

**Development of an E-Governance System for Barangay Ugong, Pasig
City**

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APPROVAL AND ACCEPTANCE SHEET

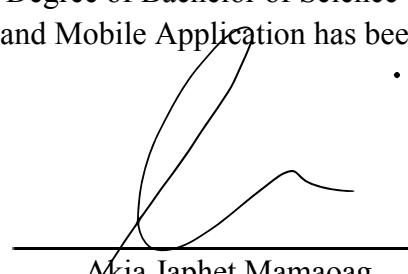
The capstone project entitled "**Development of an E-Governance System for Barangay Ugong, Pasig City**" prepared and submitted by:

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LIST OF ABBREVIATIONS

DICT – Department of Information and Communications Technology

ICT – Information Communications Technology

LGU – Local Government Unit

GISP - Government Information System Plan

BPSO - Barangay Public Security Officer

ABSTRACT

As the recent technological overhauls have taken over multiple industries as opposed to pen and paper, it's only expected for different government units to follow. Different ICT backbones are all over the country taking over manual processing by storm. Yet some districts only have outdated systems or worse, none. Barangays are essential to a development of districts as they handle permits, services, and repositories that contain each registered resident. Due to this, the system that the team is aiming to create is to provide the needed system to Barangay Ugong in Pasig City. It aims to provide a platform where residents can request services and overall automate the different processing of the barangay. The team also endeavors to develop a scheduling and deployment system for the barangay's tanod deployment scheduling utilizing crime data from reports and heat maps.

Chapter 1

INTRODUCTION

Technology plays a vital part in the ever changing and developing world enabling various improvements and advancements in today's society. All fields and branches of society have, in some way, shape or form have adopted a plethora of technologies in order to streamline the relevant processes that each needs to perform. From manufacturing, to research, to infrastructure and all other fields have also influenced the further development of past and current technologies. It is now the norm to integrate some form of technology, device or system to an entity's internal and external processes. Thus it would be beneficial for almost any entity to adopt technology into the standard operations of the field.

Most of what an average person's day would be surrounded by technology, from mobile phones, tablets and smart watches to vehicles and technologies adopted by the various services available, individuals now live in a technology based civilization. Thus the desire and drive to further improve upon these technologies in order to provide an ever more efficient system. And this drive would be most evident in one of the oldest institutions of society, the government.

The Information and Communications Technology (ICT) industry has always been seen as a key component in advancing a nation towards a more digital and technology based administration of its borders. Thus the concept for an E-government system was conceived. Adopting the various available technologies to the internal processes of an institution has already been proven to cause major advantages and shifts in providing services. And one of

the more prominent adoptions is the automation of services and processes through the conversion of manual systems that are prominent, specifically in local government units.

1.1. Purpose and Description

Barangay Ugong is labeled as a highly urbanized barangay and is also one of the fastest growing economies in Pasig due to the recent commercial developments from within. New business establishments have been constructed, namely Metrowalk, Ortigas Town Center, further boosting the barangay's economy. And as of the 2020 census the barangay is home to 28, 737 inhabitants with a population growth rate of 4.5% and which accounts for 3.58% of Pasig's population, and this could be further broken down into approximately 5,294 households.

Due to these numbers and the growth of the local government unit's population and economy, the governance in the barangay will prove to be crucial as it will act as the central hub for different permissions, permits, and even domestic disputes. The mechanism used by the barangay and its residents to operate and perform transactions are still based on pen and paper. The barangay is working towards improving how the documents are being handled and are very open in adopting a digitized system.



Figure 1 Barangay Organizational Chart

Figure 1 displays the clients' barangay organizational chart. The chart illustrates the different branches which make up the barangay, starting from the Punong Barangay or Barangay Captain, then to the 5 other major branches: the Lupong Sangguniang Barangay(Barangay Council), Tagapamayapa(Pacifying Committee), Sangguniang Kabataan(Youth Commission), Barangay Secretary, and the Barangay Treasurer, along with 10 sub-branches of the LGU.

1.2. Project Context

Outdated websites and services may not be optimized for mobile devices, limiting accessibility for individuals who primarily use smartphones or tablets to access information and services. This digital divide can further marginalize certain sectors of the population, hindering their ability to fully participate in the community and avail themselves of essential resources.

Moreover, the lack of modernization in barangay websites and services often hampers effective communication between residents and local government officials. The absence of user-friendly features, such as online forms, feedback mechanisms, and real-time updates, can impede the flow of information and hinder residents' ability to voice their concerns or provide valuable input on community matters.

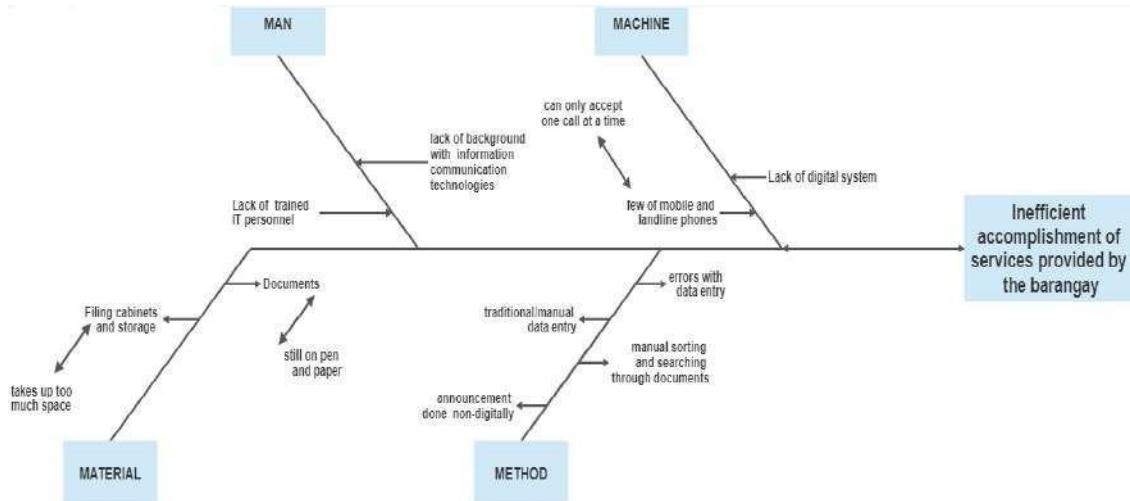


Figure 2. Ishikawa Diagram

Figure 2 displays the Ishikawa Diagram can identify and prioritize the potential root causes of the problem and take targeted steps to address said problems. Since the main problem is mostly inefficiency and reliability, a management system would be the best approach in order to lessen paper waste and also store files and records consistently

The man or man power category has issues that include staff that have to deal with manual and outdated ways of handling data. This results in inefficiency and possibility of data loss.

The machine category also has a similar problem with having a lack of an updated

and reliable system to work with.

The material category on the other hand finding paper records requires manual labor from the man category which are the staff hence the connection.

Lastly the Method category introduces multiple problems as manual search is time-consuming and recording with paper may damage the files itself and updating

records will prove difficult as pen usage is permanent. Data loss can also be common as files can get damaged or lost when misplaced.

With the system, Barangay Ugong strives to provide a potent digital sphere for the abundant residents as again, Barangay Ugong still dominantly relies on pen and paper. With LINETECH, the need to transition into a digital sphere will be provided and the system shall provide its purpose through granting Barangay Ugong a platform in which it can efficiently process the countless documents, to reduce the need for a direct appointment, to request crucial services that the residents strive for and even the central hub for data storage within the barangay.

1.3. General Objectives

The general objective of the study is to develop an E-Governance System for Barangay Ugong, Pasig City that will digitize and automate the services and transactions that the barangay offers its constituents.

Specific Objectives

This study specifically aims to accomplish the following:

- a. To develop a registration system for both barangay officials and constituents and for the residents of the barangay that will facilitate login and user differentiation;

- b. To create a module for an online barangay document form submission;
- c. To create an e-services modules for barangay and residents which would include scheduling for barangay blotter, face to face document submission, and clinic appointment, facilities and equipment reservation;
- d. To include an SMS and email notifications for barangay announcements as well as integrate a chat-bot;
- e. To create an online transaction module for payment of barangay documents and services;
- f. to develop a barangay security personal or “tanod” deployment and scheduling system using data from blotter and crime reports;
- g. to include an audit trail function to track barangay transactions;
- h. To evaluate the effectiveness and efficiency of the system using FURPS

1.4. Scope and Delimitations

This study will be focusing on the development of a website and mobile application for automating and digitizing the services and records of Barangay Ugong, Pasig City. The study will concentrate on building and creating a system that will streamline barangay operations, transactions and services in order to improve the efficiency of the aforementioned areas. The system is only meant to be used by the client, which is Barangay Ugong officials and staff as well as its residents. The study is also limiting the modules of the study to cover a user’s module, an e-services module, a records module, a document recognition module and an announcements module.

- **User Module** - this module is responsible for managing the accounts of the local government unit's employees along with the relevant data. Facilitates the login and log out functions as well as registering users. Also handles the transfer of positions for the barangay officials once the term of office is over by using unique user keys and permissions in the database.
 - For Mobile
 - **Barangay Head Admin, Admin, Barangay Officials, Barangay Staff, Residents and other users** - has the permission to only register and view user accounts.
 - For Web
 - **Barangay Head Admin** - has full control on user accounts permissions and limitations. Can register, view, edit and delete accounts for both constituents and residents. Has full authority for transfer of user privileges.
 - **Barangay Admin** - has semi-full control of user accounts; can register, view, edit and delete accounts for constituents below elected officials and residents.
 - **Barangay Officials and Staff** – Can register, view and edit certain parts of resident's user accounts.
 - **Residents and other users** – can only register, view and edit personal (resident) accounts.
- **E-services Module** - lists all available services offered by the local government unit, along with relevant requirements and procedures. This module includes the following sub modules:

- **Online and on-site documents submissions** - this sub-modules handles document submissions from online forms and for on-site submissions.
- **Blotter reports** - handles blotter reports made from incidents that happened in the barangay.
- **Clinical appointments for the adjacent medical unit**
- **Facilities, equipment and vehicular reservations** - handles the lending of the barangay's equipment and facilities
- **Transactions** - handles the payments for the services provided by the barangay such as procurement of documents, equipment and facilities rental fees.
 - For Mobile
 - **Barangay Head Admin, Admin, Officials and Staff** - has access to review submitted documents and requests and approve or disapprove documents and appointments, as well as review transactions.
 - **Residents and other users** – have access to book an appointment for blotter or barangay clinic related or documents submission.
 - For Web
 - **Barangay Head Admin and Barangay Admin** – has access to review submitted documents and requests and approve or disapprove the aforementioned. For blotter cases: [1] review blotter reports. For appointments: [1] can approve or decline appointments [2] have permission to reschedule appointments, [3] review appointment details.
 - For transactions: [1] review current pending transactions and previous transactions and flag which are priority.

- **Barangay Officials** - has access to review submitted documents and requests and approve or disapprove the aforementioned. For blotter cases: [1] can mediate between parties, [2] review blotter reports. For appointments: [1] can approve or decline appointments [2] review appointment details. For transactions: [1] review payment records and receipts.
 - **Barangay Staff** - has access to review submitted documents and requests and approve or disapprove the aforementioned. For blotter cases: [1] review blotter reports. For appointments: [1] appointment details. For transactions: [1] approve of the payments and [2] create the corresponding records.
 - **Residents and other users** – have access to book appointments for blotter or barangay clinic related or documents submission. Can select payment method from provided options (online or over-the-counter)
- **Records Module** - serves as the data repository of the system, users may view the relevant documents though this module. It also handles the reports and visualization of data.
 - For Mobile
 - **Barangay Head Admin and Barangay Officials and Staff, Residents and other users** - has access to view data.
 - For Web
 - **Barangay Head Admin** - has access to view, update and delete resident records. Has access to officials' records and transactions
 - **Barangay Officials and Staff** - access to view, update resident records.

- **Residents and other users** - has access to view records relevant to the account

- **Tanod Deployment and Scheduling Module** - this module handles barangay tanod scheduling and deployment, be it for regular day to day scheduling or during events and/or emergencies.
 - For Mobile
 - **Barangay Head Admin, Barangay Officials and Staff** - can view schedules for deployment
 - **Residents and other users** - residents and users do not have access to this module.

 - For Web
 - **Barangay Head Admin and Admin**- has full access to the module; can:
 - [1] review the schedules for deployment, [2] edit available schedules and assignments, [3] Add new deployment schedules, [4] reassign BSP to other schedules
 - **Barangay Officials and Staff** – can: [1] review the schedules for deployment, [2] edit available schedules and assignments, [3] Add new deployment schedules;
 - **Residents and other users** - residents and users do not have access to this module.

- **Announcement Module** - this module handles information dissemination for the events and current activities that the local government unit is currently undertaking, as well as any relevant emergency notices.
 - For Mobile

- Barangay Head Admin, Admin, Barangay Officials, Staff, Residents and other users –
 - can only view announcements on mobile
- For Web
 - **Barangay Head Admin** - has complete access to create, update, delete announcements.
 - **Barangay Admin** - has semi full access to the module, can update and delete announcements.
 - **Barangay Officials and Barangay Staff** – have access to create new announcements.
 - **Residents and other users** – can only view the announcements.
- **Data Analytics Module** - this module handles information and data from transactions and incident report instances from the barangay. This aggregates data and presents it into readable information.
 - For Mobile
 - **Barangay Head Admin, Admin, Barangay Officials, Staff, Residents and other users** – can only view data and graphs online
 - For Web
 - **Barangay Head Admin, Admin, Barangay Officials, Staff** - has complete access to view more detailed information regarding each statistic and data.
 - **Residents and other users** – can only view surface level data.
- **Audit Trail Module** - this module handles the tracking of transactions and cash

flows.

- **For Mobile**

- **This module is not accessible on mobile devices**

- **For Web**

- **Barangay Head Admin, Admin, Barangay Officials, Staff** - has complete access to view more detailed information regarding each transaction and logs.

1.5. Significance of the Study

The implementation of a barangay management system will help in enhancing the management of barangay's different transactions. The system will provide an ease of administration of the barangay's different projects, programs, and activities as well as a medium for its residents to easily access up-to-date documents and reports and can easily obtain assistance from the employees and members. The result of the study will be useful for the following:

- **Barangay Ugong** - the developed system will provide better control to the barangay transactions with a more proper and reliable safe keeping of barangay records.
- **Barangay Officials and Staff** - the system will help them lessen the physical and manual work as it will ease up the jobs in providing services and attending inquiries of the residents.
- **Residents** - through the system, the residents can easily access e-services that the barangay is offering, and that will also be accommodated easily as the system will provide a hotline for emergency services as well as contact information of its

- employees and members.
- **Researchers** - the researchers can gain significance in this study. It will improve their knowledge and skills in developing programs with experience in conducting the study.
 - **Future Researchers** - The study will serve as the reference and a guide to gather information as a building block to have a bigger study.

1.6. Conceptual Framework

This section shows that the conceptual framework holds the necessary requirements, what programming language will be used and how the system will process the input to ensure a good output of the system.

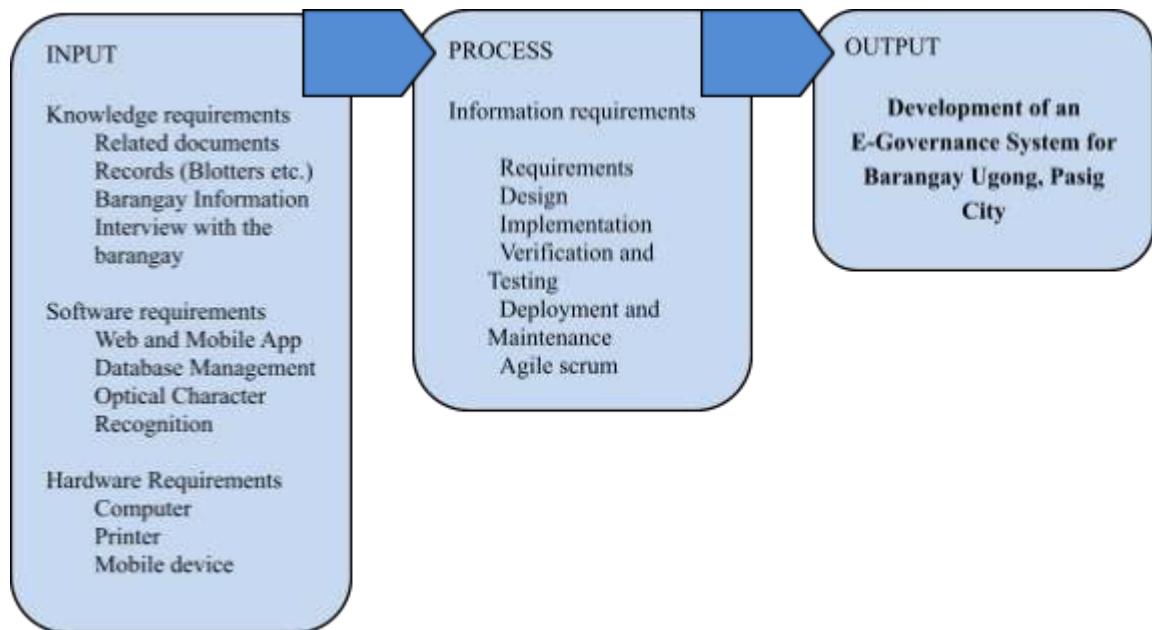


Figure 3. Conceptual Framework

Figure 3, the Conceptual Model of the system is made up of three blocks, namely the input, the process and the output.

The input block is further composed of three components, the information requirements, the hardware requirements and the software requirements. The information requirements block pertains to the functions and services which the client performs as well as the relevant information which is collected from said functions. The hardware requirements are the equipment and the devices, such as desktop computers, printers, servers, mice and keyboards, video cameras, and mobile phones, need for the system to interact with its users and store the information acquired from the information requirements. And lastly the software requirements block, this is composed of all the relevant software used in creating the system, as well as how and where the data is stored and maintained.

The process block pertains to the tasks and activities that the researchers need to accomplish based on the given timeframe. This block includes the initial planning and designing processes for the project, as well as performing data gathering through interviews and meeting with the client. This also encompasses the prototyping stages and mock-ups for the system, this is done to benchmark and provide tangible proof for the progress. And lastly if for the checking , implementation and maintenance for the project.

The intended final product for the input and process requirements would be the finished and working system for the study which is the digitized and automated barangay services.

1.7. Definition of Terms

1.7.1 Technical Definition of Terms

Automate - In the context of this study, "automate" refers to the utilization

of machines and computers instead of human intervention to perform specific tasks or jobs.

Barangay - In the Philippines, a "barangay" refers to a small district that constitutes the most localized level of government. It serves as the primary administrative and political subdivision within a municipality or city.

Blotter - a report filed by authorities to corroborate and record incidents or crime involving relevant parties.

Management - "Management" pertains to the activity of overseeing and controlling the operations of a business or similar organization. It involves planning, organizing, coordinating, and directing resources to achieve predetermined goals and objectives.

E-Government - refers to the application of Information and Communication Technologies (ICTs) in various government functions and processes. The primary objective of e-government is to enhance efficiency, transparency, and citizen participation by leveraging digital tools and platforms.

System - In the context of this study, a "system" refers to a cohesive set of computer equipment, software programs, and related components that are interconnected and utilized together to perform specific functions or tasks.

Tanod - The term "*tanod*" pertains to an individual or group of individuals who are employed to provide security and serve as guards within a specific area or community.

1.7.2 Operational Definition of Terms

E-services - In the context of this study, "e-services" refer to the range of services and transactions provided by the barangay through digital platforms. These services may include but are not limited to online application submissions, electronic payment systems, information dissemination, and interactive citizen engagement tools.

Local Government Unit (LGU) – This term refers to the smallest administrative divisions of the government at the local level. It encompasses barangays, municipalities, cities, and provinces, each having its own respective jurisdiction and responsibilities in governance and public service delivery.

Digitize - the process of converting information or data from its original paper-based or analog form into a digital format.

E-governance - pertains to the adoption and utilization of digital platforms and technologies in the operation and management of government processes and services.

Chapter 2

REVIEW OF RELATED LITERATURE

Additional space should be provided before every major heading. Presented in this chapter are the literature, studies, and systems that support the Development of an E-Governance System for Barangay Ugong, Pasig City. This chapter will also present the synthesis for the related systems and the summary of the supporting literature annotated and cited in the study.

1.1. Related Local Literature

Being the smallest unit of governance in the Philippines, the barangay serves a vital role in how the nation as a whole is run. According to Distor and Khaltar, Barangays serve as the bridge for the ordinary Filipino citizen to connect them to the wider sphere of the national government. Local government has a significant role in assuring the usefulness and availability of public amenities to the population (Distor, Khaltar 2010). Since it is the role of the barangay to govern over its citizens, it should without saying that it should be accountable and be held responsible for any of its actions. Local government units shall have the power and authority to establish an organization that shall be responsible for the efficient and effective implementation of their development

plans, program objectives and priorities (Section 18, R.A. 7160). Philippine LGUs have been providing for its citizens since its conception has gone through different iterations and roles along with the country's history. Barangays play a significant role in the national pursuit of economic progress and in improving our nation's political and social conditions (Tamayo 2014). But it can be argued that the current system has stagnated in the area of growth and development, a majority of its roles performed manually.

Most of what the traditional Filipino barangay offers are performed through manual means. Transactions, filing and storage of documents and administrative processes are hindered and slowed down by out-dated systems from the past. One of the more apparent reasons as to why the country continues to cling to the traditionally manual systems it has employed is the lack of a solid foundation for its Information Communications Infrastructures (ICTs). The lack of proper infrastructure to accommodate and facilitate the relevant and related processes as well as the budget and trained personnel to do so is hindering the adoption of e-government in the Philippines. According to the International Institute for Management Development's (IMD) 2021 World Competitiveness Report, the country retained its poor infrastructure ranking at 59th for a third straight year, despite the government's supposedly massive "Build, Build, Build" program (Montemar 2021). It is vital that the country will further strengthen its push towards adopting a more digitized system for the government, but despite the continued efforts of government officials and other related stakeholders, the country still lags behind other countries. Aside from the lack of infrastructure for ICTs, the continuity of E-Government reforms has been hampered in the past by the absence of a top-level agency that is formally dedicated to govern and oversee ICT policies and

programs (Magno, 2018). But despite the situation that the country is in currently, law makers, business owners and advocates are still pushing towards an E-government and ICT integrated country.

As a short-hand an E-government refers to the application of ICT, with the aim of supporting government operations, citizen awareness and delivering services; whereas E-governance is the use of ICT in enhancing the range and quality of information and services delivered to the public, in an effective manner. According to Ajivit Biswas, E-governance and E-governments can be broken down into 4 major categories: Government to Citizen (G2C), Government to Government (G2G), Government to Business (G2B) and Government to Employee (G2E) and it's major feature include: De-bureaucratization, E-Services, Economic Development and Reduced inequality. This study would primarily be a combination of Government to Citizen (G2C) and Government to Employee (G2E), as it aims to ease the burden for employees and provide a more convenient and accessible instrument for employees and residents to access the barangay.

The country's efforts to integrate E-Government as a key lever in development started two decades ago and it shows that the foundations have already been laid out years ago yet it fails to reach the threshold needed for it to be adopted. The groundwork dates back to 1997 with the conception of the National Information Technology (IT) Plan, where the vision of an ICT-enabled future was possible, to its later incarnations, the Government Information Systems Plan (GISP) in 2000 which called for the establishment of an online government which would allow citizens to access government services and public information in digital sphere This was further supported when Republic No. 8792

was passed, the Electronic Commerce Act of 2000 which emphasized and supported for the adoption of an e-government system for the country. And in 2016 the Department of Information and Communications Technology was established through Republic Act No. 10844. This created a governing body which will oversee the development and deployment of the needed infrastructure and systems. The function of the DICT is to provide every Filipino access to vital ICT infrastructures and services, while also ensuring the sustainable growth of ICT-enabled industries that can lead to the creation of more jobs. In 2020 the House Bill No. 7205, also known as the E-governance Act of 2020, was presented to the house of representatives, this bill further elaborates on what paths the government needs to take to incorporate e-governance as well as how the government goes about doing so. Now is the best time to ramp up initiatives to give Filipinos fast and reliable internet connection to truly enable them to shift to online transactions with national agencies and local government units (Poe 2020). Given the government's enthusiasm and continued efforts in adopting an e-government, what about the general Filipino public?

The current trends in the online traffic of Filipinos throughout the years has grown exponentially. More and more individuals have been adopting a digital lifestyle, be it young or old, Filipinos have been known to consume digital media at break-neck pace. There were 76.01 million internet users in the Philippines which account for about 68% of the Philippines population in early 2022. Internet users in the Philippines spent an average of 9.14 hours accessing the internet on various devices during the third quarter of 2022 (Statista 2023). Despite the rather large portion of the population utilizing the internet, most citizens lag behind in digital literacy. Only around 40 percent have at least one of the six information and communications technology (ICT) skills monitored for the

Sustainable Development Goals (Albert 2021). This was more apparent in children aged 10 to 14 and in elderly aged 64 and above. This statistic pertains to the entirety of the population, but with regards to specifically government officials and constituents, the consensus was in a positive regard. The study entitled “Digital Literacy among Elected Barangay Officials as an Input to a Community Extension Program” has concluded through the study that the basic skills of barangay officials are remarkable due to the collective effort of the community and the LGU in capacitating local officials with the abilities towards the usage of digital gadgets and equipment (Bona, Camara PhD, 2021).

In this endeavor, the Department of Information and Communications Technology (DICT), Tech4Ed/Digital Transformation Center (DTC), and Digital Learners Project (DLP) are best positioned to address the issue of the general populace’s digital literacy.

Another major concern for local government units is about public safety and security, and this is also evident in how the concern is being adapted into e-governance. A proposal for the Crime Information Reporting and Analysis System (CIRAS) Enhanced e-Blotter System was proposed by PCOL Noel R. Sandoval and PLTCOL Jay D. Guillermo was made in 2011, and was later tested in 2015. It is a stand-alone customized single database to be used by the Philippine National Police and its police stations to serve as a more efficient electronic blotter system across the country. Adopting a system which is similar to that of the CIRAS on the barangay level would possibly improve the Barangay Police Security Officer (BPSO) or Tanod in maintaining peace and order.

1.2. Related Foreign Literature

Although the public has just had access to the internet for the past 30 years or so, it has already had a significant impact on the world. The landscape of how people communicate and share information is still being shaped by online services. Today, one of the most common ways people obtain their news, check their financial transactions, communicate with friends, and do numerous other things is by using various websites.

