functionalities for the Barangays in Santa Cruz, Laguna. Interconnected means forming a close linked connection where multiple parties, in this case, the barangays, have a platform to meet, connect, transact, and gather information for the same and relative way of serving the people. The web-based management system includes different functionalities for both residents and barangay officials. Features for the residents are divided into three: viewing, sending, and receiving of information. In terms of viewing, residents can view barangay announcements, different incidents in the barangay, available documents to request and its price, barangay officials, total population, total incidents, and map of the barangay. In sending of information, residents request certain documents. Meanwhile, receiving information is for the residents that can receive notifications about their scheduled date. Features for the barangay officials are divided into two – managing and viewing information. Managing of information includes the feature where barangay officials can manage residents' profile per household (Census), available documents and pricing, barangay officials, schedules, letters for hearing, scheduled for the release of documents, master lists, and reports. On the other hand, the feature of viewing information is where barangay officials can view residents' profiles, requested documents, announcements for residents, announcements for barangay officials, and reports, crime rate, total population, total incidents, total blotter cases, and map of the barangay.

ENDORSEMENT FORM FOR PROPOSAL DEFENSE

TITLE OF RESEARCH: **Web-based Interconnected Barangay Management Information System**

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In Partial Fulfilment of the Requirements
for the degree Bachelor of Science in Information Technology
has been examined and is recommended for Proposal Defense.

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APPROVAL SHEET

This capstone project proposal titled: **Web-based Interconnected Barangay Management Information System,** prepared and submitted by **John Lenard M. Aglahi, Cariza F. Dolliente, Kyl Kaisser A. Pontiveros**, and **Rhenzy U. Urriquia**, in partial fulfillment of the requirements for the degree of Bachelor of Science in Information Technology, has been examined and is recommended for acceptance and approval.

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Accepted and approved by the Capstone Project Review Panel
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INTRODUCTION

Project Context

The growing trend for Information Technology has emerged far above the level of development endeavors as the global environment develops. As an innovation capability, it is the foundation of improving processes and operations in the both public and commercial sectors. No one is left behind in this age of immersive experience technologies from employing high technologies to make a task or complicated operations easier where computers play a significant role in assisting people in managing, organizing, storing, accessing, and retrieving a vast quantity of information, and making it conveniently and instantaneously available, as information technology has become less of a choice and more of a must for individuals.

Administering the government in today's world of constant evolution has become a difficult task for policymakers, service delivery managers, and civil servants — a task that is particularly complex for those in emerging and transitional economies. Information and Communication Technology (ICT) was used to improve governance by expanding the government's role in delivering services, public administration, and the promotion of political community since the government administration has been challenged to satisfy expectations and deal with the growing complexities, trends, and changes—it is a strategy called "e-governance", "Digital Government", "e-government" or "information society".

Acquiring technological processes does not mean dumping the traditional ones nor implying that their importance is not applicable, especially in this modern world. However, as the technology advances and caters to functions that denote better status for workplaces, the traditional processes will now become a training ground basis noting a direct intervention to the advantage side. Management systems are like common industries present in different organizations and companies. It is known as a process that consists of organized and standardized efforts used by a company during the deployment of a system or operation to find the ideal balance

between costs, efficiency, and support of the system during its life cycle. Now, since organizations can be found in small chapters like local governments, it is also used for securing, acquiring, and storing important documents both vital for the residents and the officials. With the presence of management systems, the users are few taps away from getting what they need. Meanwhile, web-based systems are like the trending types of systems during this time of pandemic making these run alongside the internet.

The Philippines has over forty-two thousand barangays spread across the country wherein the barangay, as the smallest political unit, is responsible for implementing developmental programs, projects, and policies. Without the motivated and determined efforts of the barangays, the nation's public service delivery system would crumble at the grassroots. People are more engaged in barangays, which are at the bottom of the bureaucracy, than in other government entities. As a result, the empowerment of individual barangays may eventually result in a stronger, more resilient, and affluent society. It was stated in the Local Government Code of 1991, that local government units must be self-reliant and effective partners in the attainment of national development, as they must have projects, activities, programs, and services that their constituents must benefit from. With that, it requires information wherein barangays shall keep a database including various information on the barangay, such as demographics, reports on funding disbursement, grievance cases filed, houses established in the community, and citizens' socioeconomic profiles. (AN ACT PROVIDING FOR A LOCAL GOVERNMENT CODE OF 1991, 1991) These responsibilities, however, could not be accomplished only by the Barangay Chairman. As a result of the authority bestowed upon him as the local chief executive, he appoints the Barangay Secretary and the Barangay Treasurer to act as his hands in dealing with administrative and monetary matters. The Barangay Secretary is in charge of the majority of the barangay's administrative functions. Though some barangays have already begun to employ computers and other gadgets to conduct official transactions, the majority remain confined to manual procedures. To ensure reliability, clearances, and certifications are prepared with little to no baseline data since there are no

readily available accurate barangay statistics, programs and policies tend to overlook inclusiveness. Furthermore, insufficient barangay data management and monitoring impede the implementation of targeted local programs because barangays lack a consistent and valid evidence base.

Santa Cruz, a first-class municipality and the capital of Laguna is composed of twenty-six barangays namely Alipit, Bagumbayan, Bubukal, Calios, Duhat, Gatid, Jasaan, Labuin, Malinao, Oogong, Pagsawitan, Palasan, Patimbao, Poblacion I, Poblacion II, Poblacion III, Poblacion IV, Poblacion V, San Jose, San Juan, San Pablo Norte, San Pablo Sur, Santisima Cruz, Santo Angel Central, Santo Angel Norte, and Santo Angel Sur. These barangays are still practicing the traditional version of management systems which were operated by hands through pen and paper. Some of which have existing systems but limit the operation on solely monitoring. With the new needs of every barangay especially in this time of the pandemic, they need not just an upgrade but a completely new system that can perform and add different functions so that it will be good for a longer run.

Whenever somebody from their residents requests for a particular file or document such as Barangay Clearance, the queuing was in a terrible state, also, protocols like social distancing are not being observed. Since it runs on physical paper documents, the piling up on the secretary's table creates not just mess but a mixed-up numbering. Sometimes when blown by the wind or somebody go over, it was again remixed taking no part on a first-come, first-serve basis. It should be arranged properly so that organization is observed.

Profiling, or the recording and analysis of a person's psychological and behavioral characteristics, to assess or predict their capabilities in a certain sphere or to assist in identifying a particular subgroup of people is also one of the concerns when it comes to proper management in system and storages. It cannot be regularly placed in a vulgar and very noticeable place since the confidentiality of the document is important. When stored in a less noticeable place, the retrieval of it can sometimes be hard since records like that do not eventually happen every day. With physical

stores, there were outside threats like faded characters, getting wet, mouse attacks, and other non-human factors such as calamities that can be a serious problem when happen. There were only limited copies for it that are either at the respondent's side or just placed on the same as where the original version is.

In cases of Barangay announcements, though it was also done vocally, they also jive it with physical posters or flyers so that when forgotten, they have visuals to remind them. There will just be an announcement posted then after it will be nothing but a piece of paper that will either be a scratch or just thrown in the trash. There were no records on who did the announcement, when was it published, and more. So, in times when there's a need to look back on records, there will only be just the announcement – no details about the background of it.

Lastly, complaints take a very serious matter since there were a lot of elements that were included in making a complaint in barangay. It will be regarded as a process there and there since elements like an evidence which were of different forms like photos, videos, and audio recordings are hard to store. It will end up on a personal gadget which should not be done even if you are a public servant. Other kinds of stuff such as papers needed are also paving the way on their storage areas for complaint forms are usually multiple pages taking a huge space within the storage areas.

Likely, a management system will create a place for an effective way of managing documents. This being done in a web-based environment will create better access and more comfortable usage for the users. Even at times of distant working, they will still be very much functional without having so much worry about having copies of documents or their workloads. It will not just benefit the system manager that more likely is the secretary and everyone in the organization on fulfilling their role on the venture. Furthermore, it is a tool that holds the data for the barangay that is beneficial not just for a single term of officials, but for the overall existence of one life.

General Problem

How to design, develop, and implement a web-based barangay management system for Sta. Cruz, Laguna that will help them lessen and improve their manual task such as processing and securing documents and records, disseminating announcements, and also to communicate with the other barangays?

Barangays use Microsoft Word and Excel to create, process, and secure barangay documents and reports. Also, they manually manage and organize all the records that they need to assure that all of it is secured to data leakage. Some of the problems are, first, the residents who will acquire barangay documents have to line up and wait a long time in the barangay where health protocols like social distancing are not observed. Second, the dissemination of information or announcements from the barangay, which is not immediately known by the residents because the barangay health workers still need to go house-to-house, and sometimes announcements are not disseminated at the same time. Third, is the manual process of residents' profiles where they use Microsoft Excel which is prone to errors. Also, the documents, files, and records of the barangay and the residents are kept in file cabinets. Lastly, the communication and coordination of one barangay with the other barangay regarding activities and concerns involving both sides, and the making of reports that need to be discussed within the neighboring barangays that are forwarded to the municipality at the end of the month.

Specific Problems

- *How to design and develop a module that will allow residents to request documents online and receive a confirmation on the status of their request via notification?*

  Based on the interview, the queuing was in a terrible state whenever some residents request a particular document, and health protocols like social distancing and minimum capacity inside the barangay are not being observed. Also, since it runs on physical paper documents, the piling up on the secretary's

table creates not just mess but a mixed-up numbering. In that case, the problem is the organization for the distribution of requested documents. *(Refer to Appendix B for the Transcript of Interview)*

- *How to design and develop a module that will allow residents to view announcements.*

  Based on the interview, barangay officials have different assigned sitio/purok, they are the ones who are responsible to disseminate the announcement, the problem is that barangay announcements are not being executed at the same time which gives confusion to other residents in different sitio. Also, barangay officials and barangay health workers need to go house-to-house just to disseminate the announcement which takes a lot of time and effort. With that, dissemination of the announcements is not being executed at the same time and takes a lot of work. *(Refer to Appendix B for the Transcript of Interview)*

- *How to design and develop a module that will allow authorized personnel to encode residents' data (Census) in a secured and organized manner?*

  Based on the interview, the barangay officials are manually handling their residents' data (Census) and keeps it in storage boxes which makes the residents' information hard to find, might be damage, and might be lost. Also, they use excel which is prone to errors. In that case, the residents' data are not organized and well secured. *(Refer to Appendix B for the Transcript of Interview)*

- *How to design and develop a module that will allow barangays to disseminate information with each other.*

  Based on the interview, it is difficult for one barangay to coordinate and communicate with the other barangay regarding activities and concerns involving both parties for which they are required to send a notice and letter, and sometimes a barangay official must go to another barangay just to inform them. In addition, some reports need to be submitted to the municipality at the

end of the month which must be discussed and agreed upon by the neighboring barangays. *(Refer to Appendix B for the Transcript of Interview)*

Purpose and Description of the Project

The project entitled "Web-Based Interconnected Barangay Management Information System" aims to provide a web-based management system that offers different online functionalities for the Barangays in Santa Cruz, Laguna. Interconnected means forming a close linked connection where multiple parties, in this case, the barangays, have a platform to meet, connect, transact, and gather information for the same and relative way of serving the people. The web-based management system includes different functionalities for both residents and barangay officials. Features for the residents are divided into three: viewing, sending, and receiving of information. In terms of viewing, residents can view barangay announcements, different incidents in the barangay, available documents to request and its price, barangay officials, total population, total incidents, and map of the barangay. In sending of information, residents request certain documents. Meanwhile, receiving information is for the residents that can receive notifications about their scheduled date. Features for the barangay officials are divided into two – managing and viewing information. Managing of information includes the feature where barangay officials can manage residents' profile per household (Census), available documents and pricing, barangay officials, schedules, letters for hearing, scheduled for the release of documents, master lists, and reports. On the other hand, the feature of viewing information is where barangay officials can view residents' profiles, requested documents, announcements for residents, announcements for barangay officials, and reports, crime rate, total population, total incidents, total blotter cases, and map of the barangay.

On the website that the proponents will develop, residents of the said barangay can create their user account, as well as they can log into the website and view the announcements of the barangay. In terms of requesting a certain document from the barangay, a resident can request what document they will need. Right after the

request, the resident has a choice on either pay with QR via GCash, Paymaya, or Paypal as an optional payment method. If the resident chooses to pay with the said payment method, a reference number must be provided as proof of payment. On the other hand, if the resident has no access to the said mobile banking applications, payment can be done on the barangay upon claiming the requested documents. The Schedule of claiming the documents is automatically set by the website.

The barangay secretary is the one who will validate, create, and send feedback on requests for documents. Residents will receive the schedule as a form of notification on their user account. The secretary also manages the residents profiling (Census) of households and the incoming new residents. Also, the secretary can generate and print reports, manages the master list of male and female residents, registered voters, indigents, and persons with disabilities (PWD) together with the total number of resident classification. Moreover, management of official lists and accounts are also included on the secretary's side or module. Secretary can also post an announcement for the barangay.

Barangay Chairman has access to all of the modules and processes on the system including receiving complaints, receiving blotter requests, document requests, and generating reports about their profile and also, the management of official and accounts.

All involved persons have their profile page where they can view their account including different details but is limited to not allow editing of information.

Objectives of the Study

General Objective

To design, develop, and implement a web-based barangay management system for Sta. Cruz, Laguna that will help them lessen and improve their manual task such as processing and securing documents and records, disseminating announcements, and also to communicate with the other barangays.

In light of the aforementioned issues on the ground, the proponents chose to develop a relevant project that would not only speed local procedures through internet services but would also assure data quality and trustworthiness. A web-based barangay management information system can help in the delivery of effective and efficient public services.

Specific Objectives

- *To design and develop a module that will allow residents to request documents online and receive a confirmation on the status of their request via notification.*

  Residents can request a certain document from the barangay by filling up the necessary details. Residents can request a date of pickup and will automatically be validated by the system, but they can only pick the day from weekdays since the barangay is closed on weekends. If the residents paid the documents online then it will be printed, but if not then it will only be printed once they go to the barangay to their preferred schedule.

- *To design and develop a module that will allow residents to view announcements.*

  Residents that are registered on the system can view announcements from the barangay through the website's news feed.

- *To design and develop a module that will allow authorized personnel to encode residents' data (Census) in a secured and organized manner.*

  Barangay Secretary can encode residents' data (Census) in the website to allow the faster retrieval of data needed in terms of searching, generating reports, and master lists wherein the data are secured and organized.

- *To design and develop a module that will allow barangays to disseminate information with each other.*

  Barangay Officials from different barangays can communicate with each other

and can exchange information regarding activities and concerns involving both parties. It also involves exchanging information on what reports they should pass to the municipal at the end of the month. They will be able to communicate in a form of chat, which is work-related only.

Significance of the Study

The proponents will design and develop a project that will merit the following persons foremost of which are as follows:

Barangay Patimbao. The Web-Based Barangay Management Information System will be useful for the Barangay because the Barangay Patimbao will be known for their online, fast, and convenient transactions.

Barangays in Santa Cruz Laguna. This web-based management system will be useful for them because the study focuses on the barangays in the city of Santa Cruz Laguna.

Barangay Officials. This web-based management system will be useful for them as it can help them manage different transactions and functionalities in an online, fast and convenient way.

Residents of the Barangay. This will be useful for them because it can lessen their allocated time to process their different transactions.

STI College Sta. Cruz. The school's name will be known throughout the Barangays in Santa Cruz Laguna for the web-based management system made by the students of the STI College Sta. Cruz will help and benefit them a lot.

Proponents. To enhance their skills in programming, and knowledge in analyzing problems to connect into a system that could achieve their goals.

Future Developers. The study will serve as a benchmark in their future research, as well as a project that can be used to provide ideas for future researchers.

Future Researchers. The study will be useful for the basis of their research and will act as additional knowledge about the study.

Scope and Limitations of the Study

Scope

The study will be focused on developing a web-based management information system that will be beneficial for the barangays as it will help them to improve their transaction, operations, and functionalities. This will include all the characteristics and features of the proposed project.

Registration

This module will allow the residents of the barangay to create their online account only if they have their census on the database that will be validated automatically.

Log In

This module will allow the residents of the barangay to type their username and password to log in.

Notification

This module will allow the residents of the barangay to receive a notification on the website, it may include the release date of the document.

Payment via QR

This module will show the payment method for the requested document but will only be optional for the resident so they can pick up the document after release.

Residents Newsfeed

This module will allow the residents of the barangay to view different

incidents and announcements.

User Profile

This module will allow the user to manage their profile but the information that they can modify is only limited and they cannot update the information that was stored in the census.

Master Lists

This module will allow the barangay officials to generate different reports and the master list of total male, female, registered voters, indigent, and person with disabilities.

Barangay Officials

This module will allow the barangay captain to create an account for different barangay officials and manage the organizational chart.

Activity Logs

This module will allow the barangay officials to view all the activities that were made inside the web-based management system.

About

This module will allow the residents and barangay officials to view different information about the barangay, it may include the map of the barangay, available documents to request and its pricing, barangay officials, total population, and total incidents.

Documents Management

This module will allow the barangay officials to add, edit, delete documents that will be offered.

Limitations

- The website will not be able to address typographical errors.
- The website will not be able to run without the internet.
- The website will not allow residents with no census record on the system to create an account.

REVIEW OF RELATED LITERATURE/SYSTEMS

The proponents of the study research the following related literature and studies to include examples and references from the existing body of knowledge to discuss how they are relevant to the study the proponents are conducting, to emphasize the differences between them, and most significantly, to highlight the study's uniqueness which will truly validate its distinction.

Review of Related Literature

Local Literature

The journal article entitled "Barangay Management Information System (BMIS) for Cities and Municipalities in the Philippines" talks about the idea to introduce a management information system to help address a solution to the difficulty that has been occurring in a barangay. The paper provides an efficient and effective way to record and manage information that is needed of every barangay. The Barangay Management Information System is a program that contains features that record and manages information and at the same time can send documents from barangay hall to the city hall. (Imus, Magleo, Soriano, & Romulo L. Olalia, 2018)

A research article entitled "Barangay Office Management", states that as the population in the Philippines increases, the number of households in each barangay in the country also increases that is why more people seek service of the barangay council as the unit of local government that is close to people. However, the increased number of people means increasing works for the barangay council members and staff also. With that they developed a system that will enable the user to manage and print barangay citizen's request and financial records and reports such as Payroll for honoraria and allowance, Disbursement voucher, Account's Advice, Purchase orders, Purchase Receipt, Reimbursement Expense Receipt, Inspection Report, Acceptance Report, Liquidation Report, Accomplishment Report, Requisition, and Issue Slip, Summary of Cash Payments, Summary of Checks Issued, Summary of Paid Petty Cash Vouchers, Summary of Collections,

Budget Information, Census, Barangay Cases, Barangay Certificates, Barangay Clearance, Barangay Indigency, Barangay Bonafede, Barangay Recommendation, Barangay Permits, Occupancy Permit, Building Permit, Business Permit, Billboard/Tarpaulin Permit, and Excavation Permit. The developmental tools that were used are PyDev Eclipse Version 2.2.4 for the Programming Language and MS SQL 2008 for the database. (Pulumbarit & Suarez, 2017)

A journal article entitled "An Open Data and Geo-based Information System", states that barangay officials are accountable for keeping records and information of citizen's health and crime incidents so they developed a web-based information system integrating features such as open data and geo-based for a pilot community in the Philippines. It will serve as the platform for collecting information that will be used for planning, analysis, decision-making as well as to increase the effectiveness and efficiency of government services in the community. (Mercurio & Hernandez, 2017)

Foreign Literature

According to a journal article entitled "Decision Making and Management Information Systems", Management Information Systems is needed by public and private organizations. Management Information System is a system of support in making decisions taken by managers in overcoming problems that are happening in an organization both public and private organizations. Through MIS managers can make decisions wisely in the sense of being able to overcome the problems that are happening and the decision will not create greater problems that can disrupt the survival of an organization. the presence of computer technology has made a very positive contribution to the management information system and MIS is also very much needed by leaders in an organization or company for responsible decision making. (Meiryani, Siagian, Puspokusumo, & Lusianah, 2020)

A literature review entitled "eGovernment Transformation: Literature Review" elaborates that eGovernment ends up one of the key components for the advancement of the nation. most governments are performing well in eGovernment

implementation. However, eGovernment makes the services from the government more effective and efficient through better ICT capabilities rather than the conventional method. The use of ICT makes the public access faster and the public can get better information through the digital platform via the internet. Currently, there is a necessity to focus on eGovernment Transformation, Organization Transformation, Public e-service, public value, Challenges, and Obstacles that face government to transform. The findings showed that each organizational element, that consists of process, people, culture, and structure can be identified well through the technology that induced organizational transformation in the public sector. The changes of an attribute can be identified by comprehensive review from a general literature review of organizational point of view, the literature in the field of organization and information systems, and eGovernment literature. (Shouran, Priyambodo, & Rokhman, 2019)

According to an article entitled "Importance of Information Systems in an Organization", to gain the maximum benefits from your company's information system, you have to exploit all its capacities. Information systems gain their importance by processing the data from company inputs to generate information that is useful for managing your operations. To increase the information system's effectiveness, you can either add more data to make the information more accurate or use the information in new ways. (Markgraf, 2019)

An article review entitled "Cloud-based Management Information System: A Systematic Review and Future Research Scope" states that Several organizations, mostly governmental, have adopted information systems for management. They are considered especially helpful for large projects that have a high degree of complexity. Due to this, most firms, especially in developing countries like Jordan, can remain on their core functions with the successful adoption of cloud-based management information systems. This study primarily focuses on the systematic review of several studies in the literature that have evaluated management information systems through cloud computing technology. To achieve the aim of this study, a systematic review of management and business process journals is

conducted Results returned are evaluated and assessed to understand the principle functioning of information systems, their uses in management, and adaptation of cloud-based MIS. Results of the assessment are compiled and a collective conclusion about the adoption of cloud-based MIS has been discerned for our present study. Findings indicate a structural focus on cloud-based management information systems among small and medium enterprises, several organizations, mostly governmental as well as industrial giants. Therefore, through this research study, the applicability of cloud-based MIS into the management processes is explored and highlighted. Various advantages and applications of cloud-based MIS in outsourcing and management are compiled from related studies in the literature. (Kanaan, Abumatar , & Abu Hussein, 2019)