A citizen's first interaction with an organization is through their website. It could be one of the most important tools for meeting the needs of the citizens, therefore optimizing it should be prioritized. A key factor is that information should be easy to find because the average user only visits an average website fifteen seconds or less which makes website design crucial in delivering information (Granicus, 2017). It should also have a connection with the citizens in times of emergency, American City and County stated that during an emergency situation, communications via government websites should be the first line of defense. Then again, a government website serves a slightly different objective than most other websites.

According to an article by GovOS (2022), these are things to consider when determining your website strategy or developing a new one. (1) Make information easy to find, (2) ease of obtaining services, (3) design with mobile in mind, (4) live help, (5) notify citizens, (6) add feedback gathering tools. In addition to providing access to government services and information, effective government websites can also help to build trust and confidence in government institutions. According to a study by (Tolbert & Mossberger, 2004), citizens who use government websites are more likely to trust their government and feel that their government is responsive to their needs. Furthermore, effective government websites can promote transparency and accountability, by providing

citizens with access to information about government policies and decision-making processes.

Despite the benefits of effective government websites, there are significant challenges involved in developing and maintaining them. One of the main challenges is the need to ensure that government websites are accessible to all citizens, including those with disabilities or limited access to technology. According to the World Wide Web Consortium (W3C), governments should ensure that their websites are designed to be accessible to all users, regardless of their abilities or the technology they use to access the internet.

Another challenge is the need to ensure that government websites are up-to-date and relevant. As technology and government policies evolve, government websites must be updated to reflect these changes. This requires a significant investment of time and resources, and may be challenging for smaller government agencies with limited budgets.

New opportunities in the public sector are being created by the increase of mobile devices and apps. Studies have shown that mobile devices accounted for over 50% of worldwide internet traffic in 2019, and that people are more likely to use their mobile devices than desktop devices when searching for information online (Pew Research Center, 2019). Government websites that are not optimized for mobile devices may be too slow to load or difficult to navigate, leading to a negative user experience and discouraging citizens from seeking information and engaging with the website (Gargiulo, 2021).

Optimizing government websites for mobile devices provides several benefits,

including improved accessibility, increased citizen engagement, and cost savings (Gargiulo, 2021). Mobile-friendly websites are ranked higher in search engines and allow users to find information more quickly, which is especially important in times of emergency or crisis (Gargiulo, 2021.) In addition, mobile devices are more affordable and functional than traditional desktops, making mobile websites a crucial access point for low-income individuals who may rely solely on their smartphones for internet access. Approximately 37% of American adults claim to access the internet mostly on a smartphone. Since 2013, this share has almost doubled. In addition, about one-in-four low-income adults are smartphone only users (Pew Research Center, 2019).

1.3. Related Local Studies

The massive rise and development of the country also includes the sudden increase in households and population. The country itself would be greatly affected if it developed a reliable ICT backbone. (G. Iglesias, 2010) Why? Due to the sudden rise in population brings greater responsibilities, needs of different permits, services, and assistance in general. As Jason Bajar stated in his assessment of the different e-governments in the Philippines, not only the said advantages will be provided, but also a crucial need in modern times which is the access to information. If e-governments along the road are formed more accordingly, convenience and communication would be greatly expanded upon if utilized properly. Along with every institution, document management systems are in high demand as again, the manual document processing cannot simply keep up with the rise of population in every government unit, and not even taking into account the quality of service that institutions should provide (DMS, 2019). According to BIPS. 2020, e-governments will greatly automate the said needs and services. And yet according

to BIPS, why is the presence of an e-Government still lacking here in the Philippines? It has been stated as it is due to the lack of utilization for the different technologies that are currently present in the country. If utilized, BIPS has stated that it will further good governance due to it analyzing different households and demographics that government units will be more effective in distributing the services needed for each district. Along with this, different Local Government Units have implemented various e-governance systems naming SMS services, telephone information services, information kiosks, all from different Government agencies.

The vast evidence amongst different studies all point to an utilization of an ICT system will greatly contribute and assist in the development of cities in the country. The different government agencies have realized that a virtual presence is a must for this day and age. Why? Most government units that has a reliable virtual presence that has shown to be more (1) efficient, (2) transparent, (3), and even earning the favor and trust of the people. (JT Bajar, 2020) Amongst the different advantages for e-governance, the most impactful one is mainly telecommunication as it plays a massive part in the infrastructure for businesses in developing countries. With this, it also lays upon the foundation which will be sorely sought for as the country goes forward in terms of technological utilization. As per the local scale, e-governance systems are in great demand as it would offer more efficient, effective, and reliable services towards the local population. (G. Iglesias, 2010) As it comes to computerized systems, according to Granada 2019, barangay halls are usually under great stress due to the backwards system of manual processing using pen and paper.

Computerized systems have been proven to decrease the workload, resources, and even effort that is required in record-keeping and management. Not only does it reduce

hassle, it also provides a streamlined path for transactions and monitoring records through the presence of databases and even cloud storage. Mountains of paperwork simply cannot be stored in case cabinets without taking absurd amounts of space along with it. Taking into account the storage system of records, manual processing would simply not cut it as storage cabinets are simply not impervious to natural disasters such as floods, storms, and typhoons that are frequent in the Philippines. A study by L. Caluza, (2017) EDAMS has made it the consideration of natural disasters in eliminating the old ways of storing documents. It was due to Typhoon Yolanda that severely ravaged Leyte along with his university. He states that the university's archives were destroyed, and countless precious records have either been scattered or deteriorated. The loss of the documents could've been greatly prevented in the presence of cloud back-ups. However, it is not a perfect system and will have several challenges such as (1) limited financial resources, (2) lack of technical expertise, (3) and of course the minority of government officials and public who are resistant to change. Yet the challenges will also come with the promised advantages it would give the population as it also grants a handful of technical advantages mainly being economical, manual processing and paperwork would be greatly reduced, and it will greatly assist in the abundant volumes of work related to the vast amounts of records that are included in the book-keeping of over 28, 737 residents.

Yet with the rising e-governance takeover, there are considerably areas that will be more important than others. One of these aspects is securing a harmless living environment for the very residents that dwell upon it. (Antonio, 2018) As much as possible, law enforcement have been trying to further improve and lengthen the reach of the law. The police cannot always guarantee quick responses especially on busy days and neighborhoods, so some responsibility in keeping the peace falls to the barangay itself.

The government has already passed bills letting barangays employ peacekeepers on the payroll in the form of barangay tanods that assist the Philippine National Police. (Antonio, 2018) The responsibility of tanods consist mostly of peacekeeping, crime prevention, even disaster management if the need arises to do so. The essence of a web-based tanod deployment seems very enticing as barangay populations are most definitely not equal. Some barangays are larger than the other, in both size and population alike. A prime example is Brgy. Ugong and Brgy. Acao, in which Ugong has 28,737 and Acao has only 4,628. An analog method in communicating amongst the residents and tanods will simply not cut it. So, a web-based governance seems extremely enticing as not only it would improve communication, it would also improve record keeping on offenses and crimes within individuals and even amongst multiple districts within the barangay. (Antonio, 2018)

1.4. Related Foreign Studies

As the world's modernization is increasingly developing, the development of political modernization has also been rapidly growing from day to day. The demand of modernization in the mechanisms of governance and public services has become a pattern in the bureaucratic reformation. The implementation of e-government becomes an integral part of the efforts to reform the bureaucracy and create good governance (Yunas, 2016). The aim of e-government is to provide efficient dissemination of information and better service delivery to the citizens. With the implementation of e-government, it can transform the government and create a resolution for easier government work by

providing services to the public. Getrude Ntulo and Japhet Otike (2013) stated that e-government is an instrument of reform and a tool to transform government.

The transformation of government from the traditional way of manual operations to the public, to digital way which achieves way better government and service delivery to the public. However, for developing countries like South Africa, it takes an amount of time to modernize processes at various organizations, especially the public service. This leads to an overall poor state of the country's various sectors and poor service delivery. Mxoli et al. (2019) suggested the use of Electronic Document Management System (EDMS), utilized by e-government implementations, for a modernized way of managing valuable information resources. One basic function of an EDMS is the use of Optical Character Recognition (OCR). OCR technology enables you to convert different types of documents captured by a digital camera into editable and searchable data (Mithe et al., 2013). Although, the OCR system isn't 100% accurate as it is directly dependent on the quality of input document. With the implementation of an EDMS with the use of OCR technology, it will eliminate the excessive production of paper and improve service delivery.

The implementation of a web and mobile application has been widely used in some villages to provide information to the community. In providing information related to the village, Margodadi Village still uses a manual system or by asking the community directly to the village office to obtain information (Risanto et al., 2022). As the village uses a manual system to provide information to the community, the study established a mobile web information system so that it is more efficient and effective in providing and accessing information to the community about village-related information. By creating

and utilizing a mobile web-based information system, the village government can easily interact and exchange information with the residents (Susilawati & Fauzi, 2021).

It was concluded in this study that with an online information system website, it helps Margodadi Village provide information to the residents, and can be accessed quickly without having to go directly to the Margodadi Village office. It is generally concluded that e-government establishment has an effective role in the government organizations, improving the quality of services, and increasing the satisfaction of the client and users.

With the great benefits and potential to improve the way the government provides public services, there are still challenges in implementing e-government, especially in many developing countries around the world. Al-Shbou et al. (2014) stated that there are always a number of critical success factors and risks associated with e-Government. Lack of ICT infrastructure, lack of allocated budget for the deployment of e-government, lack of security and privacy of information, limited IT skills and training, and lack of citizen awareness and participation, are some of the complex problems being faced by the developing countries. The challenges mentioned are just some of the barriers in implementing e-government. In order to fulfill the benefits of the e-government implementation, the government needs to deal and overcome these challenges. The government should play a leading role in developing the ICT infrastructure as this is a requirement for successful e-government implementation (Nkwe, 2012). Governments must act by developing and using e-government tools in order to enhance e-readiness, encouraging and educating communities the usage of ICT and supporting the development of ICT skills.

1.5. Related Systems

1.5.1. e-BARANGAYph

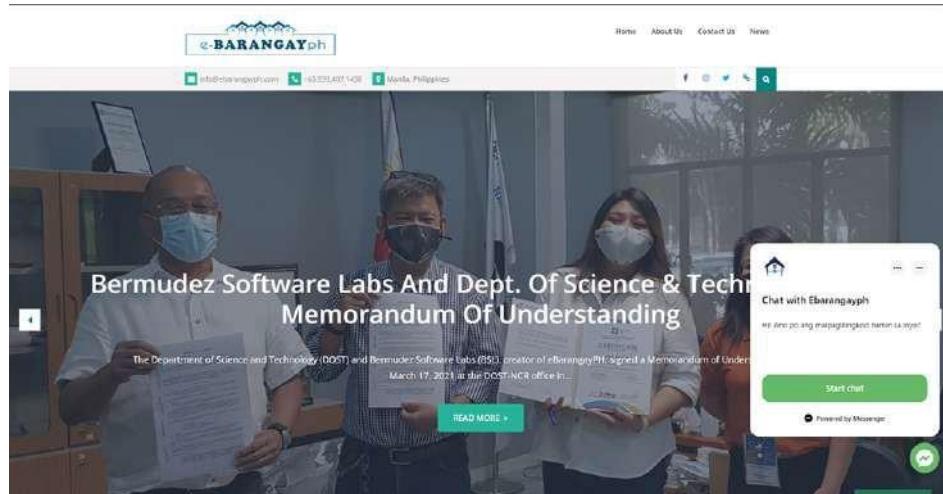


Figure 4. System Overview: e-BARANGAYph

Figure 4 shows the homepage of e-BARANGAYph. It is an Online Barangay Information Management System developed by a former OFW, Ruel Bermudez who worked as an IT Project manager and Senior Web Developer. It is a system for managing the following: Resident Records, Blotters, Hearing and Settlement records, Certificates and Permit Issuance, Resident ID System, Information Dissemination and Crisis Management. The website is developed to provide barangay services or information through the use of the internet and a mobile application. It features an on-website chat box which is linked to an e-BARANGAYph messenger account. This is for raising concerns/inquiries. It also features a news section that is updated from time to time.



Figure 5. System Features: e-BARANGAYph

Figure 5 shows the features that the system offers. It provides online connectivity, a comprehensive resident management system, online verifiable documents and a crisis management service.

1.5.2. Barangay Management Information System (BAMIS)



Figure 6. System Overview: Barangay Management Information System (BAMIS)

Barangay Management Information System (BAMIS) is an information management system which provides a digital medium for processing barangay services. It features a database where all of the records are stored. It gives the demographic summaries and raw data if needed. It also provides fillable forms used for transactions. The system also features Certificate Design Customization where the user can edit their general purpose certificates.

SUMMARY OF FEATURES

- 1. MULTIPLE USER ACCOUNT** capable (ie. Admin, Clerk).**
 - * Logs all user activities.
 - * With preset accounts for all officials and clerks
 - * Mobile Device compatible
- 2. System Security**
 - * 5 Layer system security (OTP and QR enabled)
- 3. Resident Profiling**
- 4. Business Establishment Profiling**
- 5. Ready to print certificates (may add more)**
 - *Barangay Clearance
 - *Business Permit
 - *Indigency Certificate
 - *Residency Certificate
 - *Endorsement Letter
 - *Masterlist of Residents and Business Establishments
- 6. E-payment Enabled; remote transaction via Facebook messenger or online website**

Databases

- * Residents, Families

Add New Resident

Resident

First Name: John
Last Name: Smith
House Number: 123
Zone: Zone A
Area Name: Area 1
House Type: House
Mobile: 0917-1234567
Birthdate: 10/10/2000
Residence Status: Permanent
Residence No.: 1234567890

Resident Profiling is comprehensive

- Profile Information
- Complete Address
- Residency
- Memberships (PWD, 4Ps etc)
- Contact Information
- Family and Household Membership

Figure 7. BAMIS Data Summary Feature

Figure 7 displays the system features that BRAMIS offers to its clients. It allows Files and Media Management, Budget and Expenses Tracking, Activities Progress Tracking and SMS Broadcasts. Figure 7 also elaborates more on BAMIS's features, explaining the what each feature includes.

1.5.3. Barangay Records and Automation Management System (BRAMS)



Figure 8. System Overview: Barangay Records and Automation Management System (BRAMS)

Figure 8 shows the landing page for the system ‘Barangay Records and Automation Management System (BRAMS)’. Under the Digital Government program of the Department of Information and Communications Technology, BRAMS is a free service that aims to digitize barangay management through the use of an online, web-based management system. It offers a user-friendly data processing system and basic statistical data as a tool for decision-making in a nearly real-time environment.

1.5.4. Barangay Bel Air

A screenshot of the Barangay Bel Air website. The top navigation bar includes links for 'HOME', 'SANGGUNIANG KABATAAN', 'BARANGAY ASSEMBLY', 'BOOK ONLINE', 'COMMITTEE COORDINATORS', 'ANNOUNCEMENTS', and 'More'. There are also 'Search' and 'Login' buttons. Below the navigation, there are two large images: one showing a group of people seated in a hall, and another showing a person working at a computer. At the bottom, there's a section titled 'Community' with a 'Let's Chat!' button.

Figure 9. Website Overview: Barangay Bel Air

Figure 5 shows the home page for Barangay Bel Air's E-e-government website. The website allows its users to download online forms, view barangay announcements, view information on the barangays' different branches, book appointments for ID registration and medical services.

1.5.5. Barangay Dasmarinas



Figure 10. Website Overview: Barangay Dasmarinas

Figure 10 shows the home page for Barangay Dasmarinas' E-e-government website. The website itself has basic functions such as to allow its users to download online forms, view barangay announcements, view information on the barangays' different branches.

1.5.6. Design and Implementation of a Hybrid Barangay Information Management System



Figure 11. Website Overview: Hybrid Barangay Information Management System

Figure 11 displays the interface for the hybrid system of Barangay Poblacion. The system consists of a Profiling System, Document Request System, System, Project Monitoring System, and Incident Recording. It was designed to automate the processing of the barangay which reduces waiting time, processes client requests faster, easily lookup records, and reduces paper dependency.

1.5.7. NSMGS Technologies

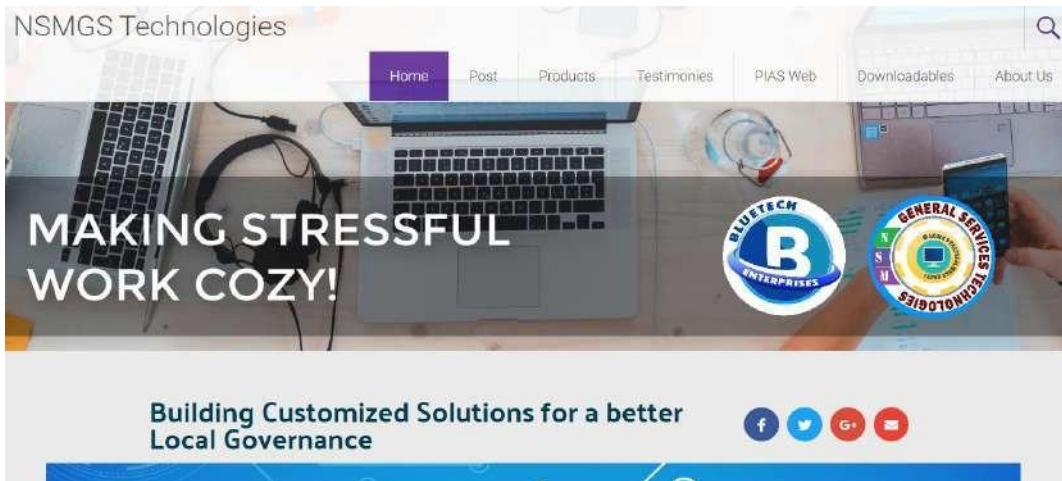


Figure 12. Website Overview: NSMGS Technologies

Figure 12 shows the home page for NSMGS Technologies. It is a company based in Quirino which offers local government units various systems which are packaged into different modules depending on what a certain LGU needs. Among the services that the company offers are PPE Inventory with Accounting System, Barangay Information Management System, and Supplies Inventory system with ICS Recording and Digital Document Tracking System.

1.6. Synthesis

Local and foreign studies suggest that taking advantage of the digital trends plays a crucial part in the development of the country. Providing a system/website on an LGU level (specifically barangay) will minimize the inconvenience of manual processing as it would provide all of its services digitally. The researchers aim to develop an E-governance system for the barangay which would make getting information, services of the LGU much more convenient.

Table 1. Synthesis Systems' Features Matrix

	LINETE CH E-Governance System	e-BARAN GAYph	Barangay Management Information System (BAMIS)	Barangay Records and Automation Management System(BRAMS)	NSMGS Technologies - Barangay Information Management System & Document Tracking System	Hybrid Barangay Information Management System
Module / Features						
Appointment	✓			Document Request for Certification and Complaint only.		Document Request for Certification and Complaint only.
Announcement	✓	✓	✓		✓	
User Management	✓	✓	✓	✓	✗	✓
Notification	✓	SMS Only	✓			
Data Visualization (Reporting)			✓	✓	✓	Summation Only
Cloud Technologies	✓	RDBMS Only (MySQL)	✓	Semi-Coud Database Management	✓	RDBMS Only (Microsoft Access)
Barangay Master List	✓	✓	✓		✓	✓
Online Payment	✓	✓	✓		✓	✗
Payroll		✓	✓		✓	✓
Project Monitoring	✓				✓	✓

The table above summarizes the different features of each system that is related to this project. This key feature, along with the rest of the mentioned above, will complement the barangay's document processing procedures well and in return, improves

the handling and management of the barangay.

The literature presented in this research emphasizes the importance of transitioning to a digitized approach in government operations. The concept of e-Government has gained significant traction, driven by the numerous benefits and convenience it offers to citizens in managing expanding populations and data. However, the research also highlights the reasons why many barangays still rely on traditional processing methods, namely the lack of Information Communications Infrastructures (ICTs), budget constraints, and the need for trained personnel.

To address these challenges, the proponents propose the implementation of an Electronic Document Management System (EDMS) as part of the e-Government initiative. Another key feature of this system will be the “tanod” deployment and scheduling system using reports and crime incidents. Residents would be able to schedule appointments with this feature. Another feature that will aid in the further easing and convenience of transactions is the implementation of an online transaction system which will handle payments through an API, while allowing the gathering of data and creation of audit trails for transparency.

Furthermore, the research explores various strategies for developing effective government websites. These strategies include making information easily accessible, simplifying the process of obtaining services, designing with mobile devices in mind, providing live help, implementing notification systems, and incorporating feedback gathering tools. By considering these strategies, the proponents aim to bridge the gap between the services offered by Barangay Ugong and the digital needs of its citizens.

The proposed system not only brings convenience to the staff and residents of Barangay Ugong but also unlocks new possibilities for improving the barangay as a whole. By streamlining processes and providing efficient access to information, the system promotes good governance in an era of technological advancements. This research synthesis sets the stage for the development of a comprehensive and effective digital solution to enhance document processing procedures and overall management within Barangay Ugong.

Chapter 3

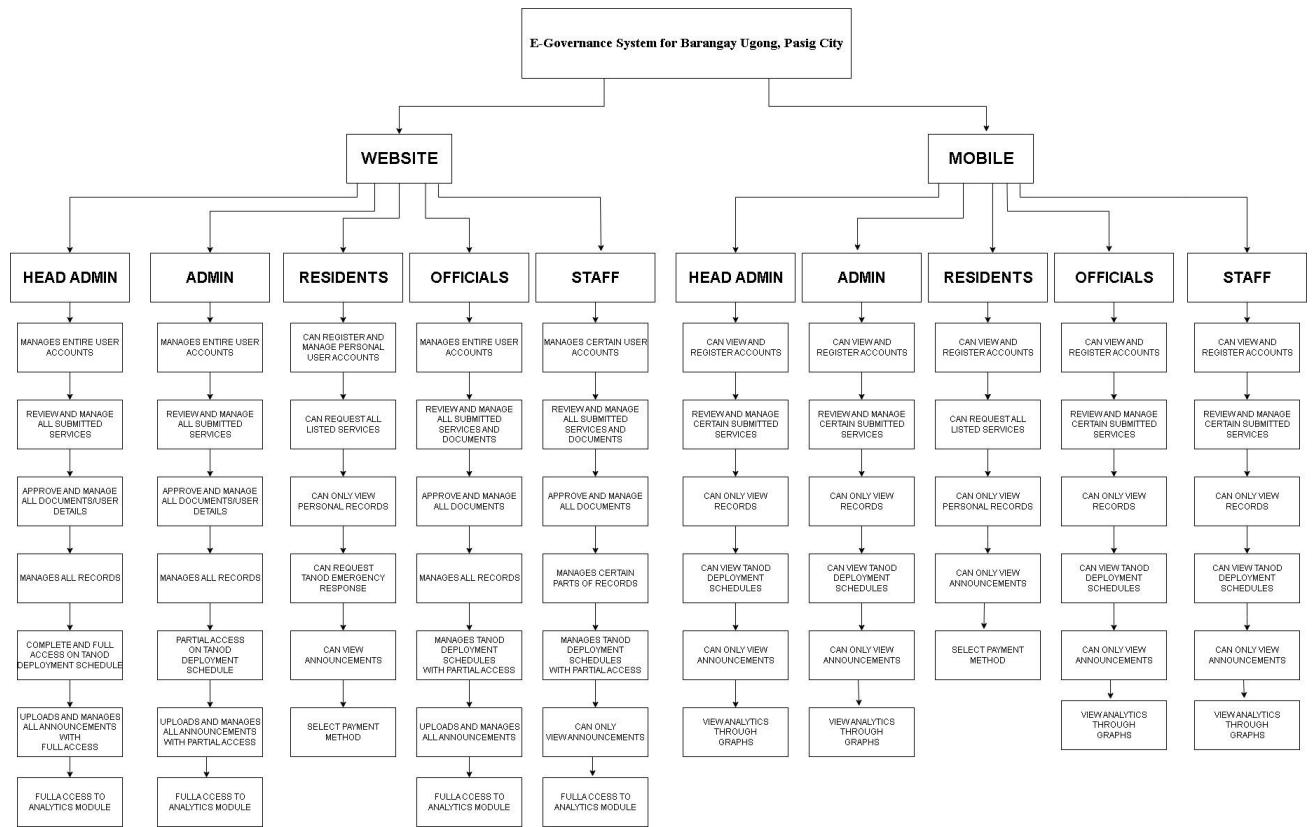
METHODOLOGY

This chapter will discuss the methodologies which will be used as well as discuss the processes related to the study. This chapter will elaborate on the structure and module of the system which will be designed. This chapter will also deliver the mock-ups of what the system would look like as well as the different phases of its modules. The techniques used in data gathering and sample selection will also be discussed and further elaborated. Lastly a summary of the study used to answer the problem proposed.

3.1 Requirements Analysis

3.1.1 Operational Feasibility

- This section will present and discuss the conclusions on whether the proposed system meets the criteria for the operational, technical, economic and schedule feasibility in developing the system. It is important to conduct a requirement analysis to make sure if the system is realistically achievable given the parameters provided.



○ Figure 13 Functional Decomposition Diagram

3.1.2 Technical Feasibility

3.1.2.1 Hardware Requirements

Table 2. Hardware Requirements

Desktop/Laptop	Mobile Device
Hard drive: at least 8 Gb Processor: Intel Pentium 4 and above Memory (RAM): at least 4 Gb of memory or higher Monitor, mouse, and keyboard Printer Scanner (300 DPI Recommended)	Mobile Operating System: Android Version/API: Android 8.1 or higher version RAM: at least 4 Gb Device storage: at least 32 Gb

Table 2 shows the required hardware specifications needed to run the system efficiently for both mobile and desktop or laptop users.

3.1.2.1 Software Requirements

Table 3. Software Requirements

User	Developer
Desktop Operating System: all major Operating System (Windows, macOS, and Linux) Web Browser: Google Chrome, Microsoft Edge, Mozilla Firefox etc Operating System: Windows 8 and above	Device storage: at least 4 Gb and above RAM: at least 4 Gb and above Web Browser IDE <ul style="list-style-type: none">• Visual Studio Code Language: <ul style="list-style-type: none">• HTML, CSS, Javascript

Table 3 shows the software requirements needed to develop the system. The table shown above shows that both users and developers have ways to run the web and mobile application with its software.

3.1.3 Economic Feasibility

The objective of this economic feasibility is to assess the financial viability of developing a comprehensive barangay website integrated with a mobile application. The proposed website and application will function as a centralized information platform, offering convenient access to essential services and pertinent information for the residents of the barangay. This study will primarily concentrate on the financial considerations of the project and present recommendations for the optimal approach to undertake the development of the website and application.