"A Literature Review of Factors Influencing Implementation of Management Information Systems in Organizations", a journal article about a proper implementation of Management Information Systems (MIS) that can improve an organization's performance, productivity, and work efficiently. Management Information Systems (MIS) play a vital role in the decision-making process. Managers can improve their decision-making process with the successful execution of Information Systems. When an organization decides to implement MIS in their organization, they need to look carefully at whether their MIS implementation goal is aligned with their organization goal or not. Their top management must support the project plan, and they also equip themselves with the required IT knowledge. They must acknowledge that a properly designed MIS can help them significantly in their decision-making process. They can achieve their overall organizational goal and they also can manage their people with the support of Management Information Systems. They allocated the necessary resources for the MIS implementation. Also, they train their users with the necessary knowledge so that their organization efficiency will improve significantly. In conclusion, these three factors jointly play a vital role in MIS implementation, and an organization will achieve numerous benefits with it. (Chowdhury & Salahuddin, 2017)

Related Studies and/or Systems

Local Studies/*Systems*

According to the study entitled "The Role of Management Information System: Review on the Importance of Data and Implementation in Organizational Process", Management Information System is important in the organization's success. Management Information System in every organization should work according to the plan and vision of every organization. The purpose of the study is to underscore the importance of the Management Information System through a literature review and to determine the level of implementation in private universities in Pangasinan. A literature search and survey questionnaire were used to satisfy the requirement of the study. The result of the study shows that schools in Pangasinan are implementing the process and practice of the Management Information System. The literature review shows the big importance of industries and organizations to maximize the utilization of the unit. It is recommended that all institutions should revisit and include the Management Information System unit as a priority unit for improvement for organizational effectiveness and innovation. (Pastor, 2020)

The study "Web-based Barangay Information System for Malita, Davao Occidental" is about developing a web-based information system that automates the management of barangay household that can be viewed in the municipal webpage to monitor the increase and decrease of household, commodities, and population for immediate action, and geotagging of commodities for barangays. The project's objectives were met, particularly it could manage the household, population, and commodities in a short period of time; the municipal personnel could now efficiently monitor the status of the community to provide an immediate solution, and the users don't need to travel and conduct a survey in every barangay to gather data. A module that will store and populate barangay household, population, and geotagged commodities were provided. (Aparici & Ruelan, 2018)

A capstone project entitled "Barangay Services Management System" is about designing and developing a management system where the residents can view the

announcements, blotter, can get reservations, as well as the barangay officials to keep and report the records of the residents. The proponents conclude that the system is fully operational and dynamic, as of the sum, data gathered. This condition is on the premise that it has addressed the necessary automation requirement of the firm after the thorough system study. (Canete, Fuellas, & Tina-an, 2017)

A thesis entitled "Management Information System in Barangay Calahan Cardona, Rizal", focuses on the development of a Management Information System for Barangay Calahan, Cardona, Rizal. The study's main concern is to perform an appropriate method and, in that way, it would be more efficient and reliable. Researchers developed a Management Information System for Barangay Calahan, Cardona Rizal that will give safer storage, fast retrieval of files, maintains reliability and accuracy, and faster tracking of the files. The software for the records is very useful to the staff, from handwritten records and manual issuing of barangay clearance, certificates, and another barangay issuance. (Martinez, Lalata, Agra, & Abogado, 2017)

"Computerized Information System in Barangay Poblacion, Danao City, Cebu", a capstone project, computerized barangay information system is appropriate for use of barangay employees, who have access to the profile of barangay residents for the direct reports. Moreover, departmental organizational staff which has a business need for this information for their business unit can also benefit. This is responsible for an effective and efficient approach for barangay employees and residents. It well helps them accomplish a task faster and would also eliminate the need for a large staff. It will provide profile-based information for residents. (Lado, Maloloy-on, Perez, Rizaldo, & Tacocong, 2017)

Foreign Studies/Systems

"E-government and Digital Divide in Hail City: A Quantitative, Older Adults Study", a thesis project that aims to identify, explain and understand the adoption, use, and diffusion of e-government services within the older adults' population

(50+) of the vicinity in Saudi Arabia. The study uses a quantitative research method along with a positivist epistemology. The data collection technique involved distributing survey questionnaires to households' residents (50+) in Hail city (area and simple random sampling). A small-scale pilot study was initially used (n=257) to validate and enhance the survey questions, followed by a wide-scale final study (n=937). Findings revealed that with regards to Internet adoption, age-based, gender-based, education-based and health-based digital divides do exist within the elderly population. It was also found by model analysis that elderlies' intentions of whether to use or not use e-government services are considerably impacted by attitudinal, subjective norms, control, and trustworthiness factors, excluding the two factors of image and trust in government, which showed insignificance. The study makes positive contributions to related literature, policy makers, and industry. (Alfalah, 2018)

Synthesis

The literature and studies that the proponents gathered are focused on management information system wherein it was used by barangays. Based on the different literature and studies, they differ on how they are calling it— "Barangay Management Information System", "Barangay Office Management", "Barangay Services Management System", "Management Information in Barangay", and "Computerized Information System in Barangay". However, they are consistent in pointing out that the management information system was used to expedite, organize and smooth the transaction and process that takes place in a barangay.

It was also stated that as the population in the Philippines increases, the number of households in each barangay in the country also increases that is why more people seek service of the barangay council as the unit of local government that is close to people. However, the increased number of people means increasing works for the barangay council members and staff also. With that, developing a Management Information System in a Barangay will help lessen and improve the process of managing and printing of barangay citizen's documents request, as well as the

financial records and reports.

Management Information System is needed by public and private organizations as it is a system of support in making decisions taken by managers in overcoming problems that are happening in an organization both public and private organizations. Through this, managers can make decisions wisely in the sense of being able to overcome the problems that are happening and the decision will not create greater problems that can disrupt the survival of an organization. Management Information Systems gain their importance by processing the data from company inputs to generate information that is useful for managing operations. However, when an organization decides to implement MIS in their organization, they need to look carefully at whether their MIS implementation goal is aligned with their organization goal or not. Their top management must support the project plan, and they also equip themselves with the required IT knowledge. They must acknowledge that a properly designed MIS can help them significantly in their decision-making process. They can achieve their overall organizational goal and they also can manage their people with the support of Management Information Systems.

Some of the gathered information from the literature, studies, and systems, differs from the characteristics, qualities, and features that the proponents will implement in the project. However, the proponents will use it as a reference for the enhancement and development of the to-be-developed project where its main objective is to provide a web-based management information system. Moreover, the proponents will not aim to replicate nor simulate the design implementations that were present and used from other systems developed.
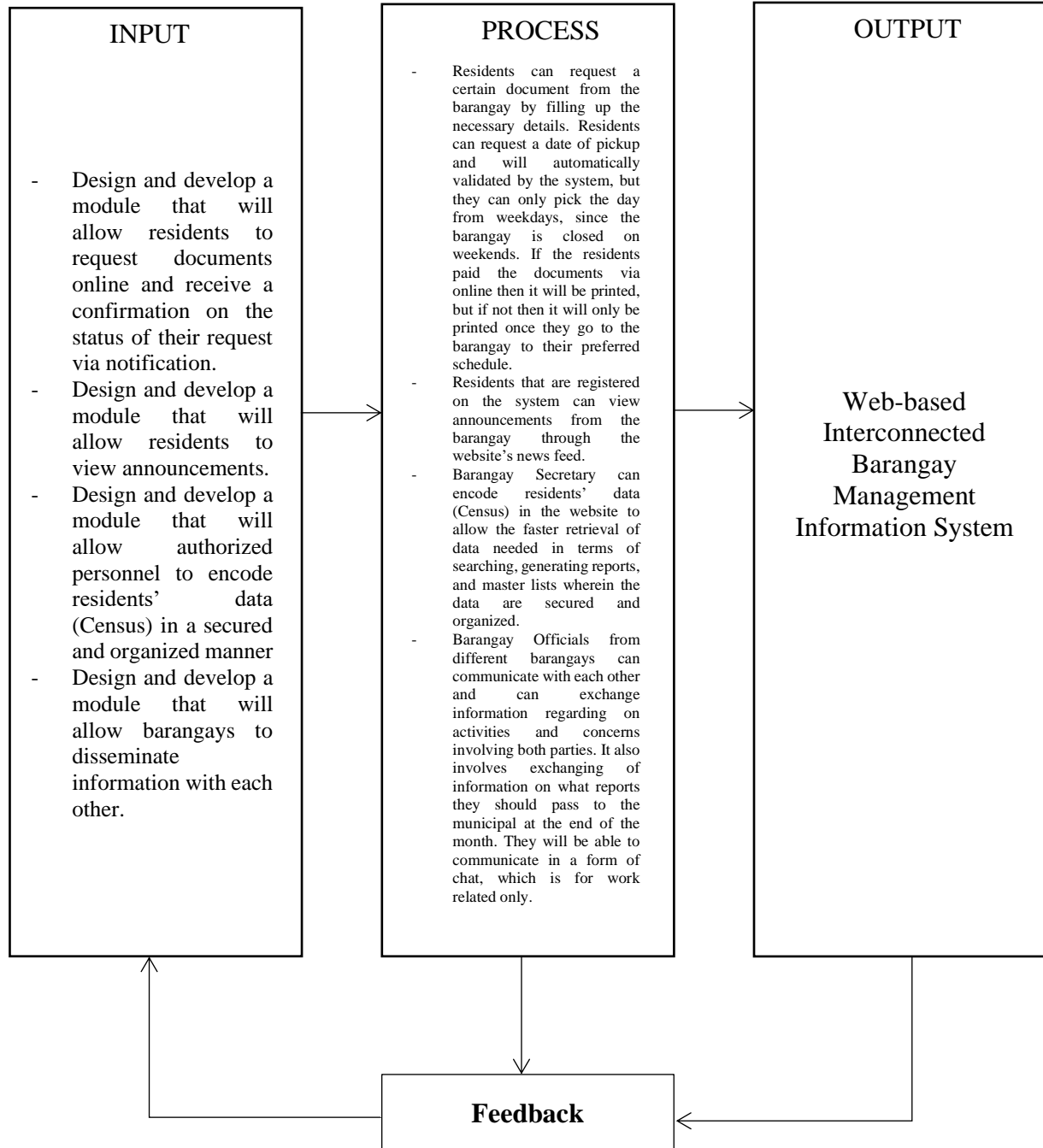
CONCEPTUAL FRAMEWORK

INPUT	PROCESS	OUTPUT
- Design and develop a module that will allow residents to request documents online and receive a confirmation on the status of their request via notification. - Design and develop a module that will allow residents to view announcements. - Design and develop a module that will allow authorized personnel to encode residents' data (Census) in a secured and organized manner - Design and develop a module that will allow barangays to disseminate information with each other.	- Residents can request a certain document from the barangay by filling up the necessary details. Residents can request a date of pickup and will automatically validated by the system, but they can only pick the day from weekdays, since the barangay is closed on weekends. If the residents paid the documents via online then it will be printed, but if not then it will only be printed once they go to the barangay to their preferred schedule. - Residents that are registered on the system can view announcements from the barangay through the website's news feed. - Barangay Secretary can encode residents' data (Census) in the website to allow the faster retrieval of data needed in terms of searching, generating reports, and master lists wherein the data are secured and organized. - Barangay Officials from different barangays can communicate with each other and can exchange information regarding on activities and concerns involving both parties. It also involves exchanging of information on what reports they should pass to the municipal at the end of the month. They will be able to communicate in a form of chat, which is for work related only.	Web-based Interconnected Barangay Management Information System

Feedback

Figure 1. Conceptual Framework

The web-based management information system follows the Input-Process-Output Model wherein what goes in the input; what causes the change in the process; and what comes out is output.