3.1.3.1 Tangible Benefits

- **Improved Communication:** The system will provide to the barangay officials easy communication with their constituents, disseminating important announcements, news, and events in real-time, reducing the need for physical communication.
- **Increased Accessibility:** The system can make it easier for the community to access barangay services, such as applying for permits, filing complaints, and requesting for assistance without the need to travel to the barangay hall.
- **Reduced Time and Cost:** A barangay system can reduce the time and cost of processing transactions. It can eliminate the need for paper-based documentation and manual data entry, leading to faster and more efficient processing of applications.
- **Improved Transparency:** A web system can provide transparency in the barangay's operations, making information on projects, expenses, and revenue easily accessible to the community. This can help to promote accountability among barangay officials.

3.1.3.2 Intangible Benefits

- **Improved Citizen Participation:** In the system, the community can be more engaged in barangay activities and decision-making processes, making them feel more connected to their barangay and involved in its development.

- **Enhanced Civic Engagement:** The system can encourage citizens to participate in community initiatives, such as clean-up drives, tree planting, and other community-based activities.
- **Greater Trust and Confidence:** The web system can enhance trust and confidence in the barangay officials and their ability to deliver services to the community effectively.
- **Increased Awareness:** The web system can raise awareness about the programs, services, and initiatives of the barangay, encouraging the community to be more informed and engaged.

3.1.3.3 Market Analysis

- The proposed barangay website and mobile application will cater to the needs of the barangay residents. Based on the latest census data, the barangay has a population of 28, 737 residents. The majority of the residents are within the age range of 25 - 29 years old, according to the 2015 census, with a significant number of them using smartphones.
- The barangay is currently using a barangay management system for confirming the residency of its citizens and for blotter reports which are only available for its employees and not the residents. As well as an application for its health workers This presents an opportunity to create a unique platform that will cater to the residents' needs.

3.1.3.4 Financial Analysis

The development of a barangay website with a mobile application will require significant investment. The following are the estimated costs of the project:

Website and Mobile Application Development - **Development (PHP Developer and Android and iOS Developer** - Since the developers would be the researchers, during the initial project life cycle, there would be no costs associated with developing the system.

Website Hosting and Maintenance - Can either be done through a free web hosting platform or through a subscription based service. Siteground offers subscriptions for the dedicated hosting website with features like enhanced security, 50 gigabytes of web space, free SSL, unlimited databases, a daily backup feature to ensure data quality, and a collaborator feature to easily navigate the transfer of privileges. The Dedicated Hosting Plans are between the range of P1500.00 PHP and P2000.00 monthly.

Mobile Application Hosting and Maintenance - Siteground's subscription costs a flat P2000 monthly for a cloud hosting option with competitive and flexible features.

SMS Pricing - The team will be utilizing One Way SMS for its sms functionalities. The price range for the service is as follows:

SMS Credit Package	1,000	5,000	10,000	25,000	Above 25,000
Price per SMS / TXT	P 1.00 P 0.90	P 0.95 P 0.85	P 0.90 P 0.80	P 0.80 P 0.73	Contact Us
Total SMS Price	P 1000.00 P 900.00	P 4750.00 P 4250.00	P 9000.00 P 8000.00	P 20000.00 P 18250.00	

Figure 14 One Way SMS Pricing Table

Database - the team will be utilizing php MySQL for the database of the website and the application. In terms of securing the database, the team will use encryption to secure the user's and admin's accounts.

3.1.3 Schedule Feasibility

It is paramount to any type of project or study to keep all of the related tasks up to date and on schedule, lest the entire project would encounter various set-backs and problems. The completion of a project reflected on how well the initial planning stages were done and this would include the proper scheduling and allotment of time for each task.

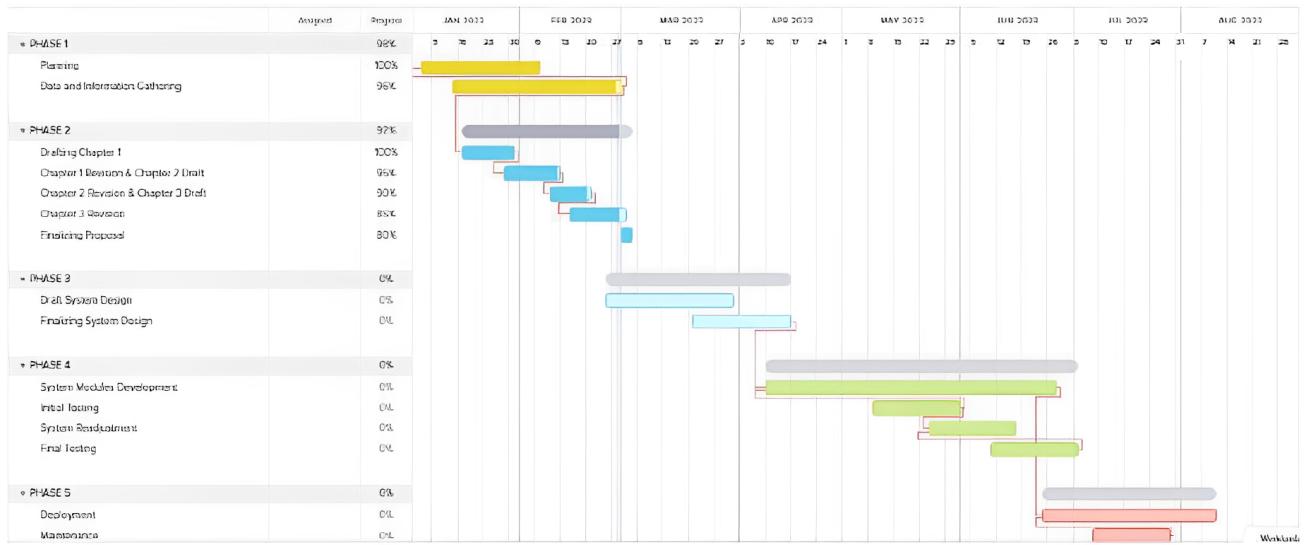


Figure 15 Agile Gantt Chart

Figure 15 illustrates the schedule and task plan of which the project is currently following. The figure also displays the general schedule allotment for each of the phases of the study and the estimated dates and durations for each phase. From the start of January 2023 up until the middle of February, the focus of the study was planning the general outline and flow of the study as well as reaching out to potential clients and gathering the data relevant in enacting the study. From there, starting at around the end of February, dictates the start of drafting the initial system design, its requirements and the modules to be included. By the end of March, the study would move to developing the

included modules for the system and beginning the initial testing process, this phase would last from early April to late May ending with the final testing and adjustment of the system before it is deployed to the client. And for the few remaining months, it would be dedicated to the process of deployment and hand over to the client and further monitoring after its implementation.

3.2 Project Design

3.2.1 System Architecture

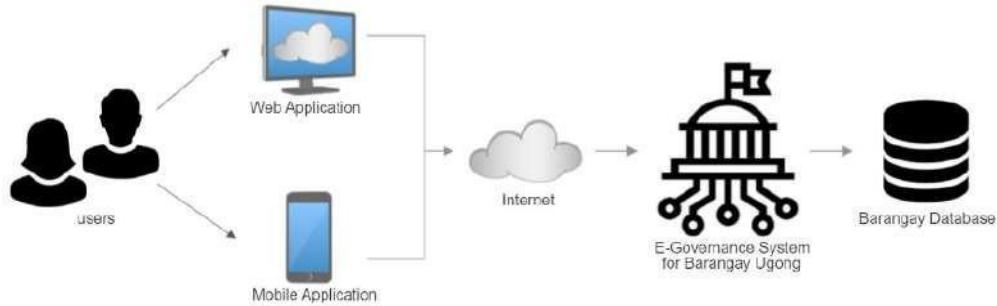


Figure 16 System Architecture

Figure 16 displays a visual representation of the system architecture which shows the connection between the various components and the functions they perform. The main users of the system will be the Barangay Head Admin, Barangay Admin, Barangay Officials, Barangay Staff and the Residents. The users will have to use a desktop or a laptop device and mobile device that requires an internet connection to use the system. The information that has been passed through the internet will then be stored in the database that can also be accessed and retrieved by the users.

3.2.2 Context Diagram

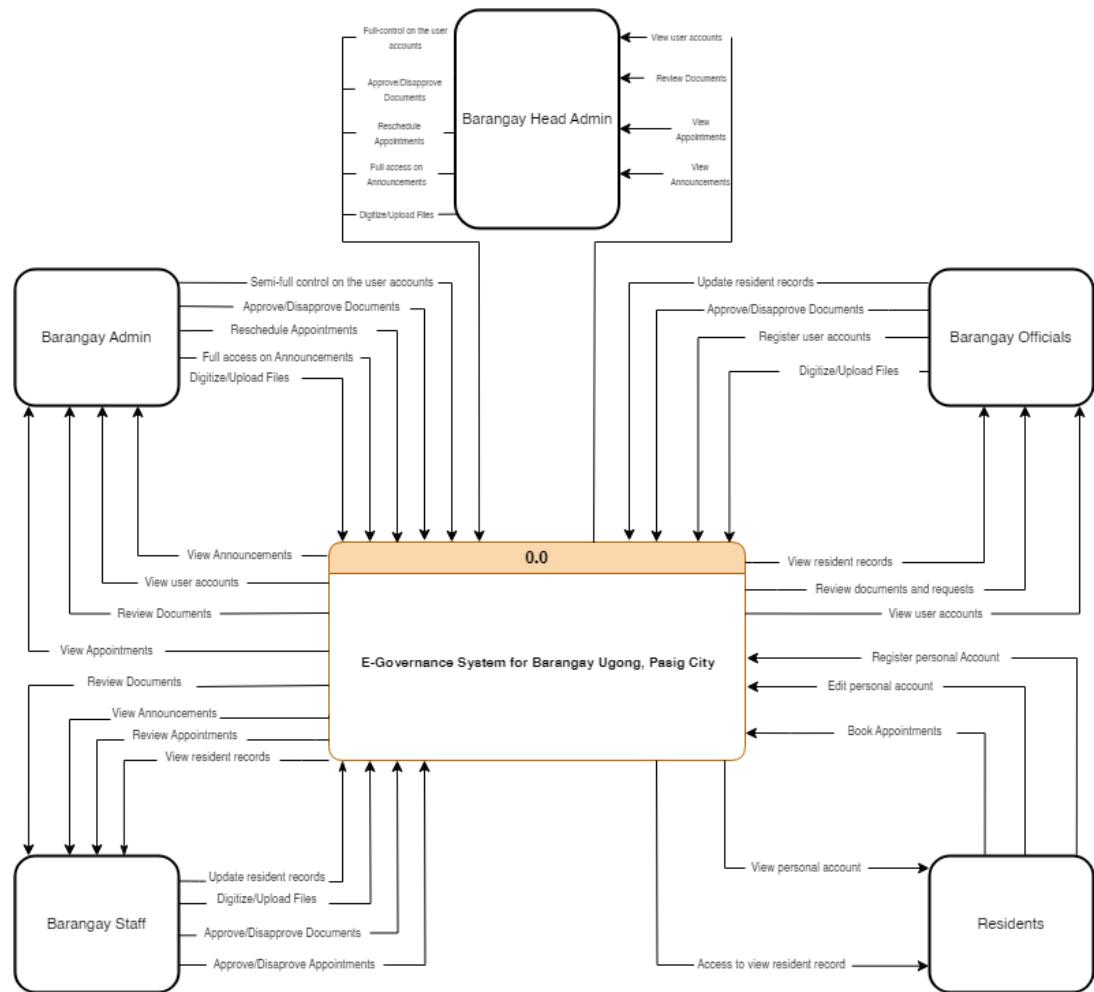


Figure 17 Context Diagram

Figure 17 shows the flow and process of each entity present in the diagram. There are five (5) main entities in the context diagram. The resident, barangay head admin, barangay officials, barangay admins and its staff.. The foremost can register, view and edit their personal accounts. This entity could also book/schedule an appointment in the barangay. The Barangay Head will be the one who will manage/supervise the whole system and its barangay accounts. The head has full authority on the overall system. The barangay staff has almost the same privileges as the head, but this entity does not have full access to the user accounts. The barangay official can update, approve/disapprove

documents, register user accounts and digitize the documents. Barangay admins will have semi-access to the user accounts and can do most of the things that the barangay head admin could do.

3.2.3 Data Flow Diagram

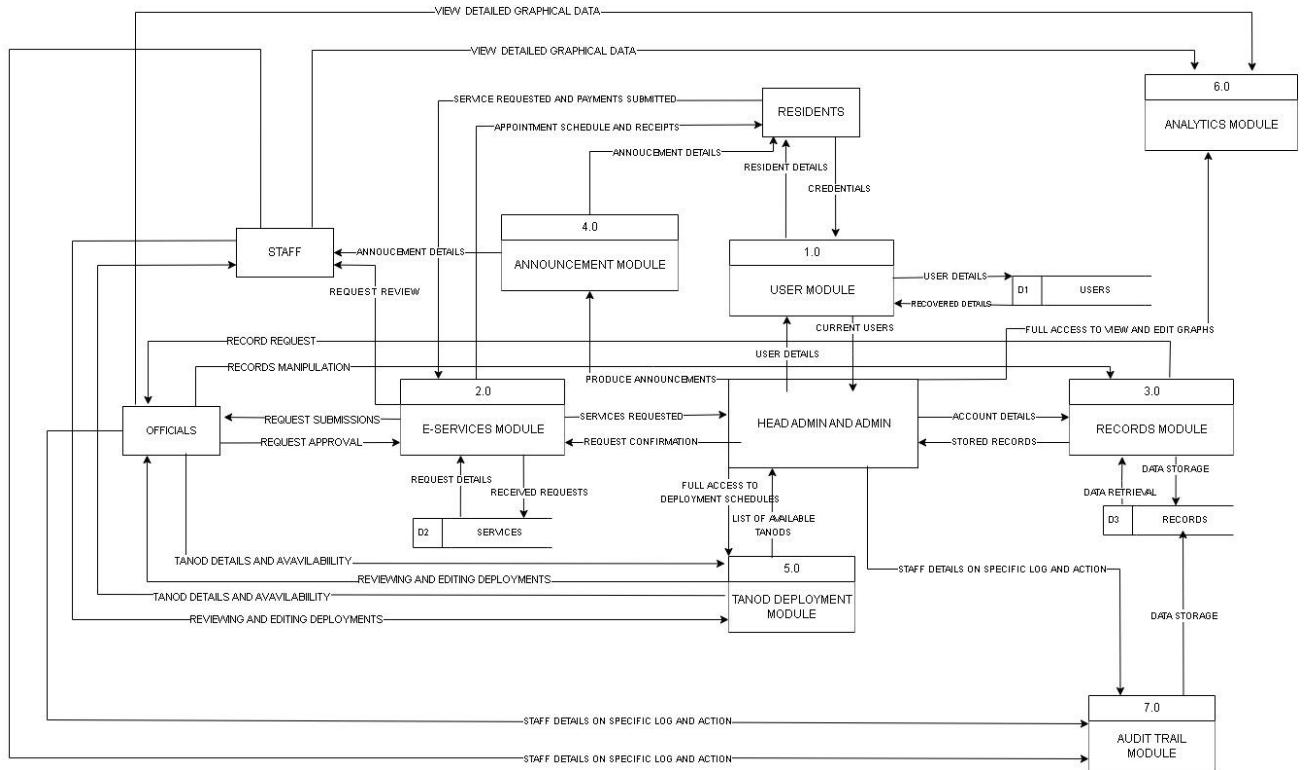


Figure 18 Level 1 of the DFD Diagram

Figure 18 displays the main data flow diagram for the system. It dictates the 5 major users of the system namely, Head Afmin, Admin, Residents, Officials, and Staff.

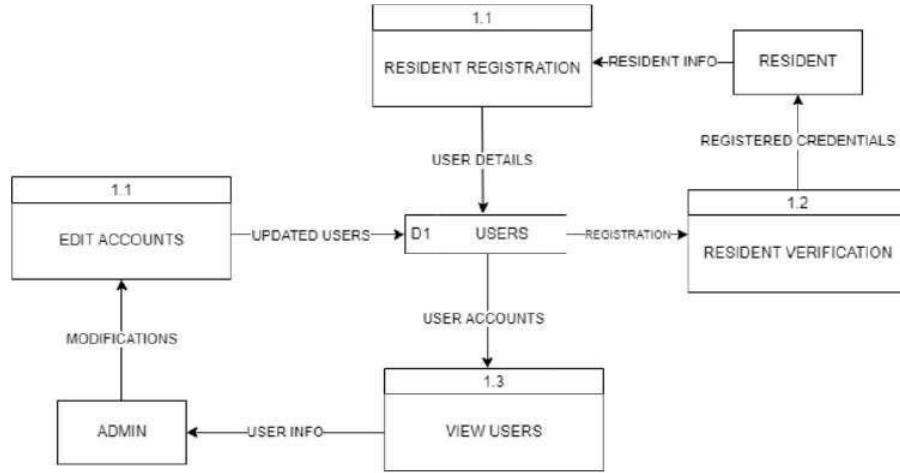


Figure 19 Level 2.0 Data Flow Diagram of the User Module

Figure 19 displays the level 2 data flow diagram of the User Module. The Admin can modify, delete, and also register accounts in the system. The resident can also register and request the credentials submitted.

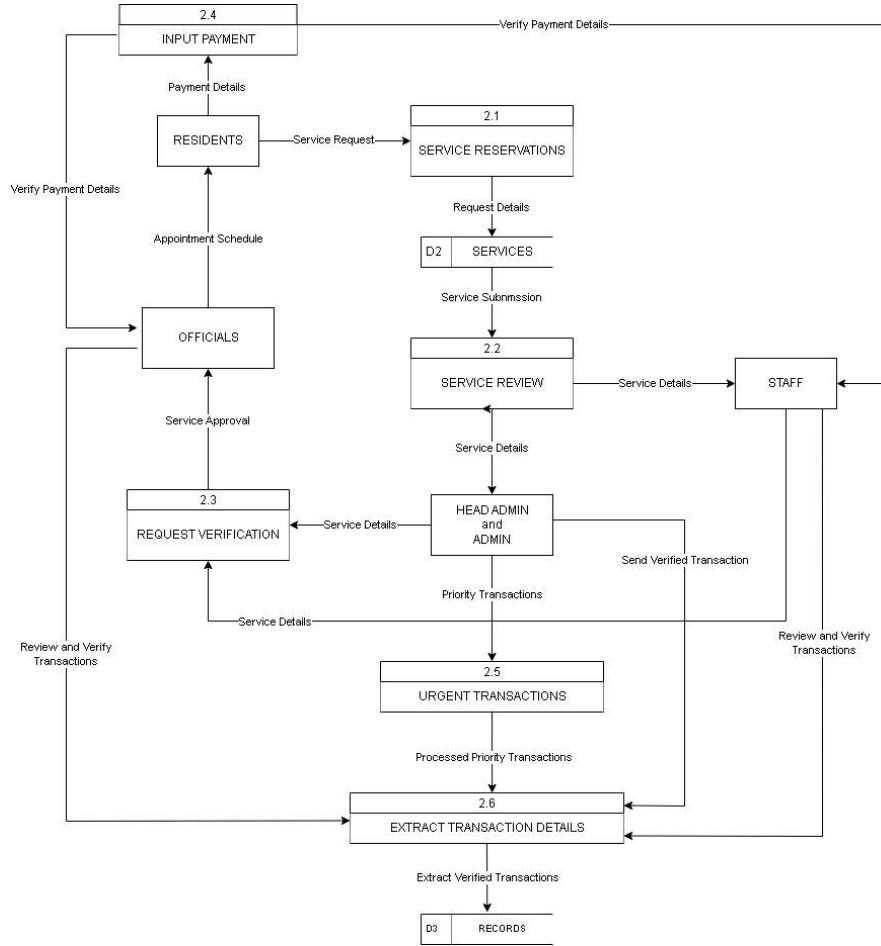


Figure 20 Level 2.0 Data Flow Diagram of the E-services Module

Figure 20 displays the level 2 data flow diagram of the E-services Module. The Resident has the option request services as the Admin reviews the request. The Staff and Admin is then able to verify the request for the Official to approve. Also, the resident is able to input in different transactions that are processed by the officials and staff, with the exception of flagging urgent transactions which only the Head Admin and Admin are only able to do.

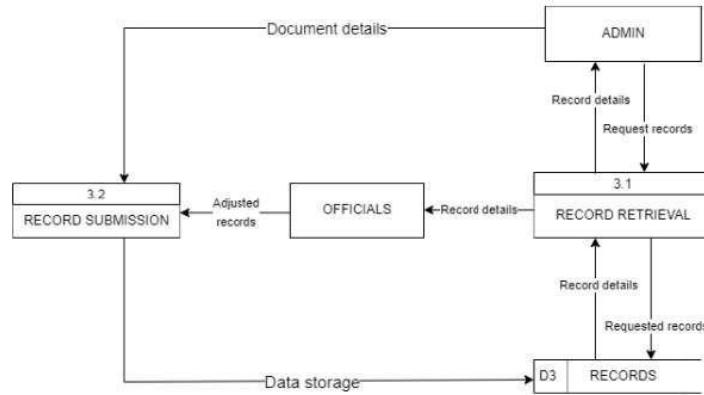


Figure 21 Level 2.0 Data Flow Diagram of the Record Module

Figure 21 displays the level 2 data flow diagram of the Record Module. The Admin can request, edit, and delete records in the system. The Officials can also update and modify the stored records in the system.

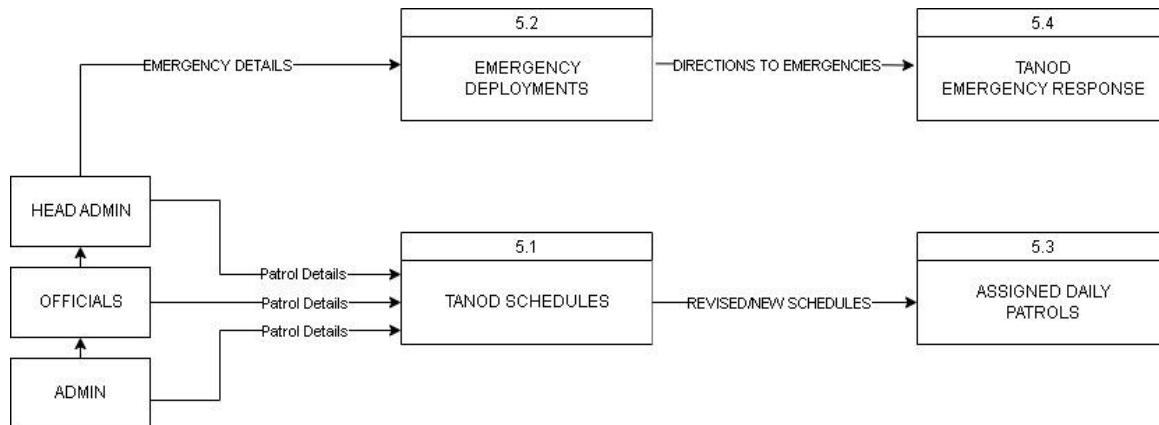


Figure 22 Level 2.0 Data Flow Diagram of the Tanod Deployment Module

Figure 22 displays the level 2 data flow diagram of the Tanod Deployment Module. The three (3) managers namely the Administrator, Officials, Staff, are able to view and modify the tanod patrols for either new or revised schedules. The three

managers are also able to assign tanods to nearby emergencies if the need arises.

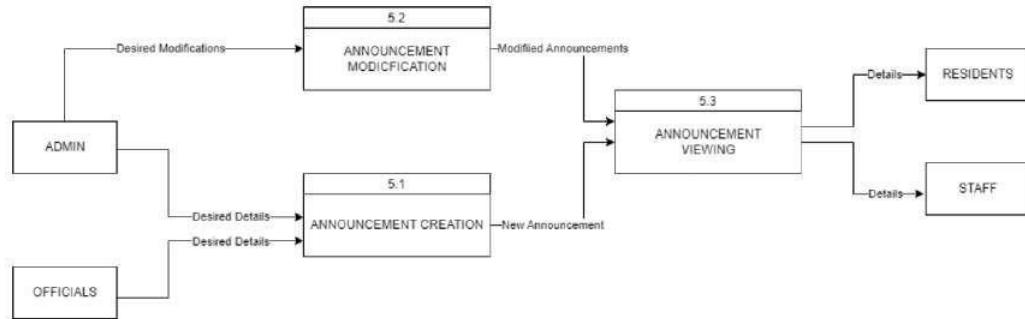


Figure 23 Level 2.0 Data Flow Diagram of Announcements Module

Figure 23 displays the level 2 data flow diagram of the Announcements Module. The Admin is able to modify and create announcements while the Officials are only able to produce announcements. The Residents and Staff are able to only view the announcements.

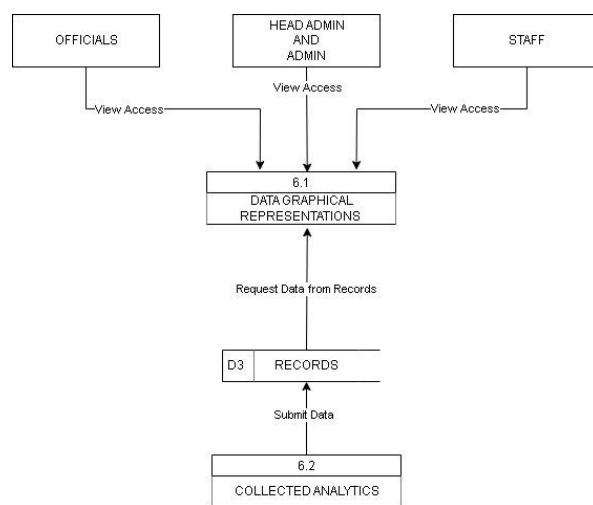


Figure 24 Level 2.0 Data Flow Diagram of Analytics Module

The 4 handlers of the system namely the Head Admin, Admin, Officials, and the Staff are able to view and access the different analytical data through the Analytics Module. Also, the 4 handlers are able to request different data from the records in order to be viewed numerically or through graphs.