TECHNICAL BACKGROUND

Overview of Current Technologies Used in the Current System

For a small unit of government, Barangay Chairman *(Punong Barangay)* is the one who leads the Barangay. Sangguniang Barangay consists of seven elected members, Sangguniang Kabataan Chairman, and a separately appointed secretary and treasurer — altogether 11 barangay officials. Furthermore, each barangay must form a *Lupon ng Tagapamayapa* comprised of a Chairman and 10 to 20 members. In addition, for each dispute in the barangay, a *Pangkat ng Tagapagkasundo* of three members must be formed. Also, local *tanods* can be organized by the barangay.

Information Technology as a tool allows people to complete more activities, making it a valuable asset, particularly in working contexts such as a Barangay. The barangay is where the basic planning and execution of community projects and activities take place, yet it has the least quantity of information presented that serves as a foundation for governance and strategy implementation.

With their current state of processing, managing, and securing documents and files, the following are the technologies, systems, or tools that they are using:

- *Microsoft Excel*

  This is used by barangays to organize data like encoding barangay census or the barangay residents' profile. Barangay Census is the procedure of systematically acquiring and recording information about the members of a given population.

- *Microsoft Word*

  It is used to create reports like Barangay Case Records where it is a written account of those people who have violated the barangay laws. Also, to create different documents that residents can acquire in the Barangay such

as Barangay Certificate, Barangay Residency, Barangay Indigency, Barangay Indigency for Burial, Barangay Business Clearance for Franchise, Barangay Business Permit, Community Tax Certificate (CTC), Travel Pass, Construction Clearance, and such.

Calendar of Activities

The discussion of the research topic is the first step, followed by the discussion of the research title. The discussion and brainstorming were held through a voice and video call since members were not able to gather because of the pandemic. The proponents proposed three titles and ended up with the title—E-Commerce Website of Systems Software. The survey was conducted through google forms and an interview was done through a phone call. Proponents approached respondents through chat, phone calls, text messages, and email. After gathering information such as related literature and studies, proponents started the project documentation.

The proposal defense ended but the verdict of the panel members regarding the project was re-title, which means that proponents were needed to propose a new title. Proponents were given a week to think of a new title, and due to the short time grace period, proponents have come up with a new project title "**Web-based Interconnected Barangay Management Information System**". The proponents immediately conducted interviews with the barangay officials to clarify the problems and objectives of the project. After the information that was needed was gathered, project proposal documentation immediately started.

Gantt Chart of Activities

MONTH / ACTIVITY	FEBRUARY				MARCH				APRIL				MAY				JUNE			
Research Topic	▓	▓														▓	▓			
Research Title & Description/Abstract			▓	▓													▓			
Client Searching					▓												▓			
Data Gathering (Survey & Interview)						▓											▓			
Looking for Related Literature and Studies						▓	▓	▓								▓	▓			
Consultation					▓	▓			▓	▓		▓	▓				▓			
Project Documentation																				
Project Context (Background of the Problem, and General and Specific Problem)									▓	▓		▓	▓				▓			
Purpose and Description of the Project									▓	▓							▓			
Objectives of the Study									▓				▓				▓			
Scope and Limitation of the Study																	▓			
Review of Related Literature/Studies/Systems & Synthesis										▓							▓			
Overview of the Current Technologies used in the Current System									▓	▓							▓			
Gantt Chart	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓						▓			
Resources									▓								▓			
Methodology													▓				▓			
Conceptual Framework													▓				▓			
Curriculum Vitae														▓			▓			
Table of Contents													▓				▓			
Completion of the Project Proposal Document															▓		▓			
Project Proposal Defense																▓	▓			
Retitle of Project Proposal																	▓			

Table 1. Gantt Chart of Activities

■ Aglahi, John Lenard M.

■ Dolliente, Cariza F.

■ Pontiveros, Kyl Kaisser

■ Urriquia, Rhenzy U.

▓ All

METHODOLOGY

In this study, the proponents of the study spared no effort and use different approaches and methods in gathering all the necessary data and information to meet the requirements of the proposal. All the methodologies that were used and adapted to achieve the mentioned problems and objectives are mentioned below.

Data Gathering

Gathering information is essential for mounting an appropriate thesis project, as it will serve as the foundation for the study that will be conducted. The proponents will be using different data gathering tools, which can help to gather the relevant information needed to achieve the goal of the proposed study. Here are the data gathering tools:

Planning

In the development of a project, planning is an equally important phase in developing a system. The proponents meticulously bring their thoughts together through message, chat, voice, and video calls through MS Teams and Messenger to ensure that every voice is heard and that rational choices are made.

Internet Research

A significant quantity of information collected including the related literature and studies came from Internet searches, which gave the proponents ideas and insight into the research's development. The proponents researched the related literature, studies, and systems that they will use as a reference and basis in developing the project. However, proponents were not able to go to libraries to research because of the current health crisis, which limits everyone's activity.

Interview

The proponents reached out and interviewed Barangay Secretary to get the most

important information for the project. The interviewees gave the proponents relevant information about the process and problem of acquiring a system.

Consultation

The proponents of the study consulted with the capstone adviser and project coordinator to review the findings and seek guidance on how the project will proceed. The consultation happened through meetings in MS Teams and calls in Messenger.

Development Methodology

The proponents follow the standard System Development Life Cycle (SDLC), to define and present solutions for the problems identified in this study, using the Modified Waterfall Model.

Modified Waterfall Model has a lot of advantages wherein it is flexible to correct mistakes and can make changes that lead to less effort and time in working the project. The system development process model is broken down into different phases. The basic phases of system development processes are as follows: requirement gathering, system analysis, design, testing, implementation, operation, and maintenance.

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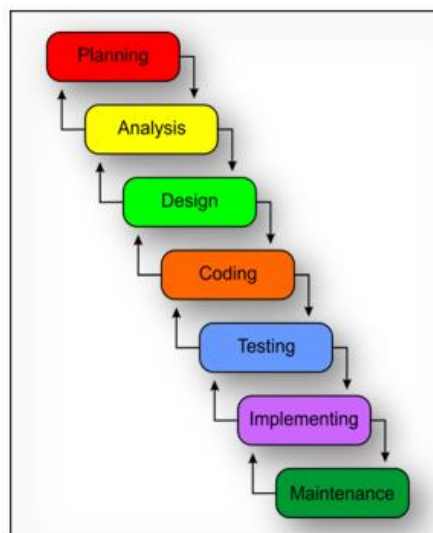
Figure 2. Modified Waterfall Model

Planning

Planning is the phase where the objectives of the system and the nature and scope of the problem are under study. It is the process of thinking about the sequence of action steps required to achieve the desired goal. The proponents are also responsible for determining the needs of the system.

The proponents planned and talked about what the process would be in the capstone project through voice and video calls due to the pandemic. To determine the problems and objective of the project, an interview was conducted in different barangays.

Analysis

The analysis phase involves breaking down the system into different pieces to analyze the situation, what needs to be created and engage users. It defines the project goals into functions and features intended in the system. It also includes looking for an existing system similar to the proposed system.

The proponents looked for related literature, studies, and systems that are related to the project. With that, the proponents will know if any existing studies are similar to the project or they can use it as a reference to improve the project they are developing.

Design

The Design Phase is the actual flow of the project is done. It seeks to develop detailed specifications that emphasize the physical solution to the user's information technology needs. It also defines the hierarchy of the functions. The functions and operations are described in detail, including screen layouts, process diagrams, and other documentation.

Coding

In this phase, the proponents will program the system and follow specific coding requirements.

Testing

The proponents will test the input and output of the system to determine if the system gives the correct operation that is provided. Proponents will invite various people from the barangay to test and rate the system's functionality.

Implementation

Once the system is completely tested and properly working. It is time to deploy the system to the user environment. It involves the actual construction and installation of the system. It will be implemented in Barangay for observation if it is efficient and effective.

Maintenance

Through the maintenance phase, the product is maintained and ensured that it will not become obsolete. It updates for certain components to make sure it meets the right standards and the latest technologies to face current security threats. It also involves preventive and corrective maintenance and periodic system usage summaries.

Resources

The following hardware and software are the resources that will be needed in the development of the system.

Hardware to be use

- **Computer**

    A programmable electronic device designed to accept data, perform

prescribed mathematical and logical operations at high speed, and display the results of these operations. A laptop and a personal computer or desktop computer are examples.

- **Server**

  Renting a Server from a distant location thru a web hosting service that allows individuals and organizations to make their website accessible via the World Wide Web.

Software to be use

- **Sublime Text 3**

  A full-featured shareware cross-platform source code editor is widely used among developers.

- **Adobe Dreamweaver 2021**

  A powerful web design and development application that combines a visual design interface with the advanced code editor.

- **Notepad**

  A simple text editor and basic text-editing programs for Microsoft Windows.

- **XAMPP 3.2.4**

  Open-source software developed by Apache Friends. XAMPP software package contains Apache distributions for Apache server, MariaDB, PHP, and Perl and is a local server or localhost.

  Together with phpMyAdmin the most popular MySQL administration tool and is a free web application that provides a convenient GUI for working with the MySQL database management system.

- **brackets.io**

  Created by Adobe Systems that is a discontinued source code editor that focuses on web development.

- **Web Browser**

  A software application is used to locate, retrieve, and display content on the web including webpages, images, videos, and other files. Examples are Google Chrome, Microsoft Edge, Mozilla Firefox.

- **Visual Studio Code**

  A free-ware source code editor with features such as debugging, syntax highlighting, intelligent code completion, snippets, code refactoring, and embedded Goit that was developed by Microsoft.

- **Composer**

  A tool for dependency management for PHP was developed by Nils Anderman and Jordi Boggiano.

- **Laravel**

  A PHP web framework, that is intended for the development of web applications following the MVC architectural pattern and based on Symfony.

APPENDICES

APPENDIX A

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TRANSCRIPT OF INTERVIEW – BARANGAY POBLACION II

Conducted by: Proponents

Interviewee: Minerva E. Ciriaco (Brgy. Secretary); Soledad G. Recio (Brgy. Councilor)

Q: What are the problems you encounter here in the barangay?

A (Secretary): For now, because of the pandemic, the problem is the announcement and distribution of *ayuda*. We tell the barangay health workers that there is an *ayuda* to be distributed. So, what they will do is they will go house-to-house in the sitios together with some barangay councilors. They will also interview the residents from house to house and of course, they will bring a form. Like what happened in the last distribution, the barangay health workers were accompanied by members of the DSWD. They have an assessment form to assess the residents whether they are qualified to be given assistance or not, and how many families are in a house.

A (Councilor): Of course, as a barangay, we also provide assistance like rice and such. Sometimes residents will get the *ayuda* here in the barangay, sometimes we will give it house-to-house.

Q: Are they all indigent or do you choose the ones to be given cash assistance?

A (Secretary): Poorest of the poor.

A (Councilor): But of course, in terms of food assistance, all of the residents of the barangay are given.

Q: How do you make announcements regarding barangay programs?

A (Secretary): For example, the child vaccine. The barangay health workers will go around the whole barangay to inform the date and other details regarding that. Similarly, when it comes to the Covid vaccine, they also go around the whole barangay to tell the date, where the venue is, as well as the schedule. Sometimes, other residents just know the announcements from other sitios, because sometimes barangay officials and barangay health workers can't go from house to house because there is a lack of time.

Q: Have you started vaccinating here in your barangay?

A (Secretary): Maybe this coming June. Because of course the facilities that will be used are still being fixed, and are still being prepared. And it's not just our barangay, of course, it's the other barangays as well. And it seems that the schedule is still being adjusted.