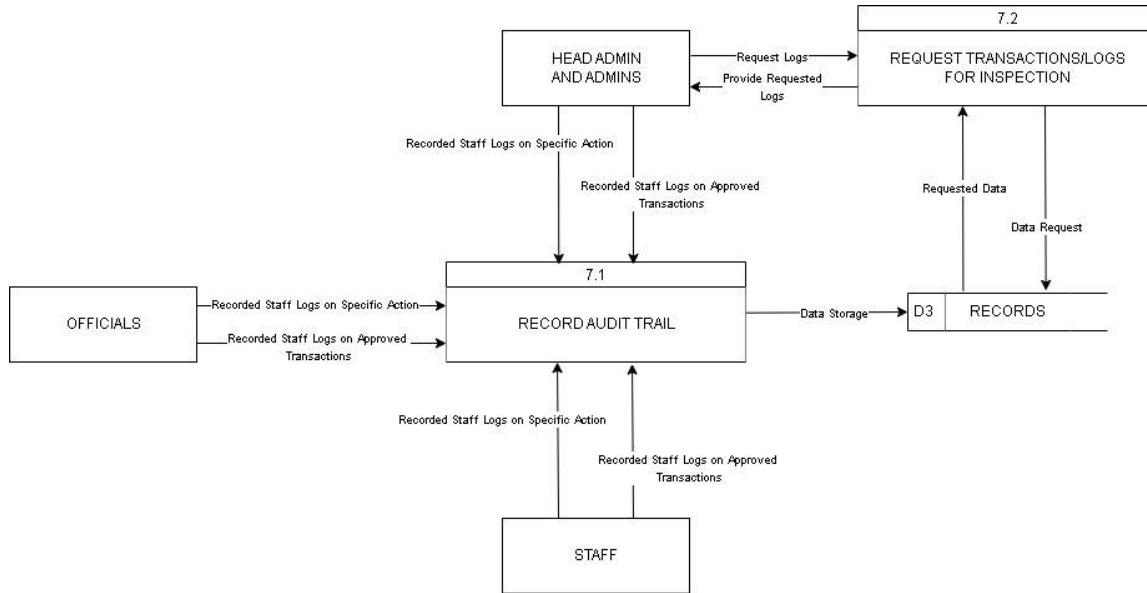


Figure 25 Level 2.0 Data Flow Diagram of Audit Trail Module

Within the 4 handlers of the system namely Head Admin, Admin, Officials, and Staff the audit trail module serves to ensure that most actions done within the system are recorded with complete staff details on who accessed the specific action, and who approved the specific transactions to track accurate records and cash flow.

3.2.4 Use Case Diagram

Use Case Diagram shows the different types of users of a system. It is a representation of a user's interaction with the system and its involvement with the different use cases.

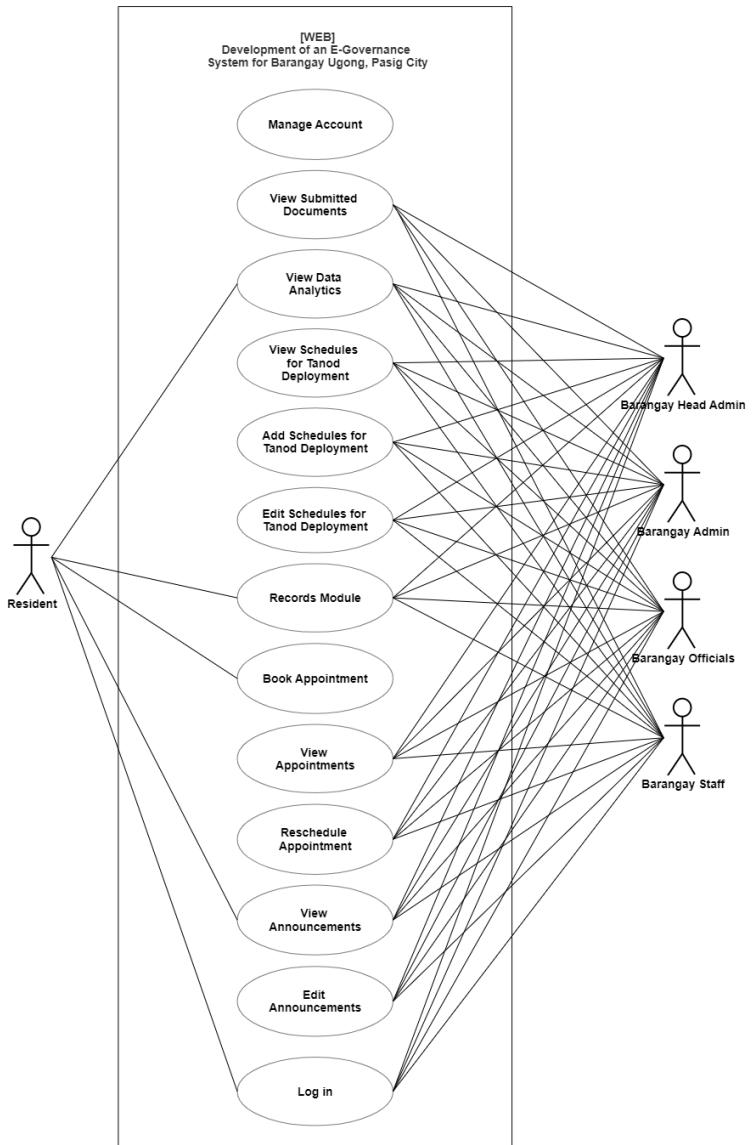


Figure 26 Use Case Diagram for Web

Figure 26 shows the use case diagram for the website. The diagram shows the interactions of the five main users of the system, mainly the Barangay Head Admin, Barangay Admin, Barangay Officials, Barangay Staff and the Residents. The Barangay Head Admin is the only user who has the most control on all the system's processes except booking of an appointment. The processes of the Barangay Admin includes managing of accounts of the Barangay Constituents and Residents, accessing and manipulation of records, approve or decline an appointment, rescheduling of an appointment, and a complete access of the announcement where the Barangay Head Admin can create, update and delete announcements. The processes between the Barangay Head Admin, Barangay Officials, and Barangay Staff are almost similar, however, Barangay Officials are restricted to rescheduling an appointment and updating the announcement, while Barangay Staff restrictions are rescheduling of an appointment, creating and updating an announcement. Residents can manage their accounts, upload files, access to view resident records, book appointments for blotter, barangay clinic related or submit documents, and viewing of announcements.

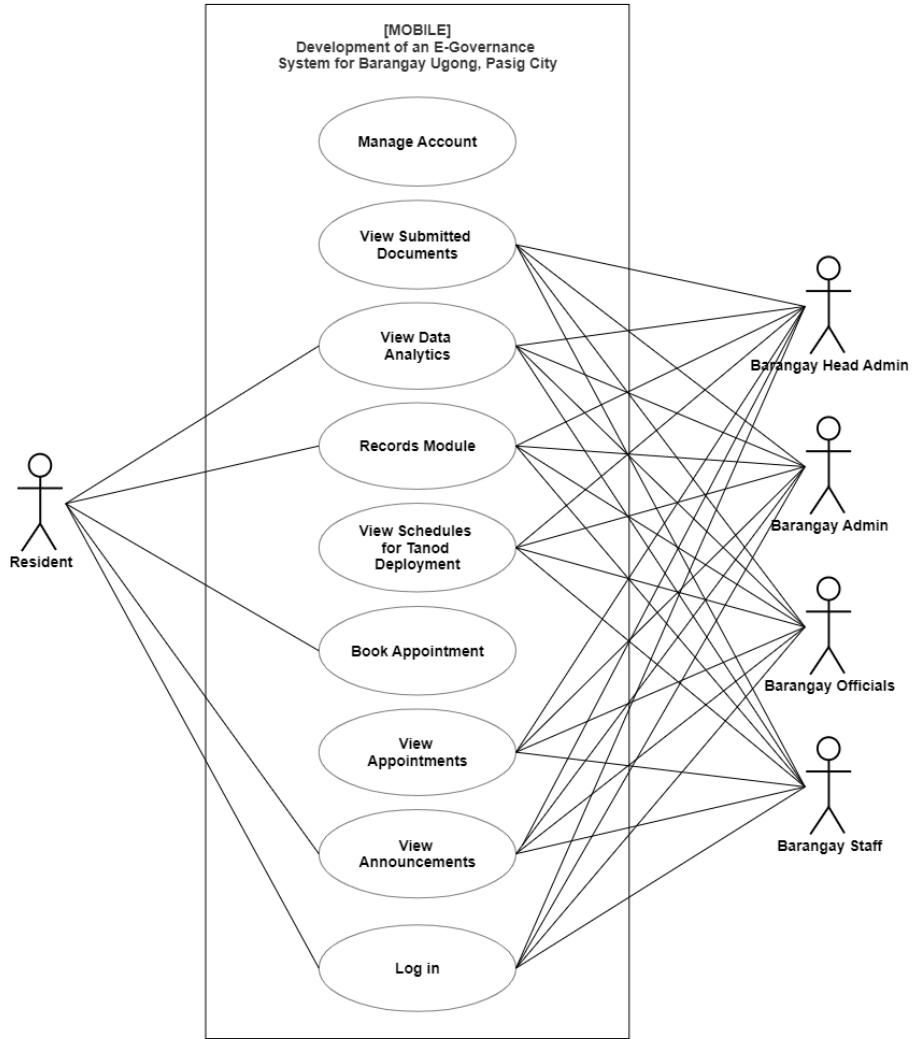


Figure 27 Use Case Diagram for Mobile

Figure 27 shows the use case diagram for the mobile. The five main users of the system are the Barangay Head Admin, Barangay Admin, Barangay Officials, Barangay Staff and the Residents. The processes between the Barangay Head Admin, Barangay Officials and Barangay Staff are the same, where they can access all processes except for booking an appointment. The processes include viewing of Barangay Constituents and Resident's user account, viewing of records, access to view submitted documents, requests and approve or disapprove appointments, and view announcements. Residents

can view their user accounts, scan files, book appointments for blotter, barangay clinic related or submit a document, and view Barangay announcements.

Table 4. Manage Account Use Case

Process:	Manage Account
Description:	This module is responsible for managing the different accounts in the Barangay where they can add, edit, or view an account.
Primary Actor:	Barangay Head Admin, Barangay Admin, Barangay Officials, Barangay Staff, Residents
Trigger:	When the primary actor wants to register an account, view and modify accounts in the system.
Basic Course Events:	<ol style="list-style-type: none"> 1. The primary actor opens the Manage Account page. 2. Different options will be shown whether the primary actor wants to register, view and edit an account.

Table 4 shows the use case for Manage Account. The table shows how the primary actors: Barangay Head Admin, Barangay Admin, Barangay Officials, Barangay Staff and Residents, add and manage their accounts.

Table 5. Barangay Tanod Deployment Module Use Case

Process:	Barangay Tanod Deployment
Description:	This module enables the process of scheduling and deploying of barangay tanods or BPSO on patrols or emergencies.
Primary Actor:	Barangay Head Admin, Barangay Officials, Barangay Staff
Trigger:	When the primary actor(s) view incident data then schedule and deploy tanods on patrols

Basic Course	1. The primary actor views incidents data.
Events:	2. The primary actor selects open schedule and tanod availability
	3. The primary actor deploys based on incident data locations

Table 5 shows the use case for Document Recognitions Module. The table shows how the primary actors: Barangay Head Admin, Barangay Admin, Barangay Officials, Barangay Staff and Residents, can scan or upload a file to be stored in the system's database.

Table 6. Data Analytics Module Use Case

Process:	Data Analytics Module
Description:	This module handles information and data from transactions and incident report instances from the barangay.
Primary Actor:	Barangay Head Admin, Barangay Officials, Barangay Staff
Secondary Actor:	Residents
Trigger:	When the primary actor wants to view data and graphs online.
Basic Course	1. The primary actor can view detailed information regarding each statistics and data.
Events:	

Table 6 shows the use case for Data Analytics Module. The table shows how the primary actors: Barangay Head Admin, Barangay Admin, Barangay Officials, Barangay Staff and Residents, can view information and data from transactions and incident report instances from the barangay.

Table 7. Records Module Use Case

Process:	Records Module
Description:	This module serves as a warehouse of the relevant documents in the system.
Primary Actor:	Barangay Head Admin, Barangay Officials, Barangay Staff
Secondary Actor:	Residents
Trigger:	When the primary actor wants to view or modify resident records.
Basic Course Events:	1. The primary actor can view relevant documents uploaded in the system.

Table 7 shows the use case for Records Module. The table shows how the Barangay Head Admin, Barangay Admin, Barangay Officials, and Barangay Staff can view, update, and delete resident records.

Table 8. Book Appointment Use Case

Process:	Book Appointment
Description:	This feature provides an ease to book an appointment.
Primary Actor:	Residents
Trigger:	When the primary actor wants to schedule an appointment to the Barangay.

Basic Course	1. The primary actor opens the Appointment Booking page.
Events:	2. The primary actor completed the appointment request form.

Table 8 shows the use case for Book Appointment. The table shows how residents can book an appointment for blotter reports, Barangay Clinic or document submission.

Table 9. View Appointment Use Case

Process:	View Appointment
Description:	This feature displays appointment details in the system.
Primary Actor:	Barangay Admin, Barangay Staff
Trigger:	When the primary actor wants to view, approve and decline, and review appointment details.
Basic Course	1. The primary actor opens the view appointment in the
Events:	Appointment Booking page.

Table 9 shows the use case for View Appointment. The table shows how Barangay Admin and Barangay Staff can view appointments booked by the residents where they can review their appointment details and approve and decline appointments.

Table 10. Reschedule Appointment Use Case

Process:	Reschedule Appointment
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Description:	This feature lets the user modify appointment dates in the system.
Primary Actor:	Barangay Admin, Barangay Staff

Trigger:	When the primary actor wants to change the date of the appointment in the system.
Basic Course Events:	<ol style="list-style-type: none"> 1. The primary actor opens the view appointment in the Appointment Booking page. 2. The primary actor changed the date of the appointment.

Table 10 shows the use case for Reschedule Appointment. The table shows how Barangay Admin and Barangay Staff can reschedule the appointment date booked by the residents.

Table 11. View Announcement Use Case

Process:	View Announcement
Description:	This feature displays barangay announcements in the system.
Primary Actor:	Barangay Admin, Barangay Staff, Residents
Trigger:	When the primary actor wants to view the announcements.
Basic Course Events:	<ol style="list-style-type: none"> 1. The primary actor opens the View Announcement page. 2. The primary actor views the barangay announcements.

Table 11 shows the use case for View Announcement. The table shows how primary actors: Barangay Admin, Barangay Staff and Residents can view the barangay announcements.

Table 12. Add Announcement Use Case

Process:	Add Announcement
Description:	This feature lets users add announcements in the system.

Primary Actor:	Barangay Admin, Barangay Staff
Trigger:	When the primary actor wants to add an announcement in the Announcement page.
Basic Course Events:	<ol style="list-style-type: none"> 1. The primary actor opens the View Announcement page. 2. The primary actor adds an announcement to the Announcement page.

Table 12 shows the use case for Add Announcement. The table shows how Barangay Admin and Barangay Staff can add announcements.

Table 13. Edit Announcement Use Case

Process:	Edit Announcement
Description:	This feature lets the user modify current announcements in the system.
Primary Actor:	Barangay Admin
Trigger:	When the primary actor wants to update or delete the current announcement in the system.
Basic Course Events:	<ol style="list-style-type: none"> 1. The primary actor opens the edit announcement in the announcement page. 2. The primary actor modifies or deletes an announcement.

Table 13 shows the use case for the Edit Announcement. The table shows how Barangay Admin can make changes to the announcements where they can update or delete an existing announcement.

Table 14. Login Use Case

Process:	Login
-----------------	-------

Description:	Login is where users input their credentials to gain access to the application.
Primary Actor:	Barangay Admin, Barangay Staff, Residents
Trigger:	When the primary actor is asked to login before accessing the application.
Basic Course Events:	<ol style="list-style-type: none"> 1. The primary actor opens the application. 2. The primary actor is asked to input user credentials.

Table 14 shows the use case for Login. The table shows how the primary actors: Barangay Admin, Barangay Staff and Residents can log in to their accounts to allow them to access the application

3.2.5 System Flow Chart

The system flow chart illustrates the general flow and the flow of specific modules of the system based on the user and type of platform the system is accessed on.

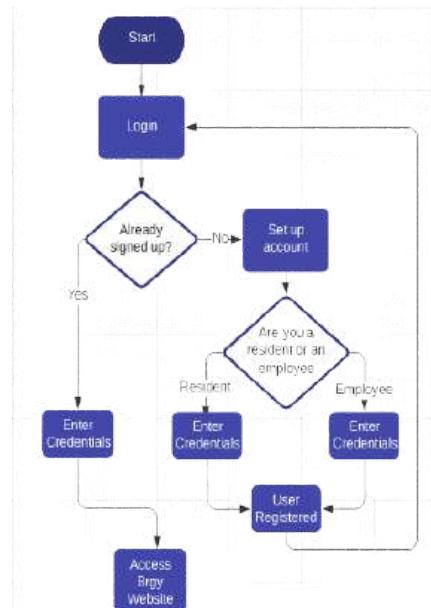


Figure 28 User Creation for Web and Mobile

Figure 28 represents the flow of the login process for the Barangay account registration and log in. Once they have successfully logged in, users can now access the website or app using the credentials which were registered..

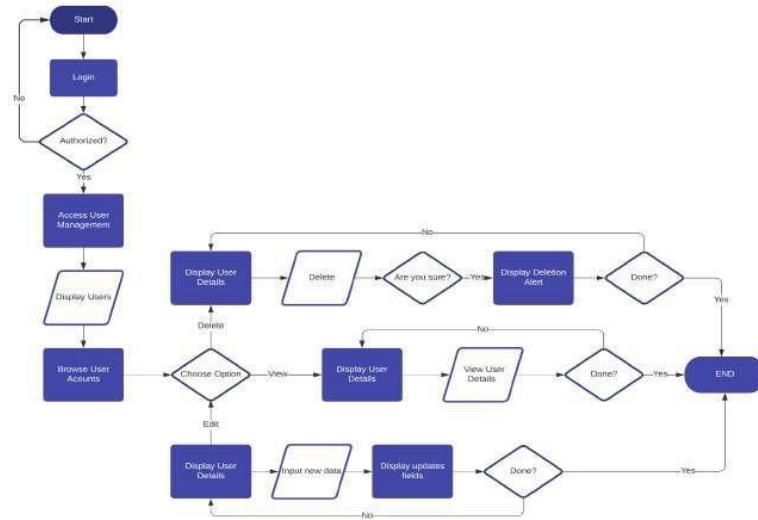


Figure 29 Barangay Head Admin in User Management for Web and Mobile

Figure 29 represents the flow of the user management module for the Barangay Head Admin. Once they have successfully logged in, they can edit, view and delete user accounts which will affect the status of an account.

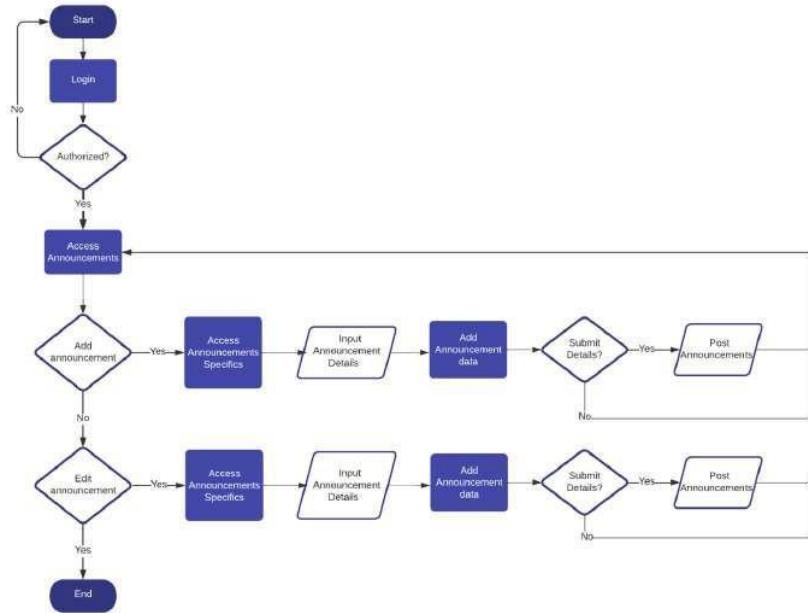


Figure 30 Barangay Head Admin in Announcement Module for Web

Figure 30 represents the flow of the announcement module for the Barangay Head Admin. Once they have successfully logged in, they can add, edit, and view announcements which can be posted and displayed on the website.



Figure 31 Barangay Officials, Staff and Resident in Announcement Module for Web

Figure 31 represents the flow of the announcement module for the website. Once logged in, users can view announcements which can be posted and displayed on the website.

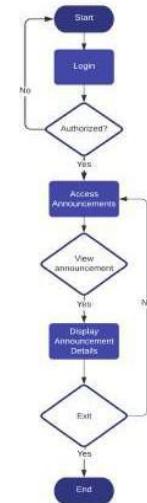
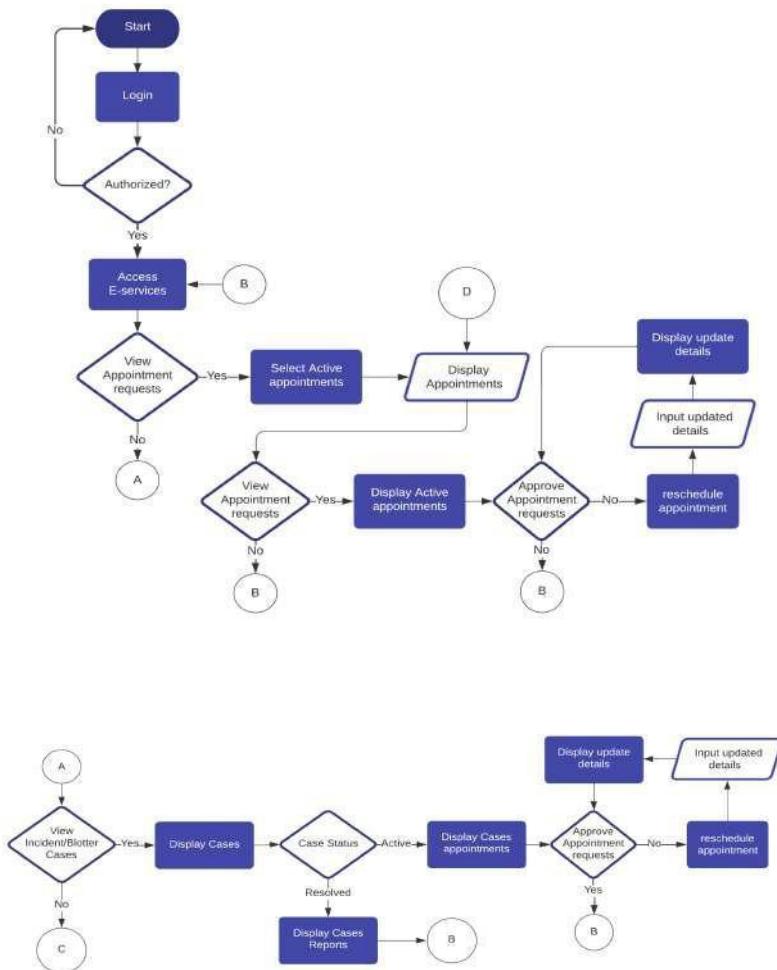


Figure 32 Barangay Head Admin, Barangay Officials and Staff and Resident in Announcement Module for Mobile

Figure 32 represents the flow of the announcement module for the Mobile application. Users are limited to only view announcements on the mobile application.



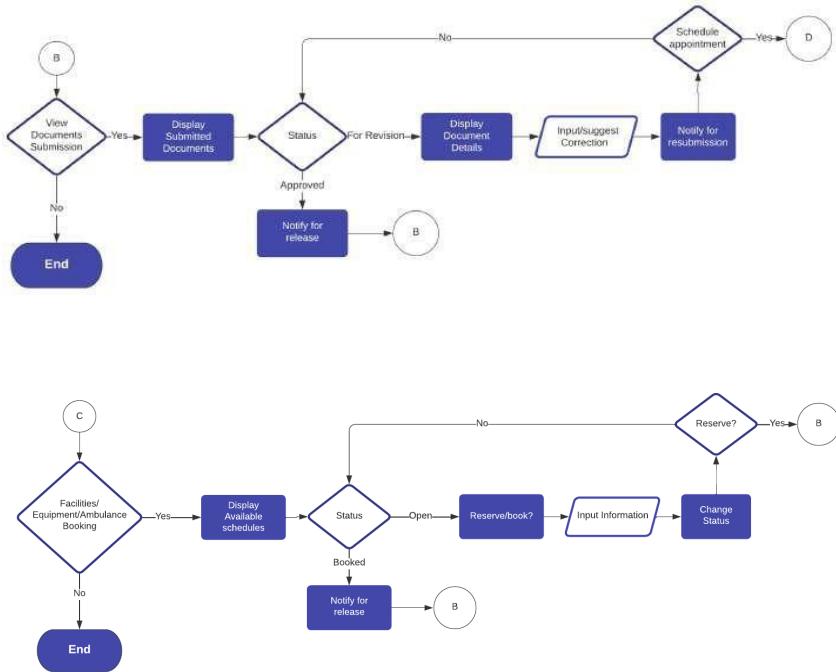
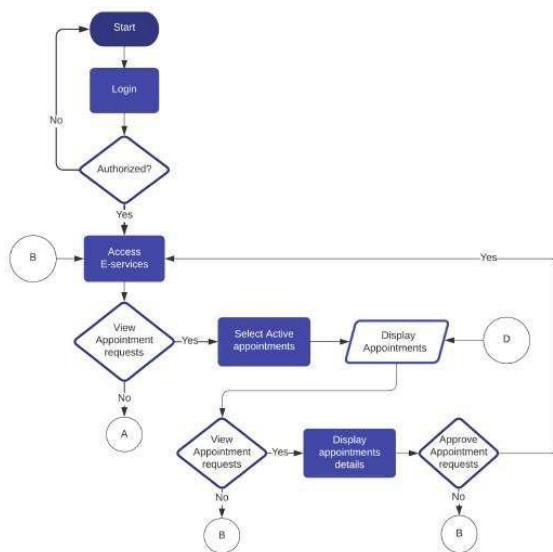


Figure 33 Barangay Head Admin E-services Module for Web

Figure 33 represents the flow of the E-services module for the Head Admin. Once logged in, the head admin can choose to view appointments, blotter reports and document submissions. The head admin can reschedule, approve or decline appointments which are then updates on the website.