A (Councilor): I am a councilor and of course a senior citizen as well. I am also the president of the senior citizen here in our barangay. There is always 1% reserved for senior citizens and PWDs, we are always a priority. With the *ayuda* of course, active or inactive senior citizens, we always still provide help.

Q: Are you the one who chooses who will get the vaccine?

A (Secretary): Barangay Health Worker arranges vaccine-related matters. Residents get the form here in the barangay but they can also ask for the form in the vaccine vicinity.

Q: How do you make an announcement and conduct a barangay activity?

A (Secretary): Every Saturday we have a clean-up drive. We will go around the whole barangay and clean the road and the surroundings. Sometimes the residents help with the cleaning. Then, we will also announce using a megaphone regarding stray dogs or untied dogs. We will warn them first, and if they still don't comply, we will give them tickets.

A (Councilor): Even the cars. Because there is a road clearing law that forbids just parked vehicles anywhere. There are still really residents who don't comply. We give them the first warning, if they still don't comply, we will give tickets as well.

Q: How about the process of residents' profiling?

A (Secretary): In the process of residents' profiling, we have a monitoring per household. If there is a relocated resident or a newly relocated resident here in the barangay, they need to get a certification from us so that we know if they have recently relocated here in our barangay.

Q: How about the process, for example, I am from barangay Poblacion IV, then I want to move here to Poblacion II, how and what will be the process?

A (Secretary): You must come here to the barangay so that you can be assessed, and so that you can join the census here. Then after you have lived here for 6 months, you can file a change of voter's are of registration with the Comelec.

Q: Will you give me a certificate indicating that I have been here for 6 months?

A (Secretary): No. We will know that from the census of barangay health workers.

Q: Is the census of the barangay health workers annually?

A (Secretary): The barangay health workers will just go around the barangay's vicinity to do the census. With that, we will know the new residents that are currently living here in our barangay.

A (Councilor): If you have lived here in the barangay for less than 6 months, we will not give you a certificate of residency, you will get that certificate in your barangay of origin.

A (Secretary): Before you can be given certificates here in the barangay, you must have lived here for 6 months. You need to be censused by the barangay health worker so that you have a record here in the barangay. We also need to have a record for all households here in the barangay.

Q: How about the process of residents acquiring documents like cedula and such?

A (Secretary): I processed the cedula and then the treasurer gave the receipt. The treasurer will take care of financial matters. I also make certificates, travel passes, certificates of residency, and such. But before we issue certificates, we will first check if they have a case here in the barangay. Sometimes, the barangay captain will interview the resident before the certificate is released. I am also the one who writes the letters regarding meeting with other barangays. Sometimes, when many residents get documents like travel passes, they line up here in the barangay, and sometimes social distancing is not observed even though they are wearing face shields and facemasks.

Q: What do you want to improve here in your barangay?

A (Secretary): The process of getting the documents here in the barangay, and the dissemination of information and announcements where the residents must know immediately.

TRANSCRIPT OF INTERVIEW – BARANGAY POBLACION III

Conducted by: Proponents

Interviewee: Arturo G. Flores, Jr. (Barangay Chairman)

Q: What do you use for filing and recording barangay documents, reports, and records?

A: We use a computer. We also use MS Word to create reports, and MS Excel to encode records of residents' profiles. Also, logbooks, for all activities and transactions done in the office for the record. We have three computers for different departments to run. For the Barangay Secretary, the reports, records, and documents of the barangay. SK Chairman, for their activities and documents as well. And of course, to the Barangay Treasurer, which is about financials.

Q: Who handles the residents' profile and processes the documents that can be obtained by the residents here in the barangay?

A: The Barangay Secretary knows about the paper works here in the Barangay. She is also in charge when there are residents who will obtain documents such as Barangay Clearance, Barangay Certificate, and so on.

Q: How do you handle reports like tanod reports or incident reports and community concerns, as well as blotter?

A: In blotter, the person you are complaining to, must be reported to the barangay where he resides. In community concern, it is the residents who come to the barangay and then we will discuss with the barangay officials what action should be taken. It would have been better if we knew it beforehand or right away so that we could take immediate action and come up with a better solution.

Q: How do you make the announcements?

A: When something is announced regarding barangay activities, the councilors and barangay officials go around the entire barangay. But sometimes because, also because of lack of time or there is a sudden need to announce from the municipality, sometimes the barangay officials can't go to other parts of the barangay. What is happening is only known when other residents tell stories or say things. While in tanod reports, they are usually the ones who know what happened, and when we have a session or meeting, that is the time that they will explain or discuss the incidents.

Q: How do you communicate when you have activities to do with other barangays, like joint activities or inter-barangays?

A: When there are joint activities with other barangays, what we do is that we send a letter to them. After that, we will wait for their response and confirmation that sometimes it will take days, so it should be about one or two weeks before the letter has been sent to them.

Of course, we understand that because they will first be discussed and talk about it with the whole barangay officials.

Q: What do you want to improve here in your barangay?

A: The communication with other barangays, because sometimes some real issues and matters need to be discussed immediately.

TRANSCRIPT OF INTERVIEW – BARANGAY POBLACION IV

Conducted by: John Lenard M. Aglahi
Interviewee: Elgine John B. Alejar (Barangay Secretary)

Q: What is the day-to-day process or transactions of your barangay?

A: A lot. First of all, issuing documents such as Barangay Clearance, Barangay Residency, Barangay Business Clearance, Barangay Indigency, and many more. In terms of process, since we already have a computer, we just use a template in MS Word, then edit it, enter the name and the other required info, then print it and put a seal, after that, it will be signed by the presiding officer. Second, the management of activities. For example, when there is a meeting on that day, it will be written in the schedule book and there you will see the activities to be executed in the next few days. Third, is the handling of resident records. Usually, we update resident's info annually. Per household, we assign housewives then write their info on printed paper and we keep it in our drawer boxes, per household. That's where we take a long time, to sort and search. Fourth, is the handling of blotter cases or guard reports, because in blotter there is a lot of need to fill in the info: the one who filed the blotter and the one the blotter is filed against, and of course the problem. After that, we store it again in the drawer box where active cases and resolve cases are separated.

Q: What are the barangay documents and reports you are handling?

A: In the documents, there are Barangay Clearance, Barangay Residency, Barangay Business Clearance, Barangay Business Clearance for Franchise, Barangay Indigency, and Barangay Indigency for Burial. In the reports, there are active and resolve blotter cases, there are also tanod reports, as well as a master list of persons with disabilities, senior citizens, males, females, and registered voters.

Q: Do you have a problem handling those?

A: Yes, because the processing is still really manual. Just like when I said before, we only use the MS Word template and put the name, age, date, and other required info before printing, and after that put the seal and signature. It's not that time-consuming but when the residents need the document one after the other, it's a big hassle and a waste of time. Also, when we need to pass the master list of PWD, Senior Citizen, etc., we are manually listing and recording it, which is very time-consuming.

Q: Do you have a current system in your establishment?

A: Nothing yet. And as a secretary, I proposed to inquire about the system with our barangay captain, even though I have no idea what is that. And because I just want to reduce our manual processes since the others already have used systems.
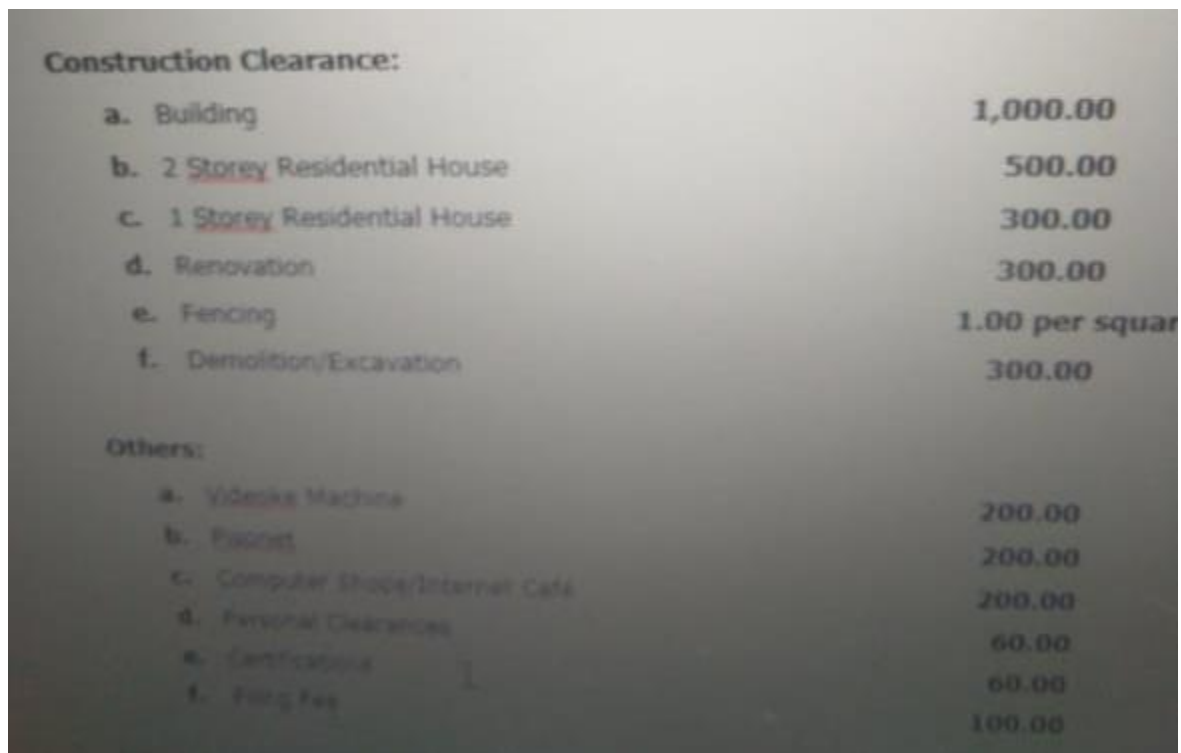
TRANSCRIPT OF INTERVIEW – BARANGAY PATIMBAO

Conducted by: John Lenard M. Aglahi
Interviewee: Maureen V. De Jesus (Barangay Secretary)

Q: What are the barangay documents that residents can acquire?

A: Barangay Certificate, Barangay Residency, Barangay Indigency, Barangay Indigency for Burial, Barangay Business Clearance for Franchise, Barangay Business Permit, Community Tax Certificate (CTC), Travel Pass, Construction Clearance, and such.

Construction Clearance:

a.	Building	1,000.00
b.	2 Storey Residential House	500.00
c.	1 Storey Residential House	300.00
d.	Renovation	300.00
e.	Fencing	1.00 per squar
f.	Demolition/Excavation	300.00

Others:

a.	Videoke Machine	200.00
b.	Pisonet	200.00
c.	Computer Shop/Internet Café	200.00
d.	Personal Clearances	60.00
e.	Certification	60.00
f.	Filing Fee	100.00

Figure 3. List of Documents

Q: What are the documents that are mostly obtained in the barangay?

A: When the travel pass was needed, that was the most acquired document. But usually, barangay clearance and barangay certificate.

Q: How do you communicate when you have activities to do with other barangays, like joint activities or inter-barangays?

A: Of course, we are sending a letter to them. We will wait until they respond. But, it's not just about all the activities that we will hold. We are also communicating about reports that all barangays must know. We need to discuss it with each other. A meeting will be set, and all the agendas that we will discuss will be submitted to the municipality. Before the pandemic, all barangays have a monthly meeting. But since the pandemic started, we

started using messenger to communicate with each other. Due to Facebook Messenger's chat function of not being able to pin conversations on top, we are having a hard time communicating what we want to convey. New messages are more easily seen than older and more important messages. Also, in messenger, you receive all messages from anyone wherein sometimes we are unaware that there was already a message in the barangay's group chat.