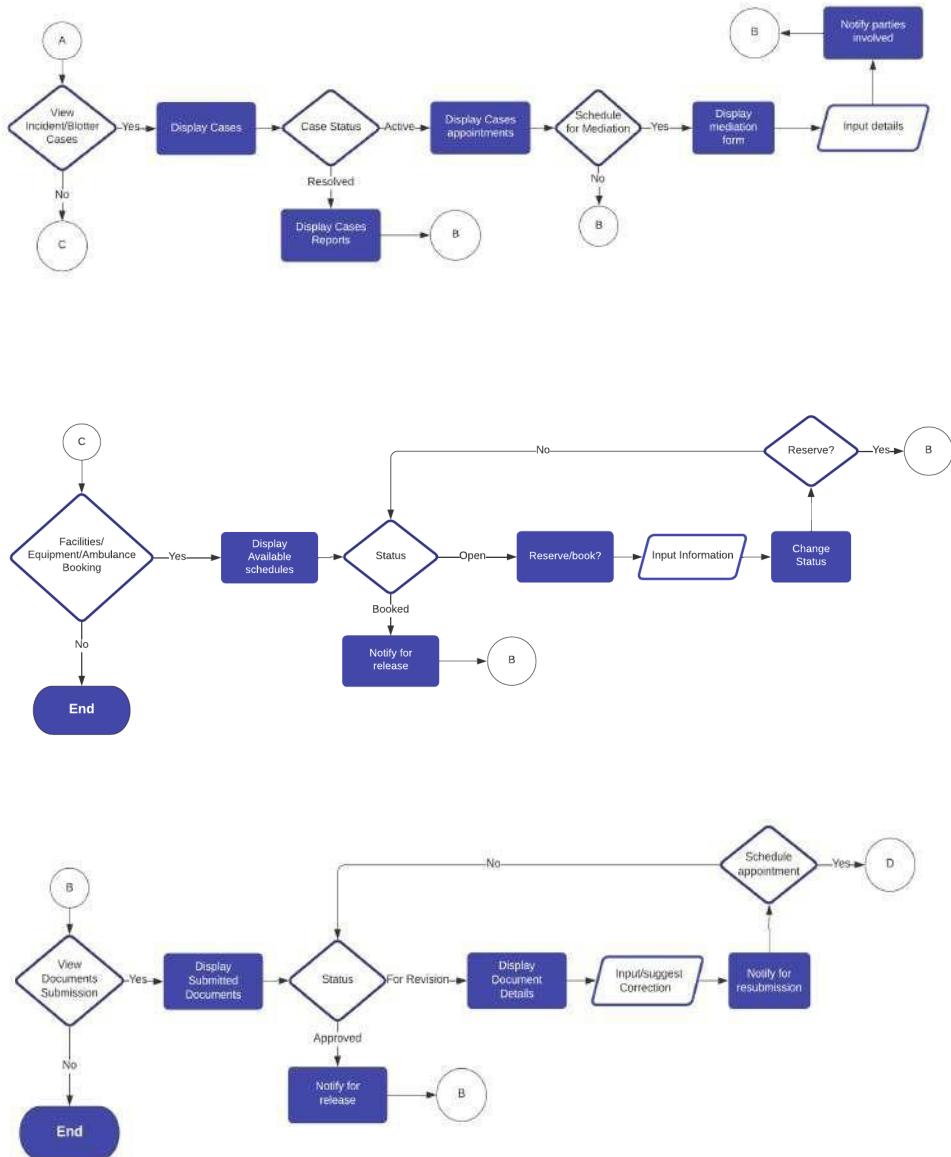


Figure 34 Barangay Officials and Staff E-services Module for Web

Figure 34 represents the flow of the E-services module for the Barangay Officials and Staff. Once logged in, the officials and staff can choose to view appointments, blotter reports and document submissions as well as approve or decline appointments which are then updated on the website. But rescheduling is not part of the privileges granted.

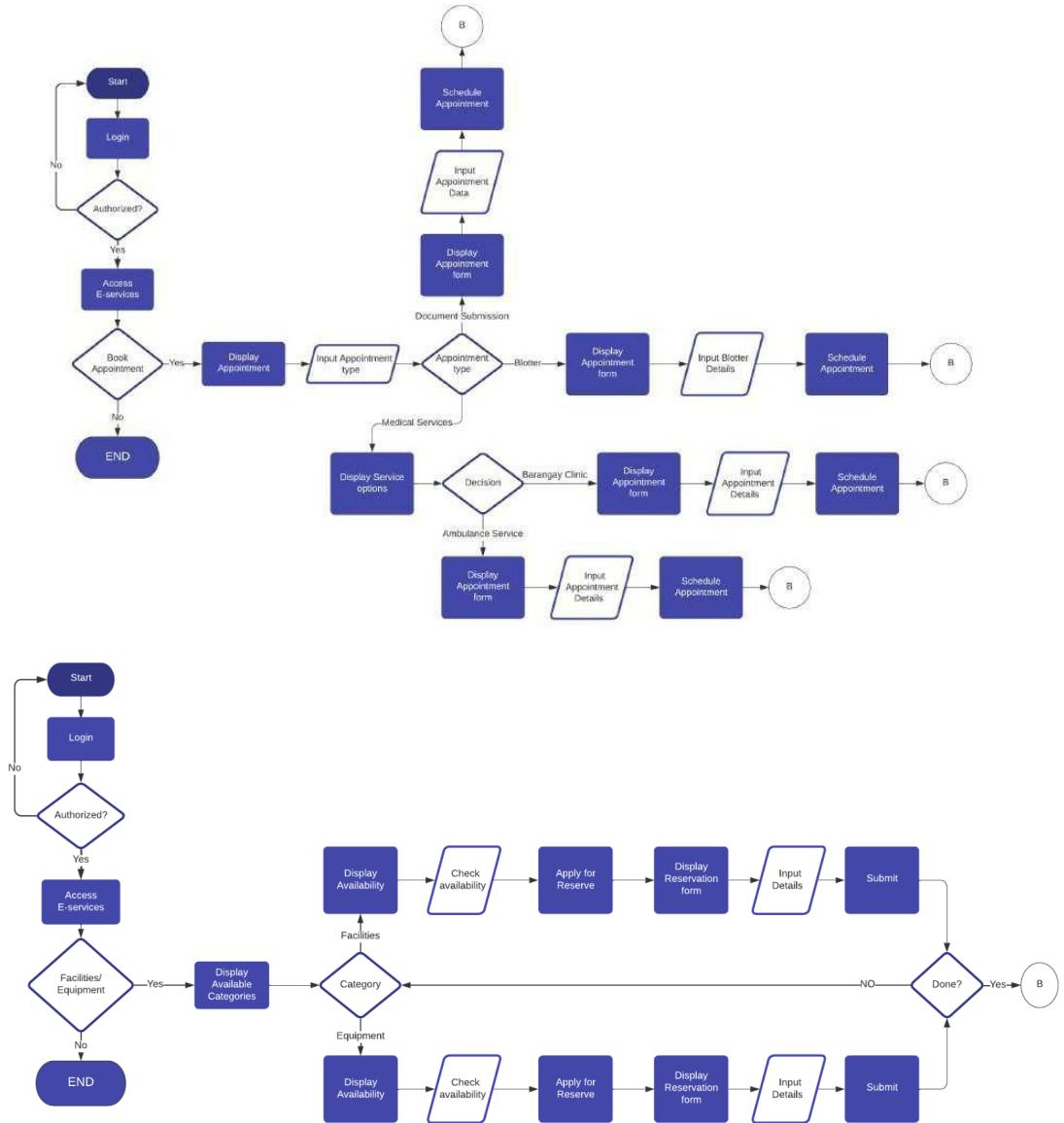
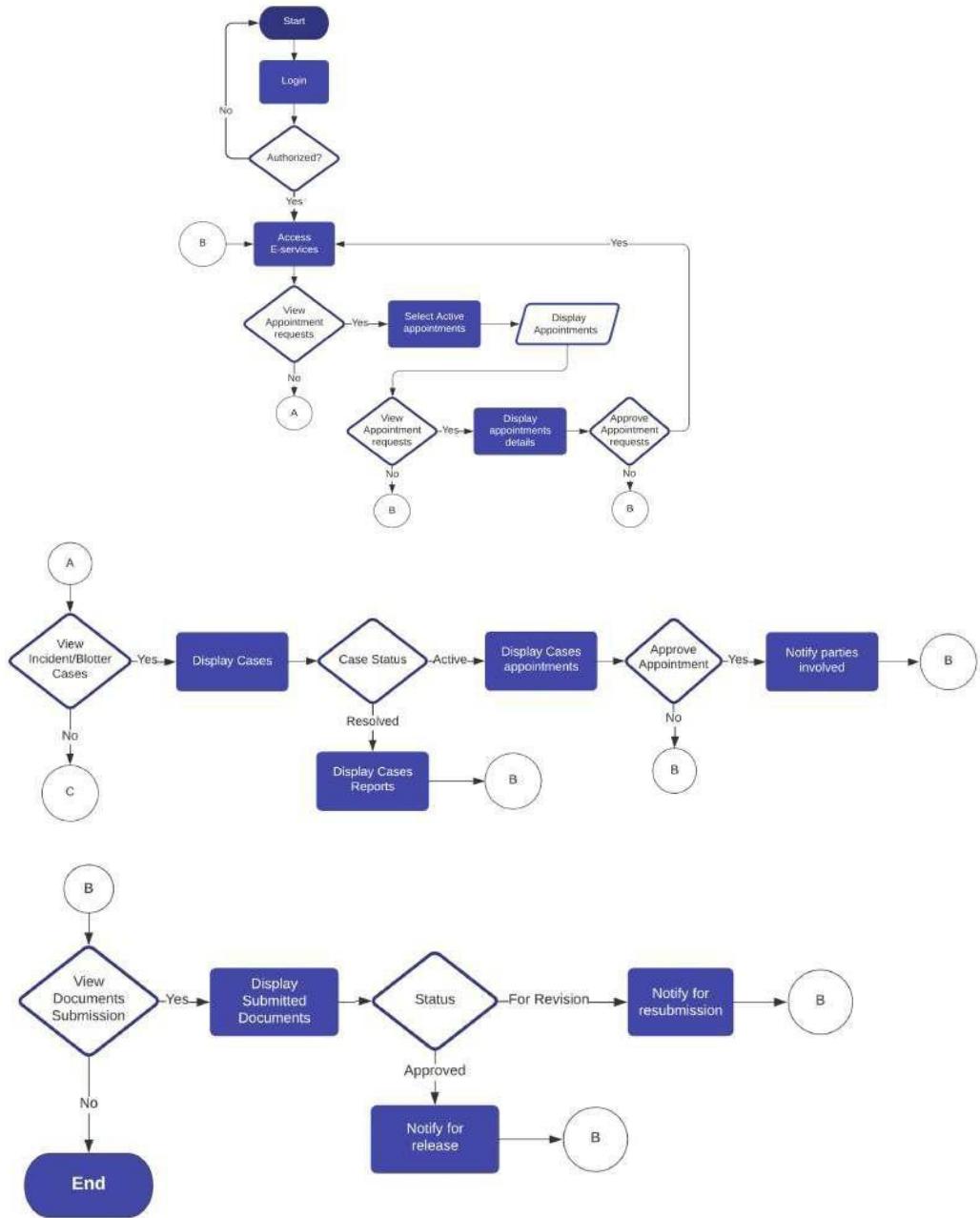


Figure 35 Barangay Residents E-services Module for Web

Figure 35 represents the flow of the E-services module for the Barangay residents. Once logged in, the residents choose to book appointments, report a blotter and schedule for a document submission on the website.



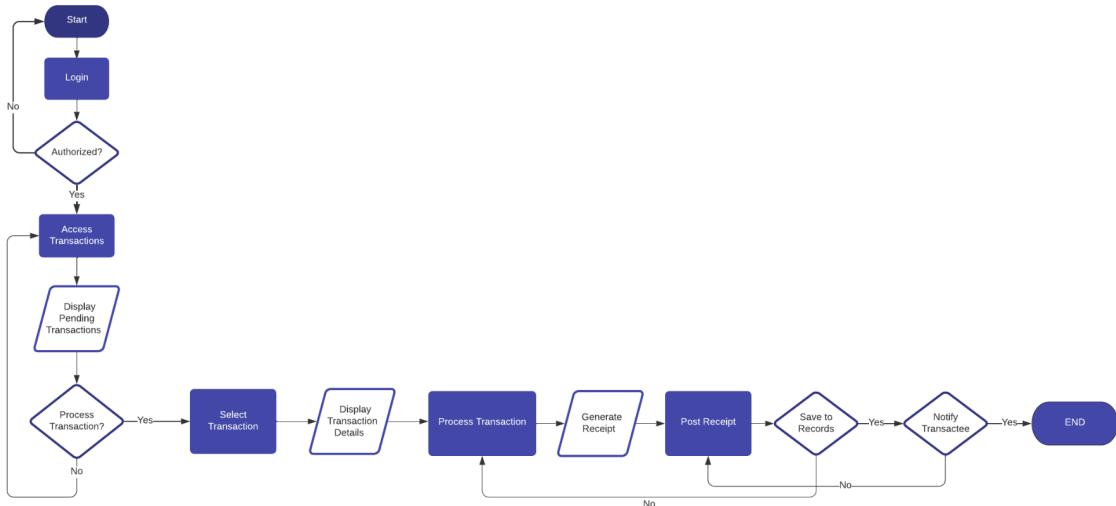


Figure 36 Barangay Head Admin, Officials and Staff E-services Module for Mobile

Figure 36 represents the flow of the E-services module for the. Once logged in, the Barangay Head Admin, Officials and Staff can perform the same tasks assigned but in a limited capacity as compared on the website.

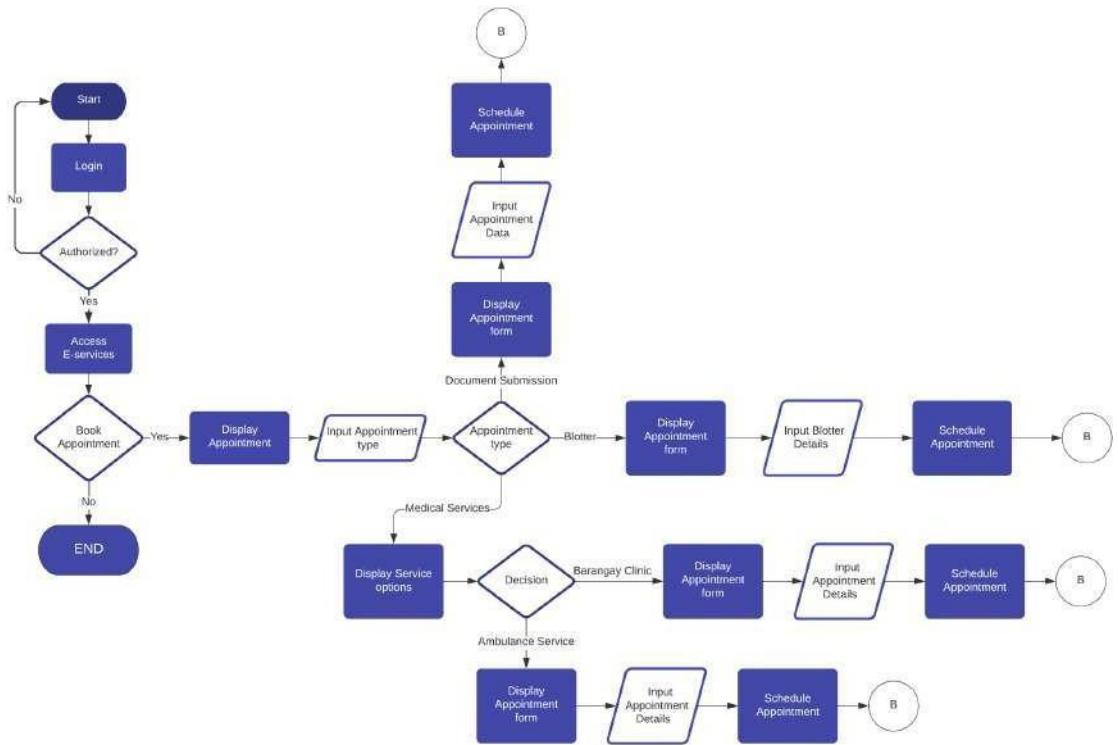


Figure 37 Barangay Residents E-services Module for Mobile

Figure 37 represents the flow of the E-services module for the Barangay residents. Once logged in, the residents choose to book appointments, report a blotter and schedule for a document submission on the website.

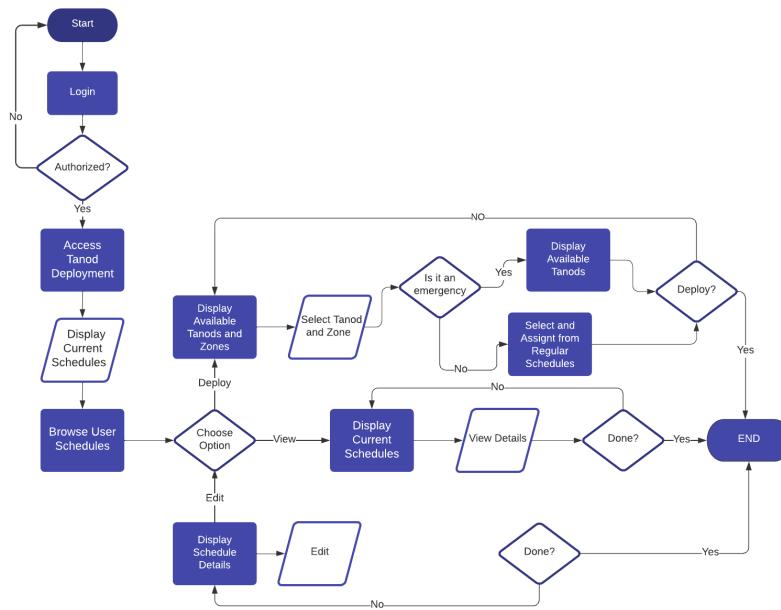


Figure 38 Barangay Head Admin, Barangay Admin, Barangay Officials and Staff for Web

Figure 38 represents the flow of the Tanod Deployment module for the Barangay Head Admin, Barangay Admin, Barangay Officials and Barangay Staff. Once login is successful, users can either choose to deploy barangay tanods for emergency or regular scheduling and deployment, or edit schedules or view current schedules.

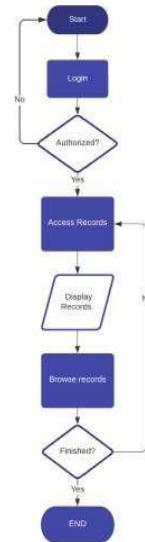


Figure 39 Barangay Head Admin, Admin, Barangay Officials and Staff and Resident in Records Module for Mobile

Figure 39 represents the flow of the user module for the Barangay Head Admin, Barangay Main Office Admin, and Barangay Main Office Secretary. Once they have successfully logged in both web and mobile, they can view the document records.

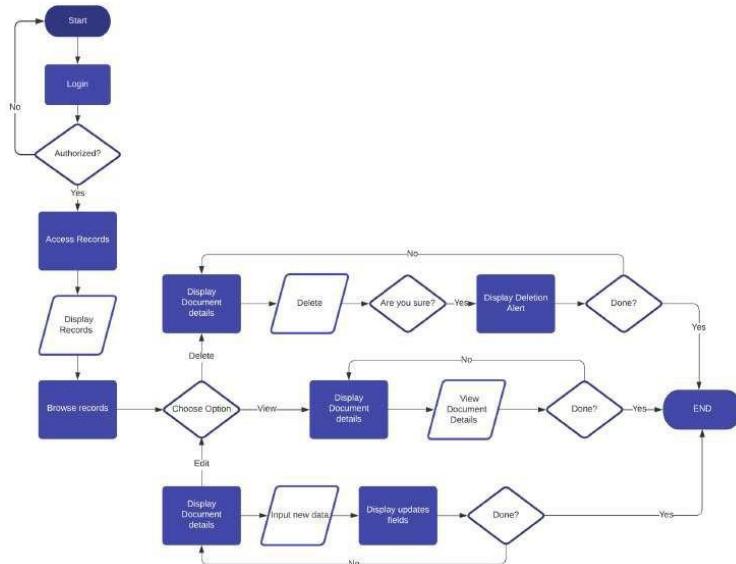


Figure 40 Barangay Head Admin in Records Module for Web

Figure 40 represents the flow of the user module for the Barangay Head Admin. Once login is successful, the head admin can view, edit and delete the document records.

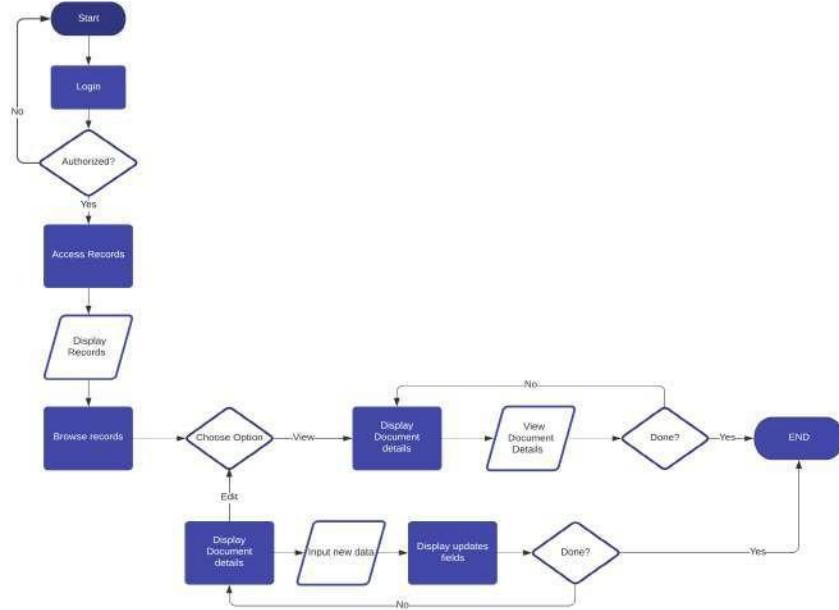


Figure 41 Barangay Officials and Staff in Records Module for Web

Figure 41 represents the flow of the user module for the Barangay Officials and staff. Once login is successful, the barangay officials and staff can only view and edit the document records.

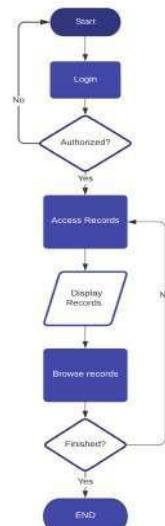


Figure 42 Barangay Residents in Records Module for Web

Figure 42 represents the flow of the user module for the Residents. Once login is successful, the residents can only view the document records.

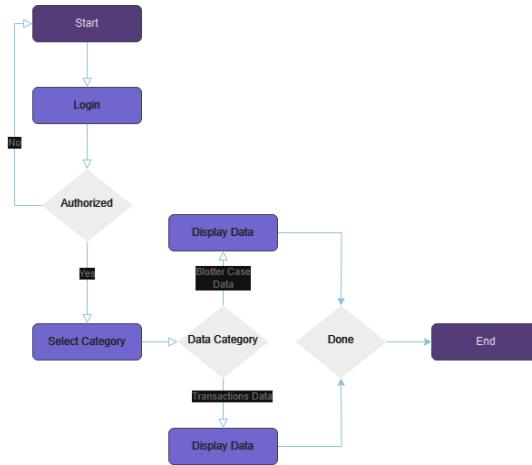


Figure 43 Data Analytics Module for Web and Mobile

Figure 43 represents the flow of the Data Analytics module for all users. Once login is successful, users can view the data from the categories

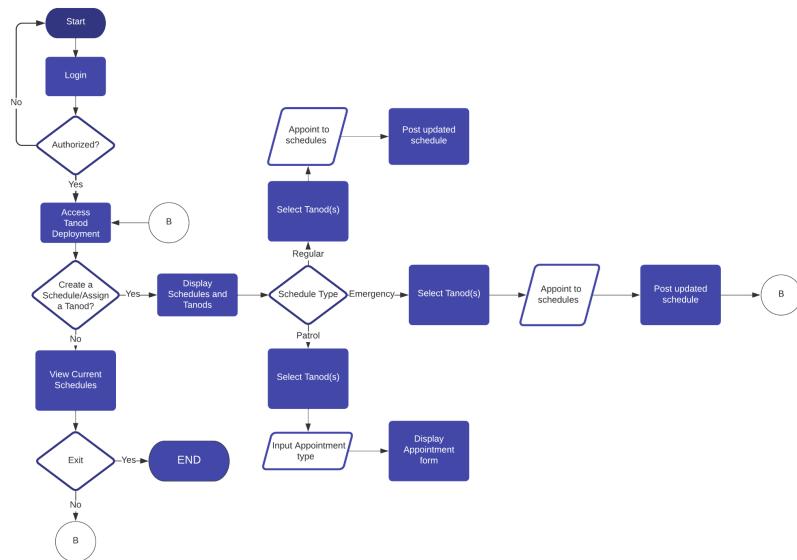


Figure 44 Barangay Head Admin, Admin, Barangay Officials and Staff in Barangay Tanod Deployment for Web

Figure 44 represents the flow of the Data Analytics module for all users. Once login is successful, users can view the data from the categories

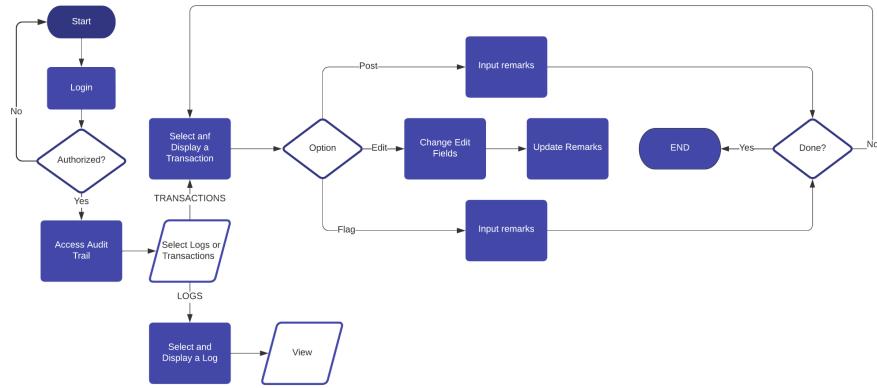


Figure 45 Barangay Head Admin, Admin, Barangay Officials and Staff in Audit Trail for Web

Figure 45 represents the flow of the Audit Trail Module for Barangay Head Admin, Admin, Barangay Officials and Staff. Once login is successful, users can view the transactions and logs. Then each user can perform additional actions on the transactions page based on what needs to be done.