Q: How do you handle reports like tanod reports or incident reports and community concerns, as well as blotter?

A: About complaints or baranggayan or blotter, head tanod will list the incident. If he is absent, me or the officer of the day can record what happened. For solution, a hearing will be set and a letter will be made by me and will be sent to the person that is being blotter or reported. In a hearing, the barangay captain will discuss or decide what to do, like how to solve it. If the captain is not in the barangay, the presiding officer or officer on duty can discuss.

Q: What do you want to improve here in your barangay?

A: Communication with other barangays. Because now that there is a pandemic, it is difficult to communicate and coordinate with other barangays regarding reports and incidents or issues, a barangay official still needs to go to their barangay hall.

UNIFIED MODELING LANGUAGE
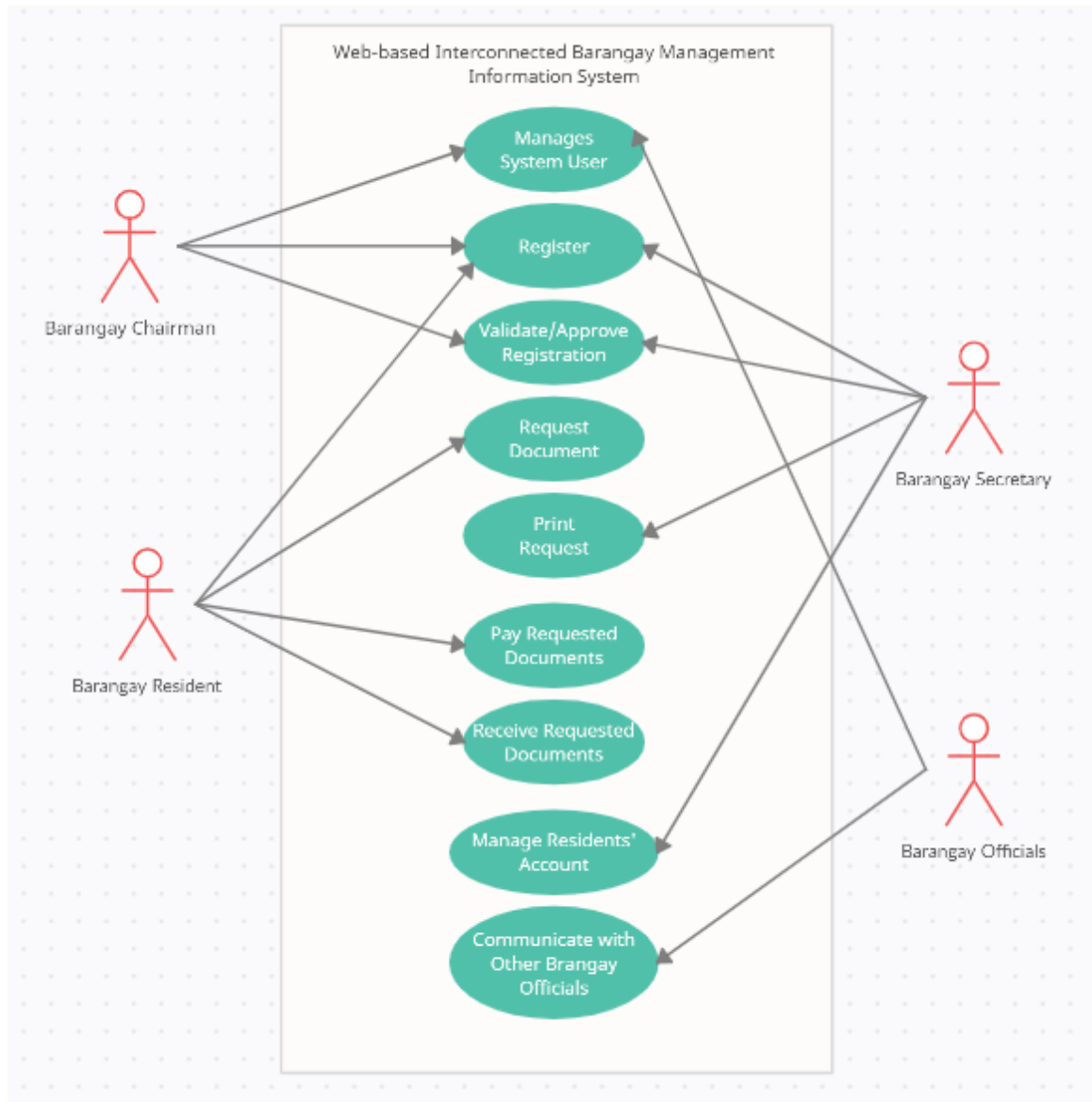
Figure 4. Use-Case Diagram