3.2.6 Entity Relationship Diagram

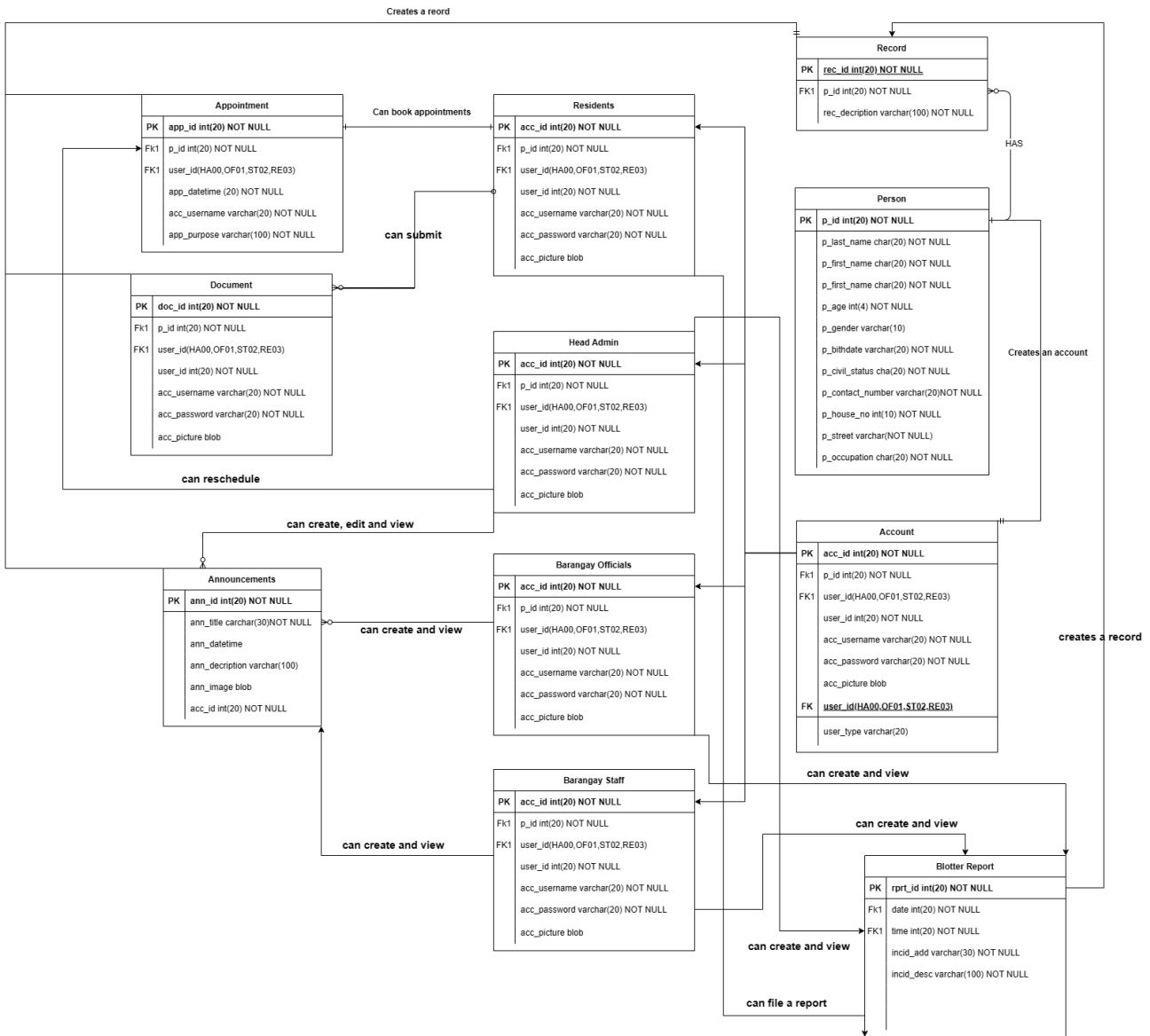


Figure 46 Entity Relationship Diagram

Figure 46 displays the Entity Relationship Diagram (ERD) which illustrates how each entity in the system is connected. The ERD is used to illustrate systems in its static states while still showing how each interaction is performed. This illustrates how the 4

main users of the system, namely the Head admin, barangay Officials, Staff and Residents interact with each other.

3.2.7 User Interface Design

3.2.7.1 Web User Interface (Head Admin, Admin, Officials and Staff view)



Figure 47 Login Page Web

Figure 47 displays the The Landing page and login page of the website. This page includes the input fields for username and password, as well as an option when a user forgot the login credentials.

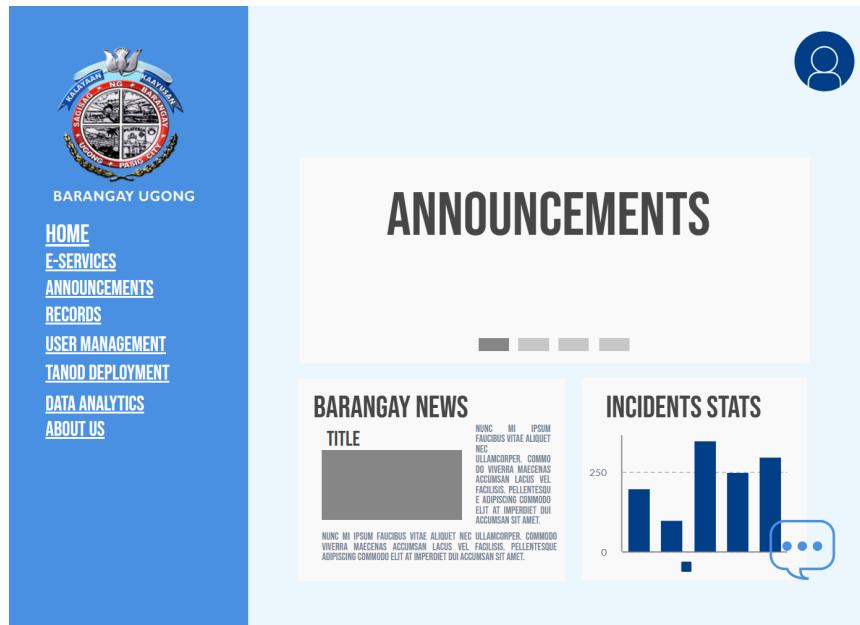


Figure 48 Home Page

Figure 48 displays the Homepage for the website. This page includes a carousel for the pages of the websites, as well as other relevant announcements if need be.

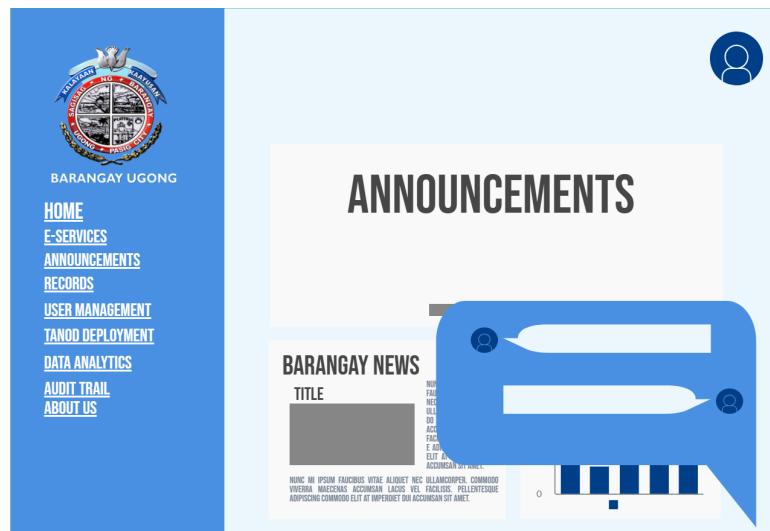


Figure 49 Homepage with chatbot

Figure 49 displays the chat-bot for the website. This page shows the

general location of where the conversation would take place.

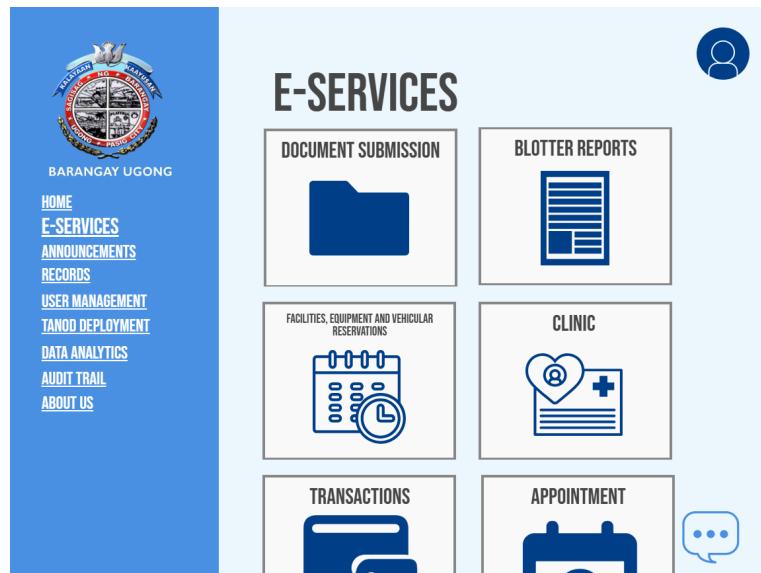


Figure 50 E-services Page

Figure 50 displays the E-services Page for the website. This page displays the various e-services that the website offers, namely documents submission, blotter and incident reports, equipment and facilities reservation, and clinic appointments.

Figure 51 E-services - Document Submission Page

Figure 51 displays the Document Submission Form for the online barangay document submission. This has the relevant fields needed for the document that the user wishes to accomplish.

The screenshot shows a website interface for 'E-SERVICES'. On the left, there's a blue sidebar with a logo for 'BARANGAY UGONG' and a navigation menu including 'HOME', 'E-SERVICES', 'ANNOUNCEMENTS', 'RECORDS', 'USER MANAGEMENT', 'TANOD DEPLOYMENT', 'DATA ANALYTICS', 'AUDIT TRAIL', and 'ABOUT US'. The main content area is titled 'E-SERVICES ➤ BLOTTER REPORT' and contains an 'INCIDENT REPORT FORM'. The form is divided into several sections: 'REPORTING PERSON' (with fields for Name, Date and Time of Report, Age, Gender, Address, Phone Number), 'SUSPECT DATA' (with fields for Name, Relation to Victim, Age, Gender, Occupation, Email, Address, Phone Number), 'VICTIM DATA' (with fields for Name, Relation to Suspect, Age, Gender, Occupation, Email, Address, Phone Number), and 'INCIDENT NARRATIVE' (with a large text area and a 'SUBMIT' button). A small profile icon is located in the top right corner of the main content area.

Figure 52 E-services Blotter/Incident Report page

Figure 52 displays the blotter/incident report module for the website. This page includes the file upload option and the input fields relevant to the case.

Figure 53 E-services - Reservation Form Page

Figure 53 displays the Reservation Form for the barangay's facilities, equipment and vehicle reservation. This has the relevant fields needed for the document that the user wishes to accomplish.



Figure 54 Announcement Landing page

Figure 54 displays the Announcements module for the website. This

page includes the link related to events and announcements of the barangay.



Figure 55 Announcement - Barangay News page

Figure 55 displays an example of what announcement modules would look like.. This page includes a more detailed version of specific articles.



Figure 56 Announcement - Create page

Figure 56 displays the announcement creation page for the website.

This page is only accessible for barangay staff and upper management.



Figure 57 Records Landing page

Figure 57 displays the Records landing page for the website. This page includes the links to the record repositories of the barangay categorized based on record type.



Figure 58 Incident Reports Page

Figure 58 displays the Incident Reports page for Transactions

Records of the website. This page displays various incident reports from various cases as well as each's statuses.

Name	Type	Date	Time	Amount

Figure 59 Transactions Records Page

Figure 59 displays the Transaction Records page for the website. This page includes the option to view past transactions, and review current transactions.

Name	Address	Age	Gender	Actions		

Figure 60 User Management Page

Figure 60 displays the User Management page which is only accessible to the Head Admin and admin of the website. This page handles user's accounts, and the admins can either edit, delete, display or create user's accounts. This also handles the assigning of roles in the barangay.



Figure 61 Tanod Deployment Page

Figure 61 displays the Tanod Deployment Page. This page handles user's the assigning of barangay tanod's deployment schedules and patrols.



Figure 62 Tanod Deployment Page

Figure 62 displays the Tanod Deployment - Patrol Page. This page handles assignment of barangay tanod's deployment for patrols.

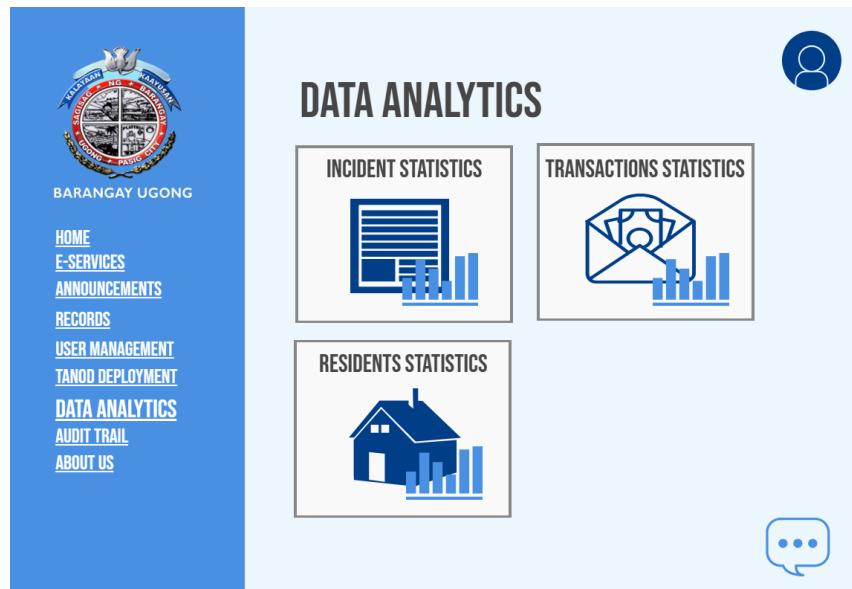


Figure 63 Data Analytics & Statistics Page

Figure 63 displays the Data Analytics and Statistics page.. This page handles data aggregation, collection and visualization of data collected from

the various barangay activities?

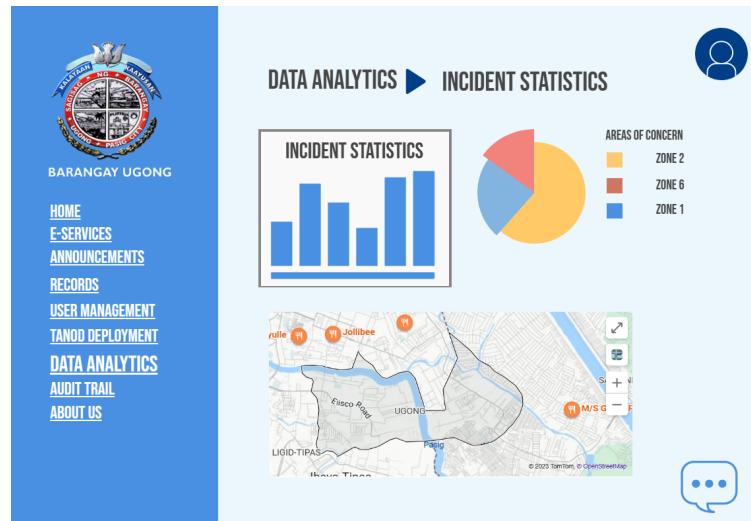


Figure 64 Incident Statistics page

Figure 64 displays the Data Analytics and Statistics - Incident Statistics page..This page handles data aggregation, collection and visualization of data collected from the various barangay activities?



Figure 65 Audit Trail page

Figure 65 displays the Audit Trail page which gives the user options to either access logs or transactions

The screenshot shows the Audit Trail page with a blue header and sidebar. The sidebar includes links for HOME, E-SERVICES, ANNOUNCEMENTS, RECORDS, USER MANAGEMENT, TANOD DEPLOYMENT, DATA ANALYTICS, AUDIT TRAIL (which is underlined), and ABOUT US. The main content area has tabs for ALL TRANSACTIONS, BY TYPE, and BY DATE. It lists three transactions:

POSTING DATE	CREATION DATE	RES. NO.	NAME	DESCRIPTION	TYPE	DEBIT	CREDIT
18 JULY 2023	15 JULY 2023 10:52AM	052062	EREN SANCHEZ	BARANGAY CLEARANCE PAYMENT	DOCUMENT	P50.00	
18 JULY 2023	16 JULY 2023 08:52AM	063284	DARWIN LOPEZ	BASKETBALL COURT RENTAL	FACILITY	P500.00	
18 JULY 2023	14 JULY 2023 02:30PM	406021	SELENA APOLONIO	REIMBURSEMENT OF FUNDS			P300.00

PAGE 2 OF 13

RECEIPT

RECEIPT NO. 052062 15 JULY 2023 10:52AM	
EREN SANCHEZ BARANGAY CLEARANCE PAYMENT PAID CHANGE	50 100 50

AUDIT TRAIL FOR TRANSACTIONS

Figure 66 displays the Audit Trail - Transactions page which displays all transactions performed within the barangay.

The screenshot shows the Audit Trail - Transactions page with a blue header and sidebar. The sidebar includes links for HOME, E-SERVICES, ANNOUNCEMENTS, RECORDS, USER MANAGEMENT, TANOD DEPLOYMENT, DATA ANALYTICS, AUDIT TRAIL (which is underlined), and ABOUT US. The main content area has tabs for ALL TRANSACTIONS, BY TYPE, and BY DATE. It lists the same three transactions as Figure 65. Below the table is a receipt section and a "AUDIT TRAIL FOR TRANSACTIONS" section. At the bottom right of the "AUDIT TRAIL FOR TRANSACTIONS" section are three buttons: EDIT, FLAG, and POST.

Figure 67 Audit Trail - Transaction Actions page

Figure 67 displays the Audit Trail - Transactions Actions page which displays the actions that the user can perform on each transaction.

ALL LOGS	BY TYPE	BY DATE				
POSTING DATE	CREATION DATE	RES. NO.	NAME	DESCRIPTION	ACTION	APPROVED BY
19 JULY 2023	17 JULY 2023 9:52AM	052062	EREN SANCHEZ	BARANGAY CLEARANCE PAYMENT	EDIT	SEC. SANTIAGO
19 JULY 2023	16 JULY 2023 08:52AM	063284	DARWIN LOPEZ	BASKETBALL COURT RENTAL	FLAGGED	SEC. MENDIOLA
18 JULY 2023	14 JULY 2023 02:30PM	406021	SELENA APOLONIO	REIMBURSEMENT OF FUNDS	FLAGGED	C. LOBELLA

PAGE 2 OF 13

POSTING DATE	FROM	TO	REMARKS	ACTION	ACCESSION
18 JULY 2023	AMOUNT: 50	AMOUNT: 70		EDIT	OS IMELDA

Figure 68 Audit Trail - Logs page

Figure 68 displays the Audit Trail - Logs displays all logs made from the actions performed in the transactions pages, as well as what statuses each transaction has.



Figure 69 About Us page

Figure 69 displays the About Us page of the application. This page includes the mission and vision statements of the barangay as well as the relevant contact information like landline and email address. As well as links to relevant social media pages.

3.2.7.2 Web User Interface (Residents and other users)

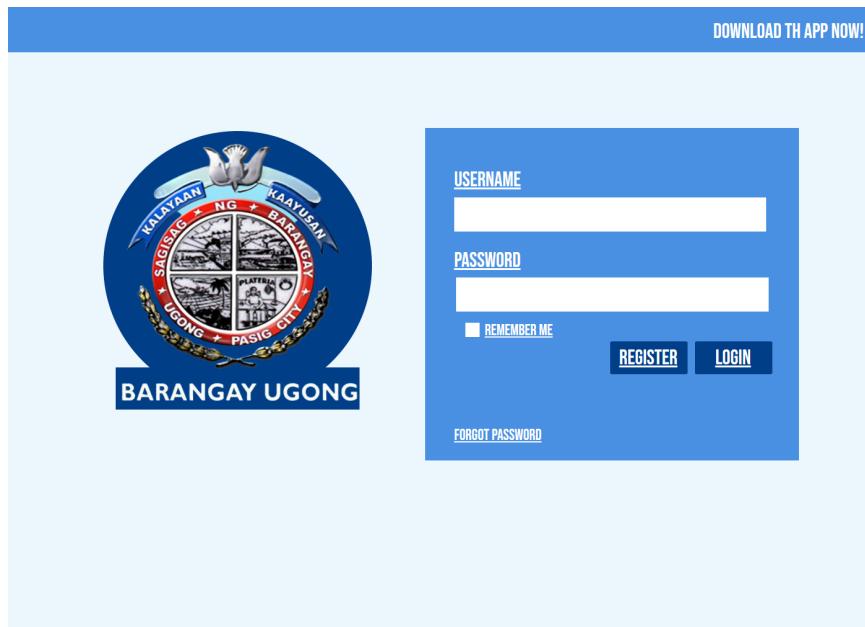


Figure 70 Login page

Figure 70 displays the The Landing page and login page of the website. This page includes the input fields for username and password, as well as an option when a user forgot the login credentials.



The image shows a registration form titled "NEW USER REGISTRATION". The form is divided into several sections: "NAME" with a text input field, "BIRTHDATE" with a date input field, "AGE" with a numeric input field, and "GENDER" with three radio button options. Below these are "ADDRESS" and "MOBILE NUMBER" with text input fields, and "EMAIL ADDRESS" with a text input field. There are also "PASSWORD" and "CONFIRM PASSWORD" fields. On the right side, there is a "UPLOAD AN ID" section featuring a camera icon inside a square frame. At the bottom right is a "REGISTER" button.

Figure 71 Registration page

Figure 71 displays the The Registration page for new users. This page includes the input fields for username and password, as well as all relevant information needed in the account creation process.

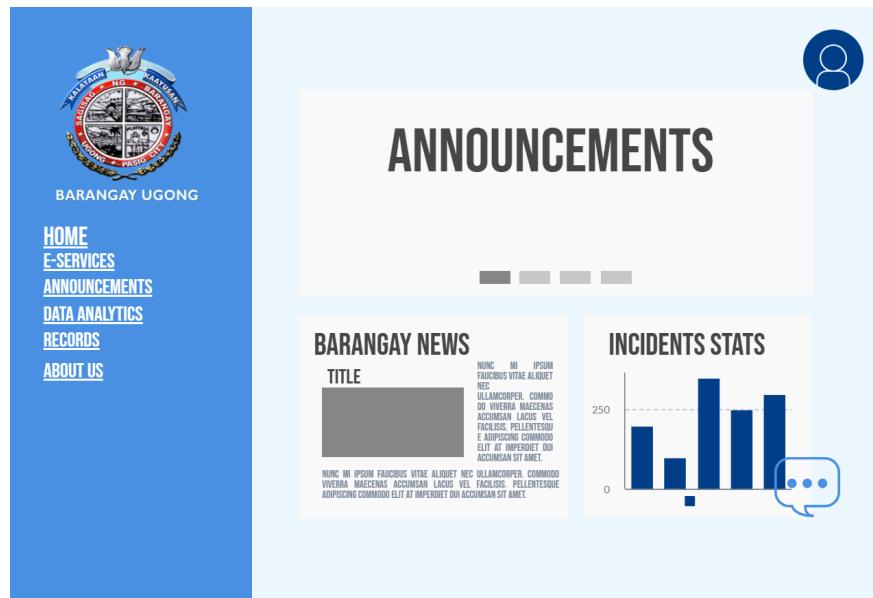


Figure 72 Home page

Figure 72 displays the Homepage for the website. This page includes a carousel for the pages of the websites, as well as other relevant announcements if need be.

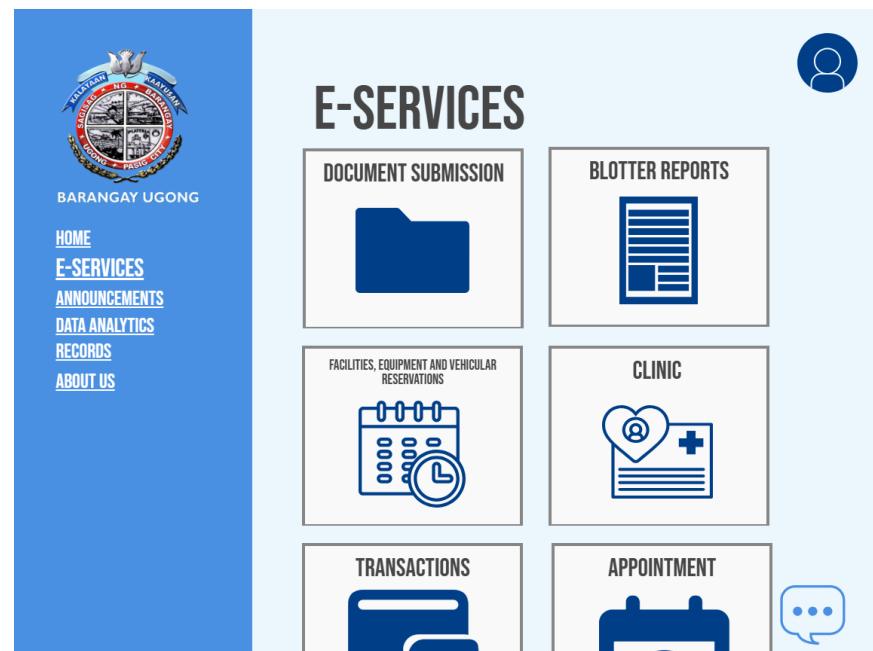


Figure 73 Eservices page

Figure 73 displays the E-services Page for the website. This page displays the various e-services that the website offers, namely documents submission, blotter and incident reports, equipment and facilities reservation, and clinic appointments.

The screenshot shows a website interface. On the left, there is a blue sidebar with the title 'BARANGAY UGONG' and a circular logo. Below the title, a vertical menu lists: HOME, E-SERVICES (which is underlined), ANNOUNCEMENTS, RECORDS, DATA ANALYTICS, and ABOUT US. The main content area has a light blue header with the text 'E-SERVICES ➤ DOCUMENT SUBMISSION' and a user icon. Below this is a form titled 'RESERVATION/REQUEST FORM'. The form is divided into sections: 'PERSONAL INFORMATION' (Name, Birthdate, Age, Gender, Civil Status, Email, Address, Phone Number), 'RESERVATION/REQUEST' (checkboxes for Barangay Equipment, Barangay Vehicle, and Barangay Facility), and 'ADDITIONAL INFORMATION' (Date and Time, Purpose, View Attachment, and a file upload icon). A 'SUBMIT' button is at the bottom right.

Figure 74 E-services - Document Submissions page

Figure 74 displays the Reservation Form for the barangay's facilities, equipment and vehicle reservation. This has the relevant fields needed for the document that the user wishes to accomplish.

Figure 75 E-services - Reservation Form page

Figure 75 displays the Document Submission Form for the online barangay document submission. This has the relevant fields needed for the document that the user wishes to accomplish.



Figure 76 Announcements page

Figure 76 displays the Announcements module for the website. This

page includes the link related to events and announcements of the barangay.



Figure 77 Announcements - Barangay News page

Figure 77 displays an example of what announcement modules would look like.. This page includes a more detailed version of specific articles.



Figure 78 Records page

Figure 78 displays the Records landing page for the website. This page includes the links to the record repositories of the barangay categorized based on record type.

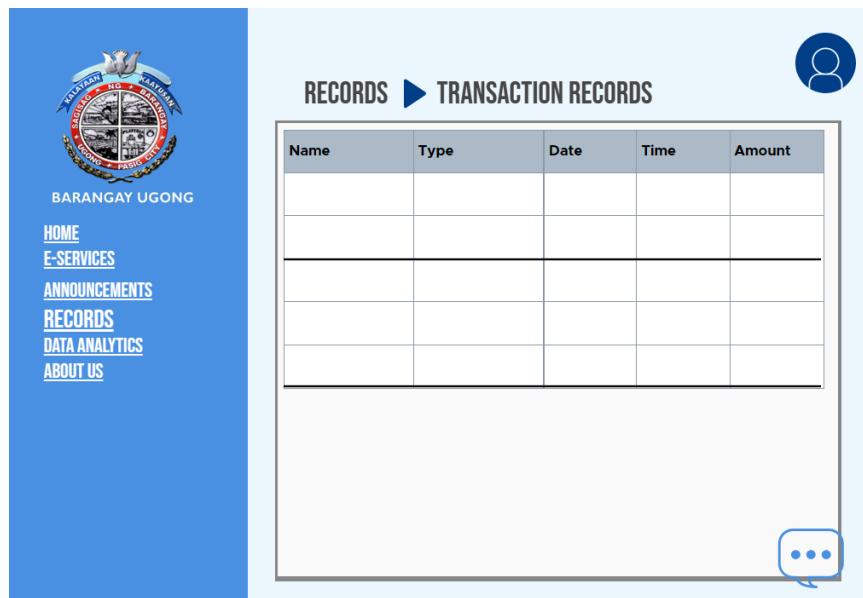


Figure 79 Transaction Records Page

Figure 79 displays the Transaction Records page for the website. This page includes the option to view past transactions, and review current transactions.

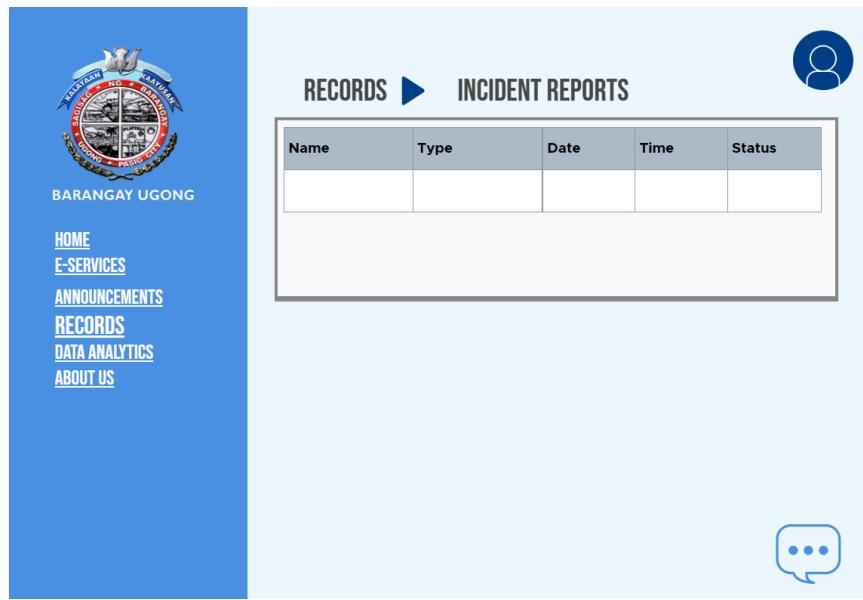


Figure 80 Incident Reports Records page

Figure 80 displays the Incident Reports page for Transactions Records of the website. This page displays various incident reports from various cases that are unique to the user's account.



Figure 81 Data Analytics page

Figure 81 displays the Data Analytics and Statistics page.. This page

handles data aggregation, collection and visualization of data collected from the various barangay activities?

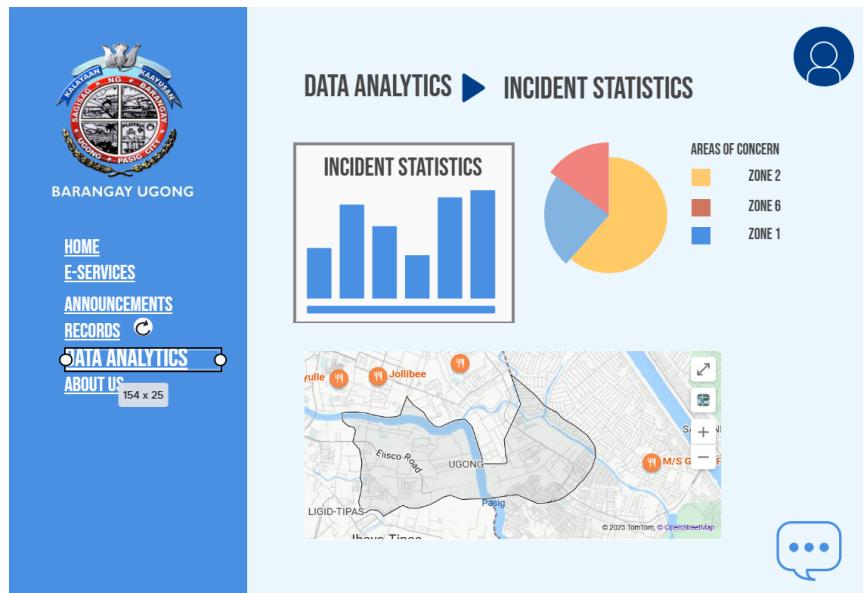


Figure 82 Data Analytics - Incidents statistics page

Figure 82 displays the Data Analytics and Statistics - Incident Statistics page. This page handles data aggregation, collection and visualization of data collected from the various barangay activities.

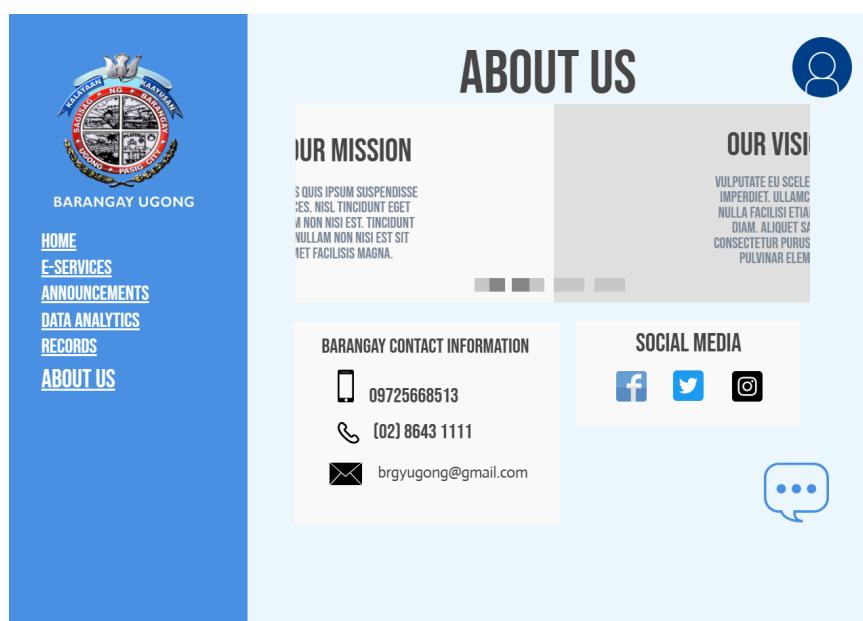


Figure 83 About us page

Figure 83 displays the About Us page of the application. This page includes the mission and vision statements of the barangay as well as the relevant contact information like landline and email address. As well as links to relevant social media pages.

3.2.7.3 Mobile User Interface

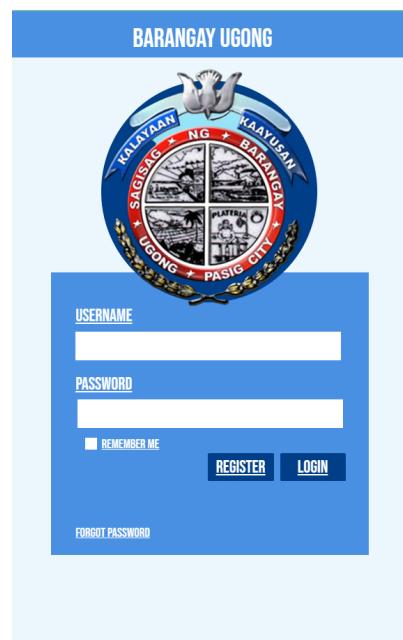


Figure 84 Login page for Mobile

Figure 84 displays the login page of the application, this is also the first page that appears when the app is opened.



Figure 85 Registration page for Mobile

Figure 85 displays the The Registration page for new users. This page includes the input fields for username and password, as well as all relevant information needed in the account creation process.



Figure 86 Homepage for Mobile

Figure 86 displays the home page and links for the other modules of the application.



Figure 87 Home with chatbot page for Mobile

Figure 87 features the chat-bot function and where and how the pop-up looks like.

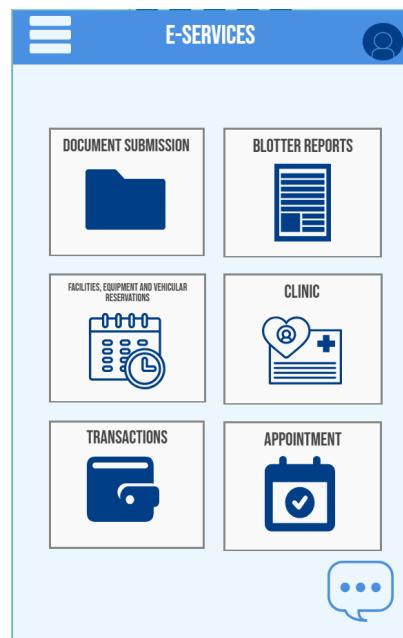


Figure 88 E-services Page

Figure 88 displays the mobile view for the E-services page of the website. Similar to that of the desktop version, it displays all available services.

The image shows a mobile-optimized version of the E-services page. At the top, there is a blue header bar with the text "E-SERVICES" and "BLOTTER REPORT" along with a search icon. Below the header, the page lists several service categories in a grid format:

- BLOTTER ID:** [Redacted]
- INCIDENT TYPE:** [Redacted]
- REPORTING PERSON:** [Redacted]
- SUSPECT DATA:** [Redacted]
- VICTIM DATA:** [Redacted]
- INCIDENT NARRATIVE:** [Redacted]

Figure 89 E-services Page - Blotter Report Form

Figure 89 displays the blotter/incident report module for the website. This page includes the file upload option and the input fields relevant to the case.

The screenshot shows a web-based document submission form titled "DOCUMENT SUBMISSION". At the top, there's a header with "E-SERVICES" and "DOCUMENT SUBMISSION" along with a user profile icon. The form is divided into several sections: "PERSONAL INFORMATION" (Name, Age, Gender, Civil Status, Address, Birthdate, Email, Phone Number), "DOCUMENT TYPE" (Barangay Clearance, Barangay Certificate, Cedula, Business Clearance), "ADDITIONAL INFORMATION" (Nature of Business, Address, Purpose of Document, View Attachment button, Approve button), and a large central area for document attachments.

Figure 90 E-services Page - Document Submission

Figure 90 displays the Document Submission Form for the online barangay document submission. This has the relevant fields needed for the document that the user wishes to accomplish.

The screenshot shows a web-based reservation/request form titled "RESERVATION/REQUEST FORM". At the top, there's a header with "E-SERVICES" and "RESERVATION/REQUEST FORM" along with a user profile icon. The form is divided into several sections: "PERSONAL INFORMATION" (Name, Age, Gender, Civil Status, Address, Birthdate, Email, Phone Number), "RESERVATION/REQUEST" (Barangay Equipment, Barangay Facility, Barangay Vehicle), "ADDITIONAL INFORMATION" (Date and Time, Purpose, View Attachment button, Approve button), and a large central area for document attachments.

Figure 91 E-services Page - Reservation/Reverse Form

Figure 91 displays the Reservation Form for the barangay's facilities, equipment and vehicle reservation. This has the relevant fields needed for the document that the user wishes to accomplish.

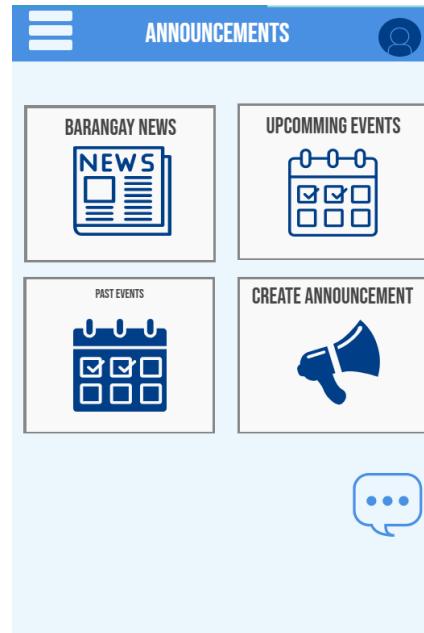


Figure 92 Announcements Page

Figure 92 displays the Announcements module for the website. This page includes the link related to events and announcements of the barangay.

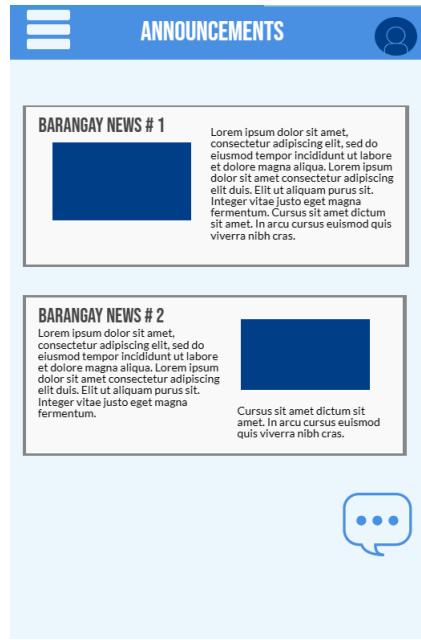


Figure 93 Announcements Page - Barangay News

Figure 93 displays an example of what announcement modules would look like.. This page includes a more detailed version of specific articles.

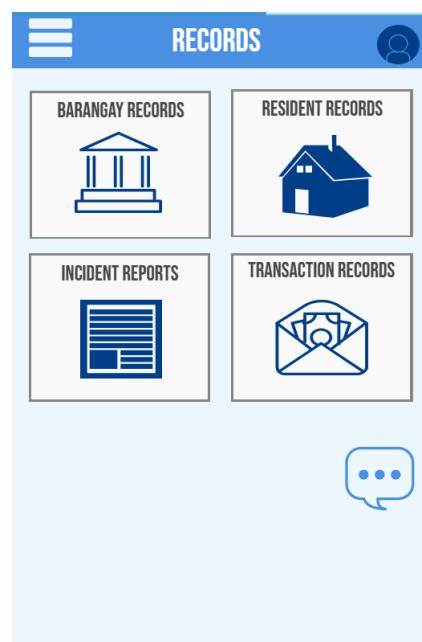


Figure 94 Records Page

Figure 94 displays the Records landing page for the website. This

page includes the links to the record repositories of the barangay categorized based on record type.

The screenshot shows a mobile application interface. At the top is a blue header bar with the word "RECORDS" in white. To the left of "RECORDS" is a white menu icon consisting of three horizontal lines. To the right is a white search icon with a magnifying glass. Below the header is a section titled "TRANSACTION RECORDS" in bold black capital letters. Underneath this title is a table with a light gray header row containing five columns: "Name", "Type", "Date", "Time", and "Amount". The body of the table is empty, showing six rows of thin gray lines. At the bottom of the screen is a light blue footer area. In the center of this footer is a white speech bubble icon with three blue dots inside it, representing a message or notification.

Name	Type	Date	Time	Amount

Figure 95 Transaction Records Page

Figure 95 displays the Transaction Records page for the website. This page includes the option to view past transactions, and review current transactions.

Name	Address	Age	Gender	Actions

Figure 96 User Management page for Mobile

Figure 96 displays the User Management page which is only accessible to the Head Admin and admin of the website. This page handles user's accounts, but on mobile, admins can only view said records



Figure 97 Data Analytics Page

Figure 97 displays the Data Analytics Page which displays statistics and data from transactions, incident reports and resident statistics.

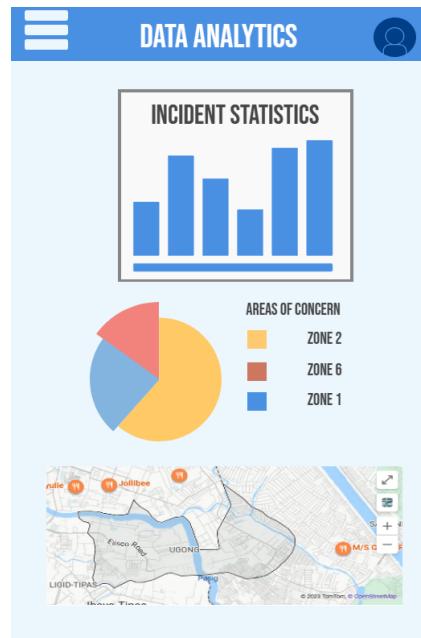


Figure 98 Data Analytics - Incident Statistics Page

Figure 98 displays the Data Analytics and Statistics - Incident Statistics page. This page handles data aggregation, collection and visualization of data collected from the various barangay activities



Figure 99 About Us Page

Figure 99 displays the About Us page of the application. This page includes the mission and vision statements of the barangay as well as the relevant contact information like landline and email address. As well as links to relevant social media pages.

3.3 Project Development

3.3.1 Agile SCRUM Methodology

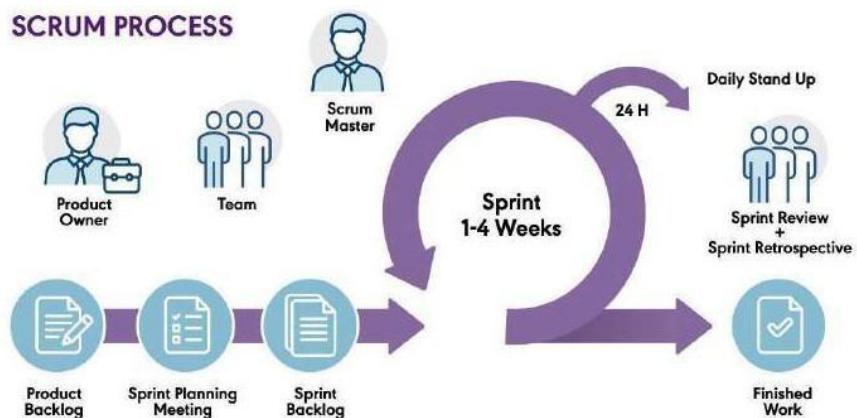


Figure 100 Agile SCRUM

Figure 100 illustrates the structure of an Agile SCRUM methodology. It relies on incremental development. Each iteration consists of two- to four-week sprints, where the goal of each sprint is to build the most important features first and come out with a potentially deliverable product.

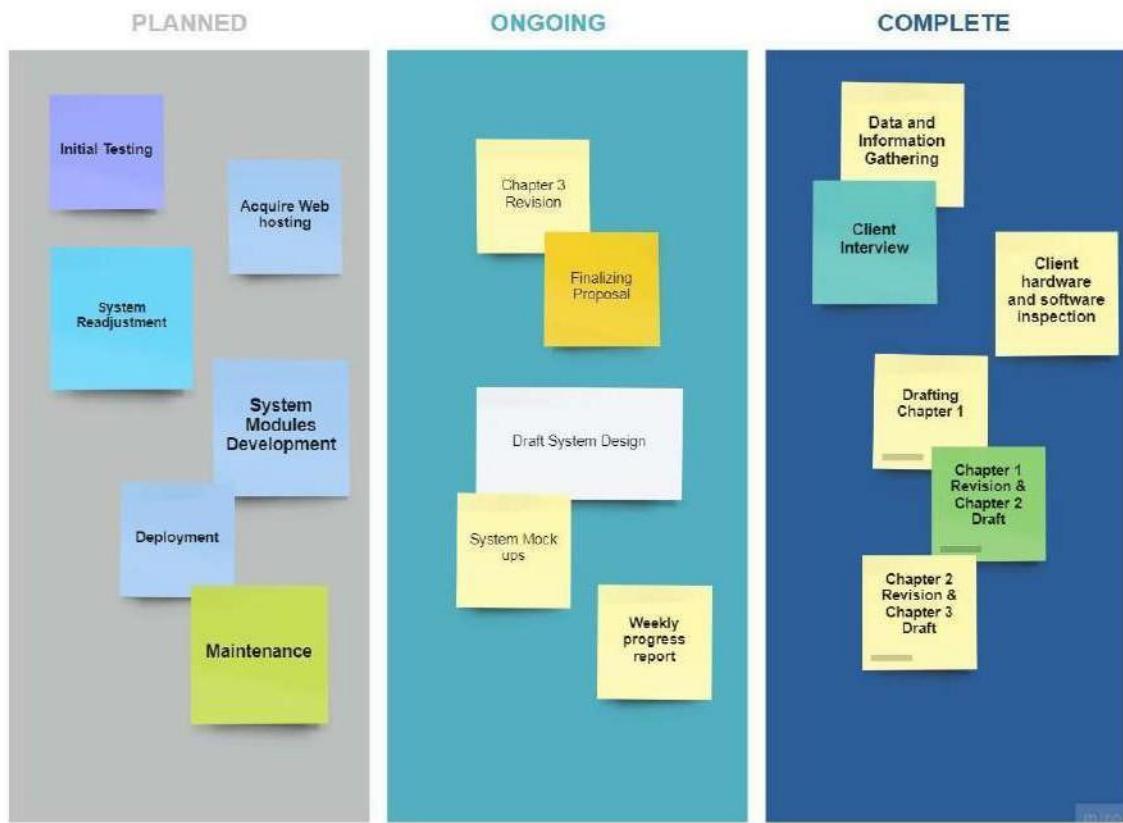


Figure 101 Product Backlog

Figure 101 displays the product backlog which illustrates the state of the systems sprint tasks. It categorizes the tasks as complete, ongoing and planned to visually present how many tasks are in the pipeline. The role of a product backlog is to provide a consistent workflow and task assignment for the team .

3.3.2 Software Testing

As with any system, it is important to first perform a series of tests before it is actually deployed to the client. Software testing would enable a more comprehensive inspection of the system in an environment outside of a fully controlled setting. Software testing is done primarily to see whether the system runs properly and check for any errors during its use. The study will employ 3 types of testing during the development of the system, namely alpha, beta and user acceptance testing.

3.3.2.1 Alpha Testing

Alpha Testing is primarily done by internal employees and testers who are part of the organization. This testing is the final stage of testing before performing beta testing and deployment.

3.3.2.2 Beta Testing

Beta testing is done by individuals outside of the organization, client employees, potential users and other stakeholders. This test is done in the environment where the system would be deployed to, and is used to identify bugs and errors which were overlooked during the alpha testing stage.

3.3.2.3 User Acceptance Testing

User acceptance testing is a test performed in the “real-world” setting and is generally used to gauge the overall applicability of the system for its intended users. End-users will be the ones doing the testing for this phase. The measure of whether or not the system is acceptable is reliant on how well the users are able to use the system’s different functions.

3.3.2.4 Stress Testing

Stress Testing will be detrimental to the system as it is an e-governance system in which an abundant amount of users will be always using the system, and a heavy amount of user traffic will be present. It also ensures that the system will be stable to avoid issues and system crashes in the midst of operations. The tool to use is Apache JMeter, as it was proven to be an effective stress testing tool with an user-friendly interface.

3.3.2.5 Security Testing

Security Testing is one of the most important aspects in developing a system as most transactions and data storage nowadays include the cloud or internet. It is highlighted as the LineTECH's system is an e-governance system in which it shall handle sensitive data due to it involving the personal addresses and names of the residents. Both Black box testing and White Box testing will be utilized as the system will be a government website, so performance and security will be of utmost importance. The tool that will be used is Metasploit as it is used by most developers around the globe due it's accessibility, user-friendly, and easy to learn nature on how to write exploit code to test the system's security.

3.3.3 Software Evaluation Model

3.3.3.1 FURPS

- **Functionality:** This refers to the main product features of the system which are normally technically oriented. It also answers the questions “what does the end product intend to do?” and focuses on the capabilities and functions of the system.

- **Usability:** Usability refers to the intended users of the system. It answers “who is the research for?” It also determines how well the system is built based on how users interact with similar systems.

Reliability: refers to how resilient the system is to errors and bugs. This would also dictate the maintenance frequency of the system. When a system is reliable, it can perform multiple tasks with minimal down-time and stoppage.

Performance: This is related to the functional requirements stated earlier in the study. This refers to efficiency the system does in certain circumstances, specifically with speed, efficiency, availability, accuracy, response time, recovery time, and resource usage.

- **Supportability:** Is concerned with the overall sustainability of the system. How often maintenance is needed, how configurable the system is and how it should be installed to name a few concerns for this part.

3.3.3.2 Data Gathering

3.3.3.2.1 Interview

The researchers conducted interviews with the barangay's employees and constituents regarding the overall situation of the barangay services and processes. These interviews would also serve as a more subjective view of the officials and constituents of the barangay regarding the impression on the current systems being employed.

3.3.3.2.2 Documents Overview

The researchers have requested a comprehensive list of documents that the barangay processes and provides to its residents. The list should include the general structure of each document, as well as the specific requirements needed for their issuance.

3.3.3.2.3 Audit Trail

An audit trail is a sequential record of the history, timestamps, and details of a financial transaction, work event, product development phase, or ledger entry. The researchers will utilize Audit trails to verify and track all types of transactions, work processes, accounting details, and quality procedures. The main way that the researchers will conduct audit trails will be through receipts issued after transactions. Since the receipts will contain the names, date and time of transactions, amount, and nature of transaction.

3.3.3.3 Sampling Technique

3.3.3.3.1 Purposive Sampling

- Since an important part of conducting research is determining which method to use in identifying the samples from a population which the study is being conducted on. One of the more popular techniques is Purposive sampling, a non-probability sampling technique which relies on the researchers own judgements to select which samples would best suit the study. As the name suggests, it would be ideal if the researchers have a firm grasp of the “purpose” of the study in order to secure the correct samples who will participate.

3.3.3.4 Respondents of the Study

- The respondents of the study will be selected through purposive sampling.