NON-WORKING PROTOYPE

USER/RESIDENT SIDE

Figure 5. Main Page

Figure 6. Login Page
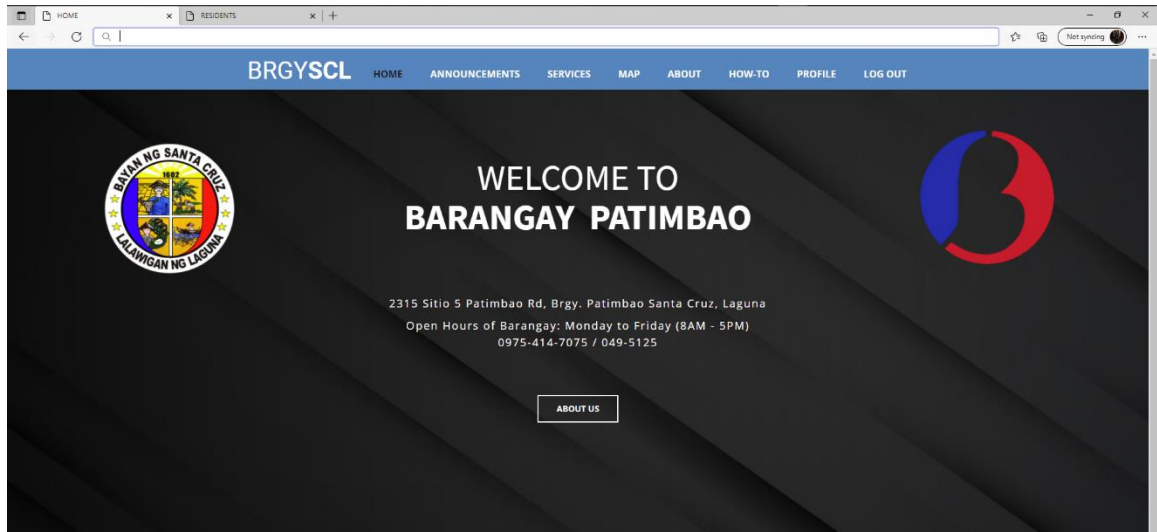
Figure 7. Home Page
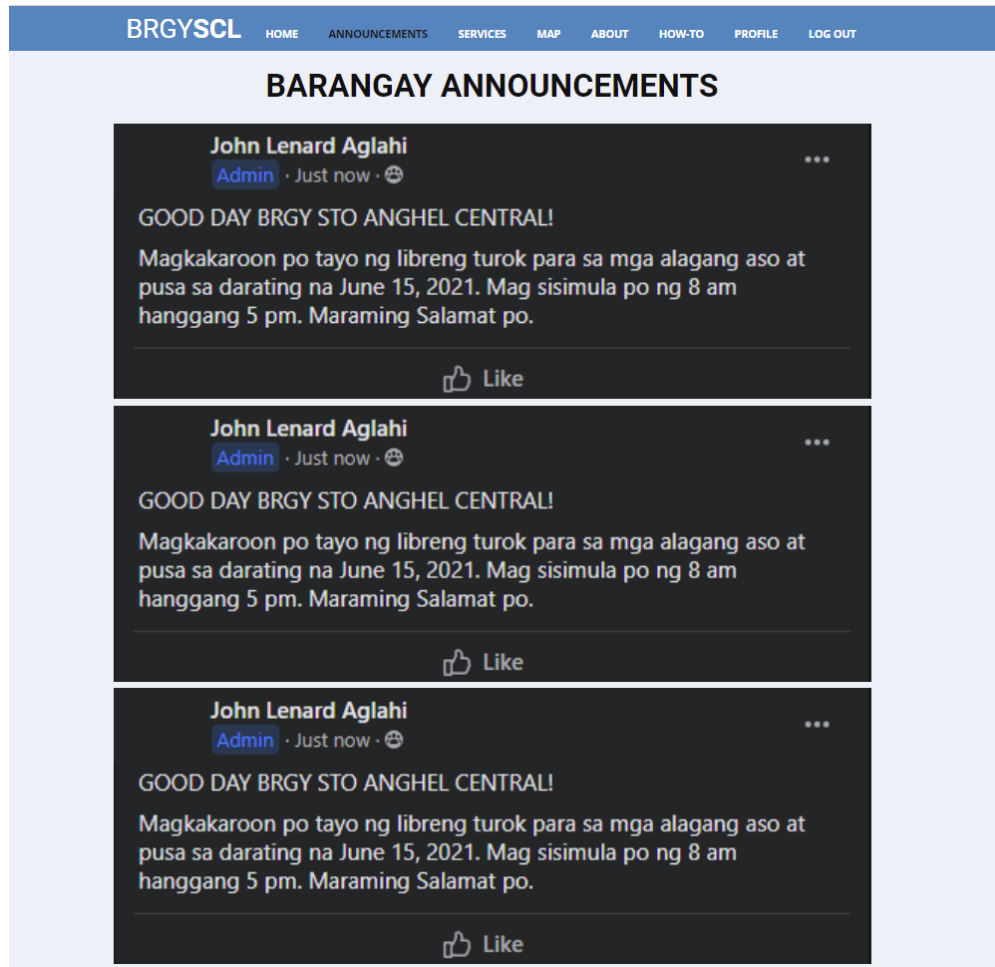
Figure 8. Announcements
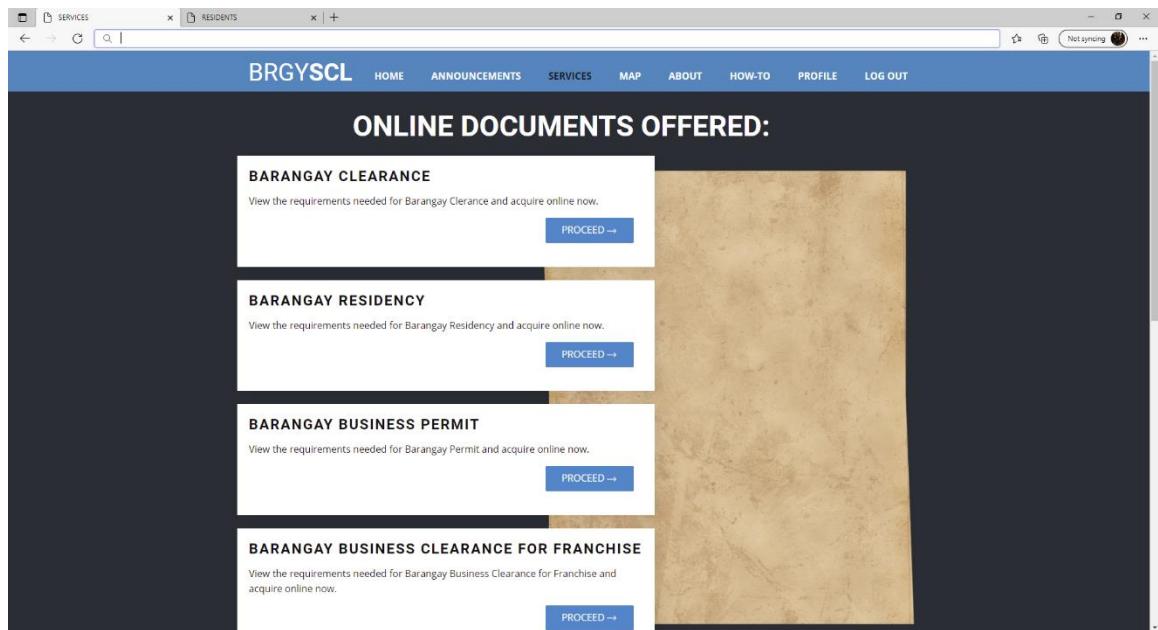
Figure 9. Services/Documents
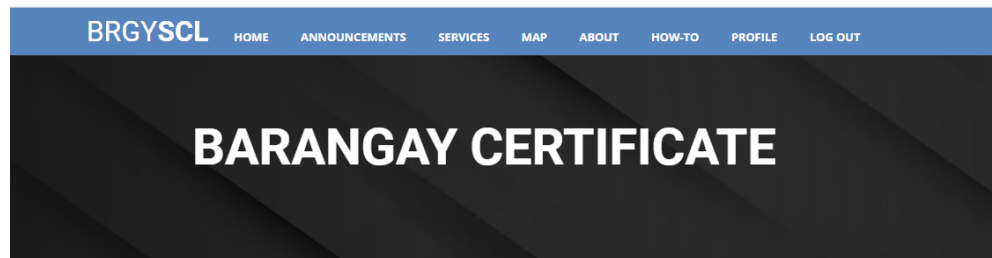
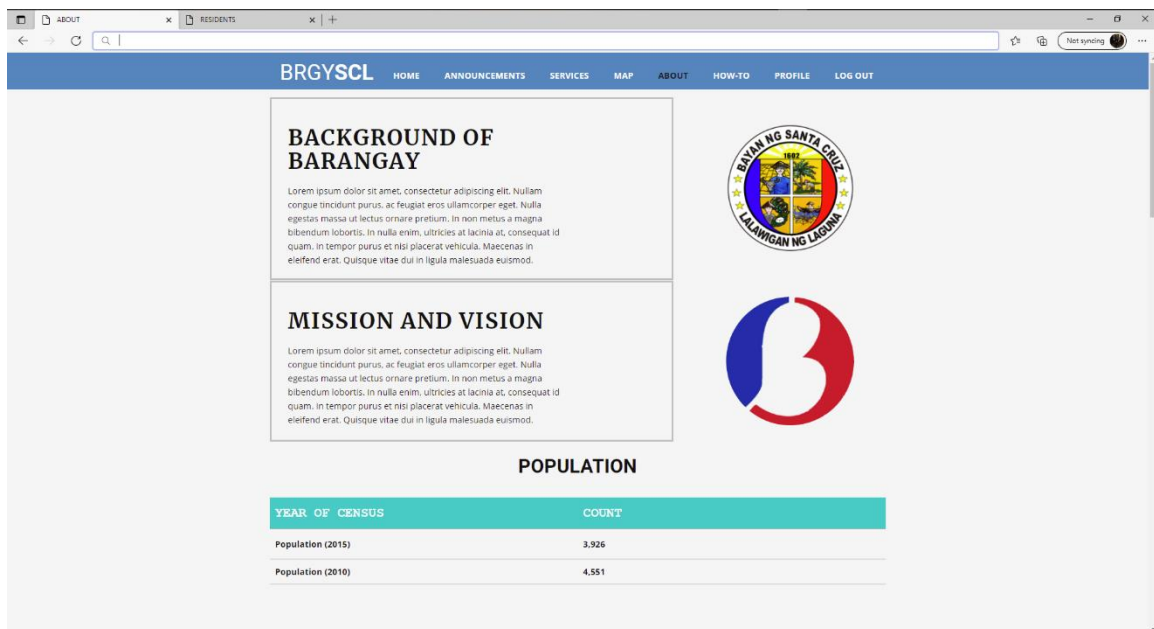Figure 10. Requesting of Documents
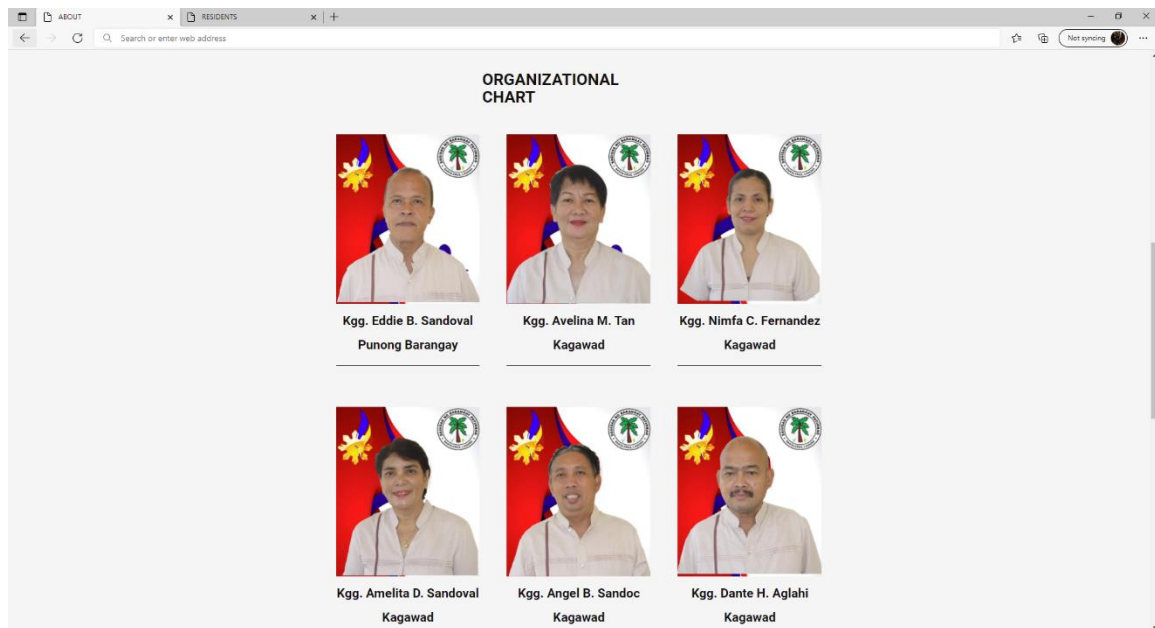
Figure 11. Map

Figure 12. Viewing of Barangay Info

Figure 13. Viewing of Barangay Officials

Figure 14. User/Resident Profile
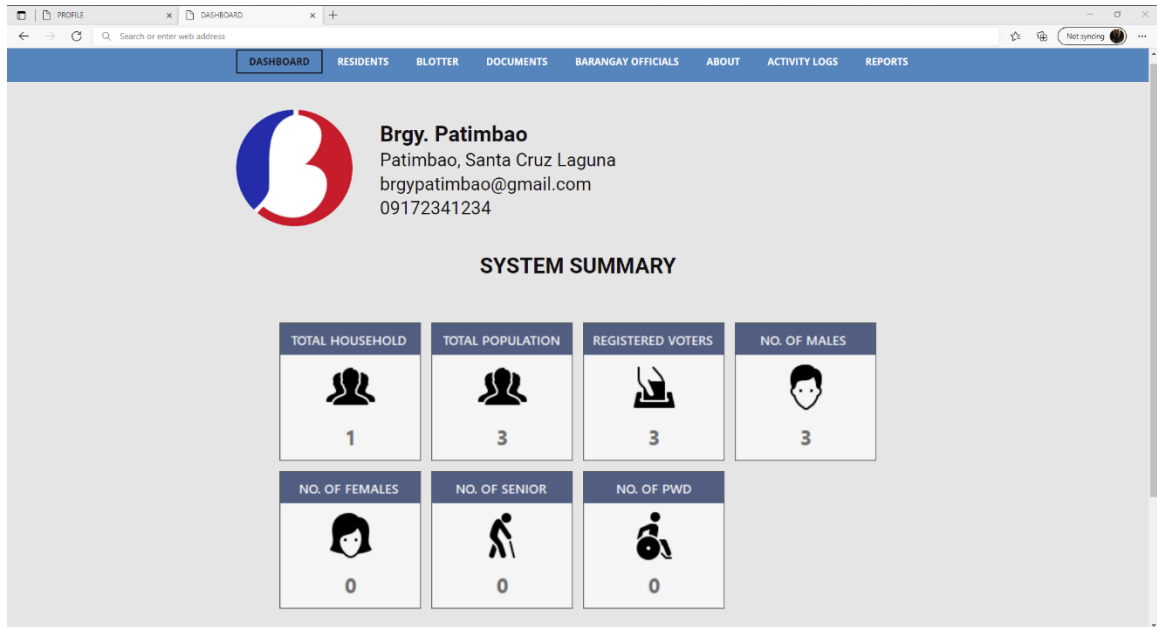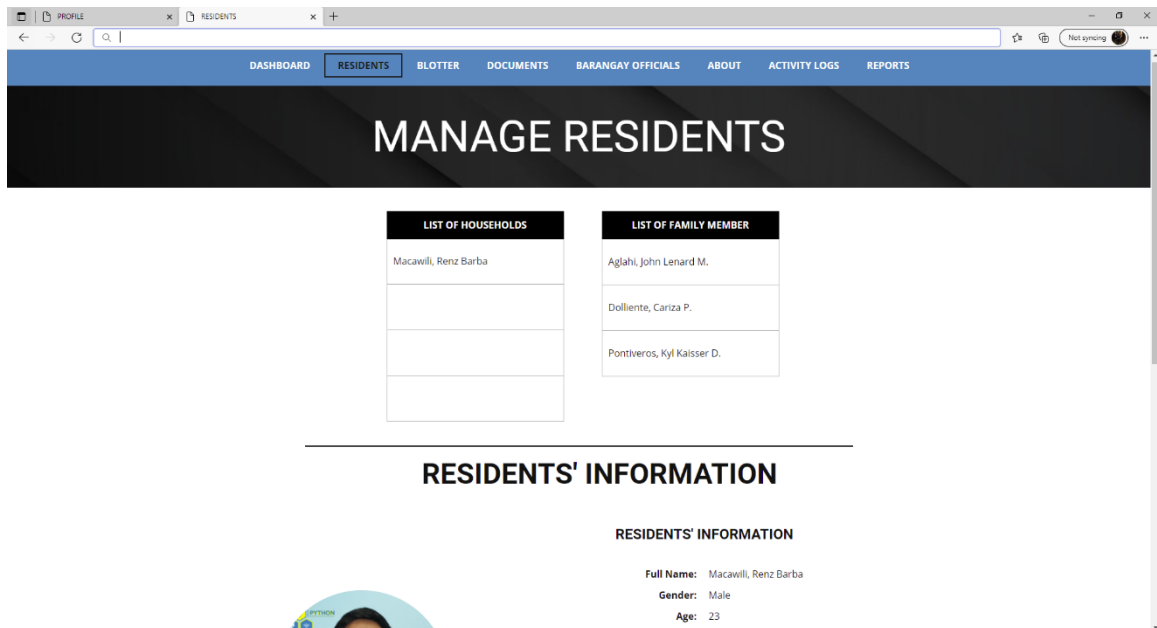
ADMIN/BARANGAY OFFICIAL SIDE

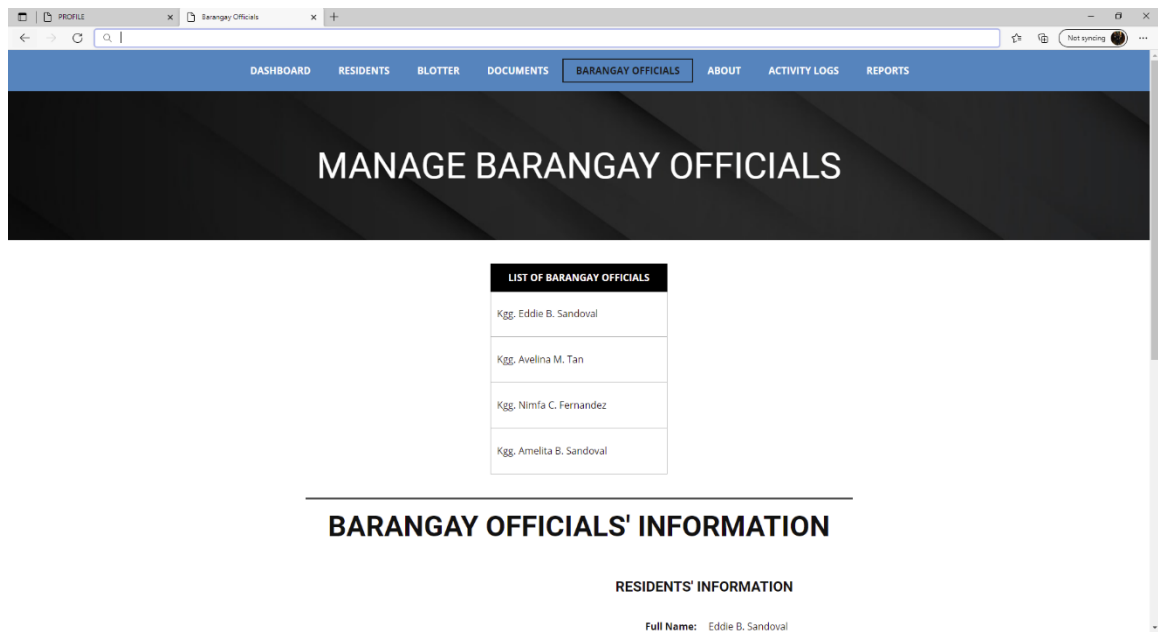

Figure 15. Dashboard

Figure 16. Manage Residents

Figure 17. Manage Barangay Officials

APPENDIX E

LETTER OF DATA GATHERING

Sta. Cruz Campus

May 31, 2021

Dear Madam/Sir,

Good day!

We the undersigned, are the 3rd year Bachelor of Science in Information Technology Students of STI Sta. Cruz, Laguna and are currently enrolled in the subject IT Capstone Project 1. For our thesis project, we would like to design, develop, and implement a **Web-based Interconnected Barangay Management Information System for Sta. Cruz Laguna**. This project system aims to provide a website for barangays that will help them improve their manual and traditional process; to help residents to file complaints and concerns, as well as to acquire documents online; also, for the dissemination of information regarding barangay activities where the barangays are connected to each other through the website.

As our client for the said project, we would like to ask permission to conduct an interview that would help us to identify the problem and clarify our objectives. We ensure that all the data that will be gathered from the organizations will solely use as a basis for the development of the proposed system.

We are looking forward to your favorable response. Thank You and God Bless!

Sincerely,

John Lenard M. Aglahi
Project Leader

Members:

Cariza F. Dolliente

Kyl Kaisser A. Pontiveros

Rhenzy U. Urriquia

Noted by: Approved by:

for

Prof. Lovely S. Cañadella   Prof. Carlo Anthony A. Sugaste, MSIT
Capstone Project Adviser   **Capstone Project Coordinator**

APPENDIX F

ADVISER'S ACCEPTANCE FORM

NAME OF PROPONENTS: **John Lenard M. Aglahi**

                                     Cariza F. Dolliente

                                     Kyl Kaisser A. Pontiveros

                                     Rhenzy U. Urriquia

APPROVED RESEARCH TITLE:

AREA OF STUDY: **Web Application Development**

CONFORME:

Prof. Lovely S. Cañadella
Capstone Project Adviser

APPROVED BY:

Prof. Carlo Anthony A. Sugaste, MSIT   **Date:**   **March 2021**
Capstone Project Coordinator

NOTED BY:

Prof. Carlo Anthony A. Sugaste, MSIT
Program Head

<center>**APPENDIX G**</center>

<center>**RESOURCE PERSONS**</center>

Mrs. Lovely S. Cañadella

STI College Sta. Cruz

College Instructor

09652730559

Mr. Carlo Anthony A. Sugaste

STI College Sta. Cruz

College Instructor/IT Program Head

Curriculum Vitae of
JOHN LENARD M. AGLAHI
4602 Sitio 5, Brgy. Patimbao Ilaya, Santa Cruz, Laguna 4009
johnlenardaglahi16@gmail.com
0906-443-2253

EDUCATIONAL BACKGROUND

Level	Inclusive Dates	Name of school/ Institution
Tertiary	May 2022	STI College Sta. Cruz
Senior High School	March 2018	STI College Sta. Cruz
High School	March 2016	Pedro Guevara Memorial National High School
Elementary	March 2012	Santa Cruz Central Elementary School

PROFESSIONAL OR VOLUNTEER EXPERIENCE

Inclusive Dates	Nature of Experience/ Job Title	Name and Address of Company or Organization
January 2020	Video Editor 3 months project	Upwork Freelance Company, Houston, Texas
February 2018	Video Editor / Database Analysis	MIS Office, Laguna Capitol – Santa Cruz Laguna, Philippines

AFFILIATIONS

Inclusive Dates	Name of Organization	Position
June 2021	Programming Youth Organization	Graphics Designer
November 2019	Programming Youth Organization	Graphics Designer

SKILLS

SKILLS	Level of Competency	Date Acquired
Data Entry	Mid-range	October 2019
C# Windows Form Programming	Advanced	March 2018
Video Editing	Advanced	June 2016

TRAININGS, SEMINARS, OR WORKSHOPS ATTENDED

Inclusive Dates	Title of Training, Seminar, or Workshop
March 2020	SAP Basics Training (Logistics and Financials)
September 2019	Seminar Building for the Best
September 2018	Server Roadmap: First Step in Becoming a System Administrator

Curriculum Vitae of
CARIZA F. DOLLIENTE
113 Dolliente Compound, Brgy. P. Burgos, Siniloan, Laguna
cariza.dolliente@gmail.com
0966-843-8617 / 0961-717-0245

EDUCATIONAL BACKGROUND

Level	Inclusive Dates	Name of school/ Institution
Tertiary	May 2022	STI College – Santa Cruz
Senior High School	May 2018	AMA Computer College – Santa Cruz
High School	March 2016	Siniloan National High School
Elementary	March 2012	Siniloan Elementary School

PROFESSIONAL OR VOLUNTEER EXPERIENCE

Inclusive Dates	Nature of Experience/ Job Title	Name and Address of Company or Organization
January 2018	Technical Support Intern – IT Department	MERALCO Santa Cruz Branch, Santa Cruz, Laguna

AFFILIATIONS

Inclusive Dates	Name of Organization	Position
June 2021	Programming Youth Organization	Vice President
November 2019	Programming Youth Organization	Secretary
August 2018	Computer Enthusiasts	External Secretary
May 2017	Christian Youth Fellowship	President

SKILLS

SKILLS	Level of Competency	Date Acquired
Network Troubleshooting	Basic	June 2018
Microsoft Office (Word, Excel, PowerPoint, Publisher)	Advanced	May 2018
Video Editing	Intermediate	March 2017

TRAININGS, SEMINARS, OR WORKSHOPS ATTENDED

Inclusive Dates	Title of Training, Seminar, or Workshop
March 2020	SAP Basics Training (Logistics and Financials)
September 2019	Building for the Best (Seminar)
September 2018	Server Roadmap: First Step in Becoming a System Administrator
May 2018	Livelihood Training in Meal and Cafeteria Management

Curriculum Vitae of

KYL KAISSER A. PONTIVEROS
127 P. Zamora St., Barangay San. Miguel, Majayjay, Laguna
kylpontiveros@yahoo.com
0956-833-4097

EDUCATIONAL BACKGROUND

Level	Inclusive Dates	Name of school/ Institution
Tertiary	May 2022	STI College – Santa Cruz
Senior High School	May 2018	STI College – Santa Cruz
High School	April 2016	Sta. Catalina Integrated National High School
Elementary	March 2012	Majayjay Center for Education and Development Foundation Inc.

PROFESSIONAL OR VOLUNTEER EXPERIENCE

Inclusive Dates	Nature of Experience/ Job Title	Name and Address of Company or Organization
March 2021	Virtual Moving Up Program Broadcast Network Assessment	Sta. Catalina Integrated National High School
February 2018	Video Editing; Database Management; Network and Computer Troubleshooting and Maintenance	MIS Office, Laguna Capitol – Santa Cruz Laguna, Philippines

AFFILIATIONS

Inclusive Dates	Name of Organization	Position
June 2021	Programming Youth Organization	Treasurer
November 2019	Programming Youth Organization	Vice President

SKILLS

SKILLS	Level of Competency	Date Acquired
PHP Programming	Mid-range	February 2019
JavaScript Programming		
HTML, CSS		
C# Programming	Mid-range	September 2017
Video Editing	Mid-range	August 2013
PHP Programming	Mid-range	February 2019
JavaScript Programming		
HTML, CSS		

TRAININGS, SEMINARS, OR WORKSHOPS ATTENDED

Inclusive Dates	Title of Training, Seminar, or Workshop
March 2020	SAP Basics Training (Logistics and Financials)
September 2019	Building for the Best (Seminar)
September 2018	Server Roadmap: First Step in Becoming a System Administrator

Curriculum Vitae of

RHENZY U. URRIQUIA
443 A. Luna. St., Brgy. San Francisco, Majayjay, Laguna
urriquiarhenzy89@gmail.com
0921-714-7890

EDUCATIONAL BACKGROUND

Level	Inclusive Dates	Name of school/ Institution
Tertiary	May 2022	STI College – Santa Cruz
Senior High School	May 2018	Liceo de Majayjay
High School	March 2016	Liceo de Majayjay
Elementary	March 2012	Liceo de Majayjay

PROFESSIONAL OR VOLUNTEER EXPERIENCE

Inclusive Dates	Nature of Experience/ Job Title	Name and Address of Company or Organization
2018	Intern (Work Immersion)	Local Government Social Welfare and Development in the Municipality of Majayjay Laguna

AFFILIATIONS

Inclusive Dates	Name of Organization	Position
June 2021	Programming Youth Organization	Member

SKILLS

SKILLS	Level of Competency	Date Acquired
Microsoft Office (Word & PowerPoint)	Basic	May 2018

TRAININGS, SEMINARS, OR WORKSHOPS ATTENDED

Inclusive Dates	Title of Training, Seminar, or Workshop
March 2020	SAP Basics Training (Logistics and Financials)
September 2019	Building for the Best (Seminar)
September 2018	Server Roadmap: First Step in Becoming a System Administrator