From the approximately 28, 737 residents of barangay Ugong 40 respondents would be selected. Out of the 40 participants, 5 will be IT professionals, 20 would be barangay residents and 15 would be barangay officials and staff.

3.3.3.4.1 Statistical Treatment

- The gathered data will be processed and analyzed with the use of a computer. The information extracted from the data will be utilized to further support the study, to achieve this the researchers utilized the following statistical methods:

3.3.3.5.6 Likert Scale

The questionnaire responses were scaled using the Likert scale, which has ratings ranging from 1 to 5, with 1 being the lowest rating and 5 being the highest rating.

The weighting of the Likert scale is as follows:

Table 15 Numerical Scare equivalence to verbal scale

Numerical Scale	Verbal Interpretation
5	Strongly Agree
4	Agree
3	Neither/Nor agree
2	Disagree
1	Strongly Disagree

Table 15 illustrates the equivalences for the numerical scale used in the evaluation of the system by its users. Users will be asked to give a grade between 1 to 5, which has a corresponding interpretation.

Table 16 Mean Range to Verbal interpretation

Verbal Interpretation	Score Range
Strongly Agree	4.6 – 5.0
Agree	3.6 – 4.5
Neither/Nor agree	2.6 – 3.5
Disagree	1.6-2.5
Strongly Disagree	1.0-1.5

Table 16 illustrates the equivalences for the range of the means calculated and the corresponding interpretation for each range.

Weighted Mean

This is used to evaluate the data from the surveys completed by the system respondents.

Formula: $X = fx$

where,

X = weighted mean f = frequency

x = weight of each item

n = number of respondents

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APPENDICES

APPENDIX A

Communication Letters

The image displays three screenshots of a communication letter template, likely from a mobile application or a digital form. The first two screenshots show the 'Questions' section, while the third shows the 'Answers' section.

Monday • 7:48 PM

questions:

1. How may documents are available for residents and what specific documents are they? (in list form)
2. How many brgy employees are currently employed(excluding elected officials)
3. Current computer specs
4. Current number of Mobile phones and landline
5. Which barangay process would they say is in most need of being digitized/computerized?
6. What do they think about having/hiring a dedicated It specialist?
7. What is the most time consuming process they perform?
8. Estimated daily transactions per day.

- siguro sa pag oorganize. kasi kung computer or web base yung gamit nila madaling makikita yung files at hindi na kailangan maghalungkot pa sa mga papers na dati nilang naisulat. mas mapapadali siguro kung puro computer or web based nalang lahat ng information para na rin practical ang at the same time transferable.

4. Ano yung sa tingin nya na dapat i improve, tpos bakit - sa tingin ko yung sa info's ng mga patients, clients or even yung mga nairereklogo sa barangay mas mabuti siguro kung magkakaroon sila ng back up files o back up copies if ever man na masunog o mabasa yung mga written files nila. para incase na may mangyareng ganon may other sources sila na mapagkuhanan ng information o documentation about the pa ↓ idents.

APPENDIX B

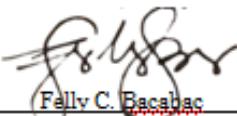
Client Approval letter

Barangay Ugong Pasig City
F. Legaspi st. Ugong, Pasig City

03/01/2023

This letter is written to state that the Local Government Unit of Barangay Ugong has approved LINETECH, a group of students from FEU Institute of Technology, to create an e-government system as partial fulfillment of the course requirement for the Degree of Bachelor of Science in Information Technology, containing the following proposed modules:

- User Module
- Eservices Module
- Records Module
- Documents Recognitions Module
- Announcement Module



Signature over printer name

Lupon Office Secretary

APPENDIX C

Client Business Profile

CLIENT PROFILE	
Client (Company Name):	Barangay Ugong Pasig City
Company brief description:	It is the local government unit of Ugong, Pasig City, where most of the residents file or request for documents as well as seek assistance for certain situations or circumstances
Nature of Business:	Local Government Office
Contact Person:	Felly C. Bacabac
Position/Designation:	Barangay staff (lupon office secretary)
Business Address:	F. Legaspi st. Ugong, Pasig City
Office Number:	
Mobile Number:	0932 769 8922
Email Address:	liey.farren@gmail.com

APPENDIX D

Transcript of Interview

Interviewee: Kase meron kaming BMIS kung saan pag fill-up mo titignan kung talaga ng residente ka. Meron kasing mga residente dito na sinasabi nilang taga Ugong sila.

Interviewer: Pero hinde?

Interviewee: Pero hindi na sila ditto nakatira.

Interviewer: Ahh pwede rin naming gawin yung ich-check ng system kung taga ditto pa basila

Interviewee: Oo may system kaming ganon.. so chine-check sa baba palang nache-check na, nakalagay doon kung active or inactive, kung true or false ibig sabihin kung ikaw ay residente talaga naka true ka, pero kung naka inactive ka or naka false ka ibig sabihin botante ka lang ng Ugong na kumukuha ng

Interviewer: Pero di ka residente

Interviewee: May ganon may ganon ng system, yung sinasabi mo na system yung mga blotter blotter meron na rin, halimbawa nag pa blotter ka, sinusulat don sa record book, tapos it-type yon sa system, pag type sa system pag gusto mong kumuha ng clearance may pipindutin ka lang doon na date or something pangalan makikita mo na pwede nanilang ... meron din naman, halimbawa, nagreklamo ... ahh meron din yung system na nakakonekta sa BMIS, nakakonekta sa lupon, so pag tinype sa baba yung reklamo, tsaka kung ano yung nirereklemo niya, aakyat yon salupon, pagakyat non sa lupon makikita ko yon don so ilalagay ko don yung summary kung nag hearing na siya first hearing second hearing at kung ano yung naging remarks kung na settle ba kung na withdrawn ba or kumuha ng certificate of file action, so dun yun sa system na yon, so ilalagay ko don pag na-settle false na kasi ibig sabihin na-settle yung case ...

Interviewer: Eh ano yung mga mano-mano lang na ano, na pwede naming i-automate? Parang may nasagot kasi kayo noon nayung mano mano lang na de papel na pag naglilista

Interviewee: Wala nayun

Interviewer: Wala ng ganon?

Interviewee: Wala na

Interviewer: Eh ano yung sinagot yung binigay sakin neto?

Interviewee: Meron yung sabi mo

Interviewee: Alin?

Interviewee: Yung sa ano, di bakapagsanaanosa rescue, dibasinusulat lang nila yon

Interviewee: Sa rescue isusulat nila yon, isusulatnila yon kase pag nasa ambulansya yung tao , tatanungan yung pangalan,a ddress, kung ano yung masakit ano yung nagging cause bakit magpapadala sa ospital, pagkatapos non dadalhin yun don sa sekretarya nila i-ttype yon so nakalagay sa system lahat kung sino yun gsinakay ng ambulansya ng gantong date gantong araw gantong oras may ganon, ang kulang lang sa amin nagagawin niyong program alalo na yung salupon, yung mga..pano malalaman yung information at ni BMIS kung pwedeng bigyan ng barangay certificate or barangay clearance yung isang taong kumukuha kasi anoyun eh pag galing salupon yung pangala, ano yon ahm.. hindi mo pwedeng ilabas... confidential siya, so ang makakaalam lang non yung tatawag sakin “ahh ate fe may gantong pangalan ba na may kaso”, “ay oo may ano yan naka pending yung case niyan kase di yan uma-attend”, so pag hindi siya uma-attend, naka pending siya, nakalagay don sa system ko naka pending siya, hindi siya pwedeng releasan ng barangay clearance or barangay certificate kase meron pa siyangkaso. So kung ang nakalagay sa system ko ay false at settled, pwede nilang bigyan yon, so mare-releas-an. Pero hanggat meron kang pending case don at certificate of file action ang nakalagay don, hindi ka pwedeng bigyan ng barangay clearance. Iyon yung wala na wino-work out ng barangay na magkaroon.

Interviewer: Parang kailangan pa dumaan sayo para maconfirmnila?

Interviewee: Oo, tapos kung halimbawa binigyan nila, hindi siya nags-print, ayaw tanggapin nung system yung printing itatawag sakin

Interviewer: Ah di siya mag-print kapag may problemasiya?

Interviewee: Oo, hindi siya nags-print. So talagang nasakin parin yung buhay nung pagkuha ng barangay clearance, so ayun ,yung wala, na dapat dun palang sa system ahmm..malalamanna kung bibigyan or hinde kaya lang yun yung wino-work out yata ng namaano ng programa..magawa.

Interviewer: So yung mga available lang na nap-provide niyo sa mga residents, ano yung mga yon?

Interviewee: Ayun yung barangay clearance, barangay indigency, barangay certificate tsaka yung... ayun alam ko ayun lang

Interviewer: Tapos yung..ilanyung employees ngayon current?

Interviewee: 300

Interviewer: 300, tasyung current computer specs?

Interviewee: Ahh..mabilis bilis naman kaya nga lang kase ang nagiging problema internet.

Interviewer: Internet..

Interviewee: Pero kasi kung mabilis yung internet walang problema

Interviewer: Walang problema?

Interviewee: Oo, maganda naman yung specs nung computer sa barangay kase ahm..syempre kapag may bagong labas na specs alam ko naman binabudgetan, so yun lang ang nagging problema talaga.. internet

Interviewer: Yung current number of mobile phones and landline?

Interviewee: Landline isa lang, with locals lang. Yung mobile phone hindi ko alam kung per department meron, pero meron..ako meron ako sa department ko, yung barangay secretary alam ko meron yung kanya

Interviewer: Yung individual mismo hindi pwedeng direct contact?

Interviewee: Pwede naman, iyon yung ibinibigay kase iyon yung pang barangay na pagkanawala ka don at kung sino papalit sayo isa salin mo sakanya

Interviewer: Hmm okay okay

Interviewee: May mga ganon, hindi ko lang alam kung ilang department ang meron, pero parang barangay secretary, lupon, tsaka council lang yata ang meron

Interviewer: Ahm.. may barangay process ba na sobrang kailangan i-digitize or icomputerize? Or karamihan naman nameetnayung needs?

Interviewee: Siguro yung ano, yung halimbawa.. report. Imbis na i-print yung report, at i-present kay barangay secretary, siguro much better yung pagkagawa mo ng report transmit lang ng transmit

Interviewer: Parang digital nalang

Interviewee: Oo parang siya nalang.. okay ahh halimbawa pagsalupon, “oh fely kulang to, paki ayos mo tsaka mo i-transmit uli saken tsaka para maiprint ko” ayun

Interviewer: Oo kasi pag ip-print tas babaguhin na naman tas ip-printna naman

Interviewee: Oo syempre kung sa lumang siste ma-usb, pag ano mo nung usb oh may mali, so sa computer lang babaguhin mo na ie-erase mo yung nasa usb, papalitan mo ng bago minsan nakakalito. Yon siguro yung transmittal ng report ng bawat department papunta dun sa barangay secretary.

Interviewer: Ah.. meron nakayong dedicated na IT specialist?

Interviewee: Anong dedicated IT..

Interviewer: Parang meron nakayong personnel para sa IT?

Interviewee: Ah wala

Interviewer: Wala?

Interviewee: Alam ko wala..yung programmer ba yon?

Interviewer: Oo mga programmer, mga pag nagkaproblema system niyo may tao dun

Interviewee: yung sa BMIS, merong head sila don sa BMIS, pero hindi mo masasabing IT siya hindi mo rin masasabing programmer kum baga

Interviewer: Marunong lang?

Interviewee: Marunong lang siya, pero kung sa IT, yung lisensyadong IT wala.. kasi mahal yun

Interviewer: So yun yung pinakaproblem, budget para sa ano

Interviewee: Syempre lahat naman ng barangay kung hindi naman ganon kalakihan yung barangay mo at hindi naman ganon kalakihan ang pumapasok na income syempre kung ilan lang yung..

Interviewer: What is the most time consuming process? Pinakaagaw.. parang hassle dun sa pag p-proseso niyo may ganon ba sainyo?

Interviewee: Siguro yung barangay clearance or business permit, kasi syempre pag akyat mo andami ng documents nahinihingi diba tas ip-print nila yon syempre maghihintay sa baba yun.. which is ano, talagang kailangan kasi talagayun hands on eh, hindi yun pwede nung ewan ko ha, hindi..satingin ko hindi pwede ng basta basta lang nayung may portal yung

Interviewer: Hindi siya kaya idigitize?

Interviewee: hindi natin alam, pero kasi meron digitize yung barangay health workers, halimbawa ikaw bago kang household..kasama namin..dumating ka..halimbawa kamaganak ka namin, nagstay ka nadito so ice-census ka, para makasama ka dun sa census meron silang app naginagamit..pagkanailagay ka na dun sa app papasok yun dun

sa system na BMIS so dun nila machine checkna may additional household na dumagdag sa gantong family

Interviewer: yung BMIS bayan third party siya?

Interviewee: hindi, sa barangay

Interviewer: ah sa barangay talaga

Interviewee: parang ano yata..kalimutan ko kung anong meaning ng BMIS eh.. basta yon merong BMIS nasarili ang barangay

Interviewer: ah so may mobile app din pala kayo? Oh parang ina-access mo siya sa browser?

Interviewee: yung BHW lang yung barangay health worker lang, sila lang yung meron

Interviewer: Ah sila lang yung meron

Interviewee: sila lang yung meron, yun ang alam ko ha

Interviewer: Kasi kami balak din sana lahat meron.. ng mobile app, may website den, mobile application den

Interviewee: merong website.. or merong fb account ang barangay.. halos lahat naman ng barangay diba merong fb account ayun meron merong fb account ang barangay..ayun yun ang alam ko pero yung app, yunnga BHW lang ang meron kasi para dun sa mga households ng mga residents

Interviewer: Ah.. estimated daily transactions per day?

Interviewee: yun ang hindi ko masasabi..kase kung sinasabimong transaction business permit, barangay clearance, pag month ng January to march maramitalaga. Pero the rest of the month..

Interviewer: wala na? wala na masiyado?

Interviewee: wala na, mga ano lang barangay indigency, barangay certificate, pero ang business permit pagtumungtong ng January hanggangkatapusang ng march yon maramitalaga

Interviewer: Okay.. thank you

APPENDIX E

UI Screen Capture of the System

Web View

DOWNLOAD TH APP NOW!



BARANGAY UGONG

USERNAME

PASSWORD

REMEMBER ME

REGISTER **LOGIN**

[FORGOT PASSWORD](#)

NEW USER REGISTRATION

NAME <input type="text"/>	BIRTHDATE <input type="text"/>	AGE <input type="text"/>	GENDER <input type="text"/>
ADDRESS <input type="text"/>	MOBILE NUMBER <input type="text"/>	EMAIL ADDRESS <input type="text"/>	
PASSWORD <input type="password"/>	UPLOAD AN ID		
CONFIRM PASSWORD <input type="password"/>			

REGISTER



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- [ANNOUNCEMENTS](#)
- [RECORDS](#)
- [USER MANAGEMENT](#)
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E-SERVICES ➤ BLOTTER REPORT

BLOTTER ID:

INCIDENT TYPE:



INCIDENT REPORT FORM

REPORTING PERSON

NAME:	DATE AND TIME OF REPORT:	
AGE:	GENDER:	DATE AND TIME OF INCIDENT:
ADDRESS:	PHONE NUMBER:	

SUSPECT DATA

NAME:	RELATION TO VICTIM:		
AGE:	GENDER:	OCCUPATION:	EMAIL:
ADDRESS:	PHONE NUMBER:		

VICTIM DATA

NAME:	RELATION TO SUSPECT:		
AGE:	GENDER:	OCCUPATION:	EMAIL:
ADDRESS:	PHONE NUMBER:		

INCIDENT NARRATIVE

PLACE OF INCIDENT:

DATE AND TIME OF INCIDENT:

I

E-SERVICES ➤ DOCUMENT SUBMISSION

DOCUMENT ID:



DOCUMENT SUBMISSION

PERSONAL INFORMATION

NAME:	BIRTHDATE:	
AGE:	GENDER:	CIVIL STATUS:
ADDRESS:	PHONE NUMBER:	

DOCUMENT TYPE

BARANGAY CLEARANCE	CEDULA
BARANGAY CERTIFICATE	BUSINESS CLEARANCE

NATURE OF BUSINESS

ADDRESS:

PURPOSE OF DOCUMENT:

ADDITIONAL INFORMATION

VIEW ATTACHMENT 



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E-SERVICES ➤ DOCUMENT SUBMISSION

RESERVATION/REQUEST FORM

DOCUMENT ID	RESERVATION/REQUEST	SEARCH
PERSONAL INFORMATION		
NAME	BIRTHDATE	
AGE	SEX	CIVIL STATUS
ADDRESS	EMAIL	PHONE NUMBER
RESERVATION/REQUEST		
BARANGAY EQUIPMENT	BARANGAY VEHICLE	
BARANGAY FACILITY		
ADDITIONAL INFORMATION		
DATE AND TIME	VIEW ATTACHMENT	
PURPOSE	<input type="file"/>	APPROVE



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E-SERVICES ➤ DOCUMENT SUBMISSION

DOCUMENT SUBMISSION

DOCUMENT ID	SEARCH	
PERSONAL INFORMATION		
NAME	BIRTHDATE	
AGE	SEX	CIVIL STATUS
ADDRESS	EMAIL	PHONE NUMBER
DOCUMENT TYPE		
BARANGAY CLEARANCE	CEDULA	
BARANGAY CERTIFICATE	BUSINESS CLEARANCE	
ADDITIONAL INFORMATION		
NATURE OF BUSINESS	UPLOAD ATTACHMENT	
ADDRESS	<input type="file"/>	
PURPOSE OF DOCUMENT	<input type="file"/>	SUBMIT



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ANNOUNCEMENTS

BARANGAY NEWS	UPCOMING EVENTS
	
PAST EVENTS	CREATE ANNOUNCEMENT
	



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ANNOUNCEMENTS ➤ BARANGAY NEWS

BARANGAY NEWS # 1

Lore ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Lorem ipsum dolor sit amet, consectetur adipiscing elit dui. Elit ut aliquam purus sit. Integer vitae justo eget magna fermentum. Cursus sit amet dictum sit amet. In arcu cursus euismod quis viverra nibh cras.

BARANGAY NEWS # 2

Lore ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Lorem ipsum dolor sit amet, consectetur adipiscing elit dui. Elit ut aliquam purus sit. Integer vitae justo eget magna fermentum. Cursus sit amet dictum sit amet. In arcu cursus euismod quis viverra nibh cras.



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ANNOUNCEMENTS ➤ CREATE ANNOUNCEMENT

EVENT/ANNOUNCEMENT TITLE	DESCRIPTION
<input type="text"/>	Lore ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Lorem ipsum dolor sit amet, consectetur adipiscing elit dui. Elit ut aliquam purus sit. Integer vitae justo eget magna fermentum.
TYPE	
<input checked="" type="checkbox"/> ANNOUNCEMENT	
<input checked="" type="checkbox"/> EVENT	
<input checked="" type="checkbox"/> NEWS	
DATE AND TIME	
	
LOCATION	
UPLOAD ATTACHMENT	<input type="file"/>



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- [DATA ANALYTICS](#)
- [AUDIT TRAIL](#)
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RECORDS

BARANGAY RECORDS	RESIDENT RECORDS
	
INCIDENT REPORTS	TRANSACTION RECORDS
	



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RECORDS ➔ TRANSACTION RECORDS

Name	Type	Date	Time	Amount



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USER MANAGEMENT

Name	Address	Age	Gender	Actions



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TANOD DEPLOYMENT



REGULAR



PATROL



EMERGENCY



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TANOD DEPLOYMENT ➔ PATROL

NAME OF BSCO/TANOD(S)



DATE AND TIME



AREA STATISTICS



DESCRIPTION

Lorum ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Lorum ipsum dolor sit amet consectetur adipiscing elit duis. Elit ut aliquam purus sit. Integer vitae justo eget magna fermentum.

DEPLOYMENT AREA





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AUDIT TRAILS



LOGS



TRANSACTIONS



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ALL TRANSACTIONS		BY TYPE	BY DATE				
POSTING DATE	CREATION DATE	RES. NO.	NAME	DESCRIPTION	TYPE	DEBIT	CREDIT
18 JULY 2023	18 JULY 2023 10:52AM	052082	EREN SANCHEZ	BARANGAY CLEARANCE PAYMENT	DOCUMENT	P50.00	
18 JULY 2023	18 JULY 2023 08:55AM	053284	DARWIN LOPEZ	BASKETBALL COURT RENTAL	FACILITY	P500.00	
18 JULY 2023	14 JULY 2023 02:30PM	406021	SELENA APOLONIO	REIMBURSEMENT OF FUNDS			P300.00

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RECEIPT

RECEIPT NO: 052082
15 JULY 2023 10:52AM

EREN SANCHEZ
BARANGAY CLEARANCE PAYMENT

PAID	50
CHANGE	100
	50

AUDIT TRAIL FOR TRANSACTIONS

RECEIPT | DESCRIPTION | RES. NO. | NAME | DESCRIPTION | DEBIT | CREDIT

RECEIPT NO: 052082 15 JULY 2023 10:52AM	EREN SANCHEZ BARANGAY CLEARANCE PAYMENT	50	100
--	--	----	-----

[EDIT](#)
[FLAG](#)
[POST](#)



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ALL LOGS	BY TYPE	BY DATE				
POSTING DATE	CREATION DATE	RES. NO.	NAME	DESCRIPTION	ACTION	APPROVED BY
18 JULY 2023	17 JULY 2023 9:55AM	052082	EREN SANCHEZ	BARANGAY CLEARANCE PAYMENT	EDIT	SEC. SANTIAGO
18 JULY 2023	18 JULY 2023 08:55AM	053284	DARWIN LOPEZ	BASKETBALL COURT RENTAL	FLAGGED	SEC. MENDOLA
18 JULY 2023	14 JULY 2023 02:30PM	406021	SELENA APOLONIO	REIMBURSEMENT OF FUNDS	FLAGGED	C. LOBELLA

PAGE 2 OF 13



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DATA ANALYTICS



INCIDENT STATISTICS



TRANSACTIONS STATISTICS



RESIDENTS STATISTICS

DATA ANALYTICS ➤ INCIDENT STATISTICS

AREAS OF CONCERN

- ZONE 2 (Yellow)
- ZONE 6 (Red)
- ZONE 1 (Blue)

Category	Value
Incident Statistics	High
Incident Statistics	Medium
Incident Statistics	Low

ABOUT US

OUR MISSION

S QUISSUM SED NISI TINCidunt ETIA
NILLAM NON NISI EST SIT
ET FACILIS MAGNA.

OUR VISION

VOLVITATE EU SCLE
IMPEDIMENTA ILABE
NULLA FACILIS ETIA
DIAM ALIQUET SI
CONSETETUR PUBIS
PULVINAR ELEM

BARANGAY CONTACT INFORMATION

- Phone: 09725668513
- Call: (02) 8643 1111
- Email: brgyugong@gmail.com

SOCIAL MEDIA

[Facebook](#) [Twitter](#) [Instagram](#)

Mobile View

BARANGAY UGONG

NEW USER REGISTRATION

NAME

ADDRESS

PASSWORD

CONFIRM PASSWORD

BIRTHDATE AGE GENDER

MOBILE NUMBER EMAIL ADDRESS

UPLOAD AN ID

REGISTER

ANNOUNCEMENTS

BARANGAY NEWS

TITLE

NUNC MI IPSUM FAUCIUS VITAE ALIQUET NEC ULLAMCORPER. COMMODO VIVERA MAEZENS ACCUSAN LACUS VEL FACILIS. PELLentesque ADIPISCING COMMODO ELIT AT IMPERFECT ORB ACCUSAN ST AMET.

INCIDENTS STATS

250

E-SERVICES

- [**DOCUMENT SUBMISSION**](#)
- [**BLOTTER REPORTS**](#)
- [**FACILITIES, EQUIPMENT AND VEHICULAR RESERVATIONS**](#)
- [**CLINIC**](#)
- [**TRANSACTIONS**](#)
- [**APPOINTMENT**](#)

E-SERVICES ► BLOTTER REPORT

INCIDENT REPORT FORM

REPORTING PERSON

NAME [REDACTED] AGE [REDACTED] GENDER [REDACTED]
 ADDRESS [REDACTED]

DATE AND TIME OF REPORT [REDACTED] PHONE NUMBER [REDACTED]
 DATE AND TIME OF INCIDENT [REDACTED]

SUSPECT DATA

NAME [REDACTED] AGE [REDACTED]
 GENDER [REDACTED] OCCUPATION [REDACTED] EMAIL [REDACTED]
 ADDRESS [REDACTED]

RELATION TO VICTIM [REDACTED] PHONE NUMBER [REDACTED]

VICTIM DATA

NAME [REDACTED] AGE [REDACTED]
 GENDER [REDACTED] OCCUPATION [REDACTED] EMAIL [REDACTED]
 ADDRESS [REDACTED]

RELATION TO SUSPECT [REDACTED] PHONE NUMBER [REDACTED]

INCIDENT NARRATIVE

PLACE OF INCIDENT [REDACTED]
 DATE AND TIME OF INCIDENT [REDACTED]

NARRATIVE
[REDACTED]

E-SERVICES ► DOCUMENT SUBMISSION

DOCUMENT SUBMISSION

PERSONAL INFORMATION

NAME [REDACTED] BIRTHDATE [REDACTED]
 AGE [REDACTED] GENDER [REDACTED] CIVIL STATUS [REDACTED] EMAIL [REDACTED]
 ADDRESS [REDACTED] PHONE NUMBER [REDACTED]

DOCUMENT TYPE

[REDACTED] BARANGAY CLEARANCE [REDACTED] CEDULA
 [REDACTED] BARANGAY CERTIFICATE [REDACTED] BUSINESS CLEARANCE

ADDITIONAL INFORMATION

NATURE OF BUSINESS [REDACTED] VIEW ATTACHMENT
 ADDRESS [REDACTED]
 PURPOSE OF DOCUMENT [REDACTED]

APPROVE

ANNOUNCEMENTS

- [**BARANGAY NEWS**](#)
- [**UPCOMMING EVENTS**](#)
- [**PAST EVENTS**](#)
- [**CREATE ANNOUNCEMENT**](#)

ANNOUNCEMENTS

BARANGAY NEWS # 1

[REDACTED]

Barangay News # 1
Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

BARANGAY NEWS # 2

[REDACTED]

Barangay News # 2
Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

RECORDS

- [**BARANGAY RECORDS**](#)
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- [**TRANSACTION RECORDS**](#)

APPENDIX F

Project Adviser/Mentor Endorsement Form

1 / 1 | - 53% + | ☰ ⌂

 FEU Institute of Technology
INFORMATION TECHNOLOGY DEPARTMENT

ENDORSEMENT FOR ORAL PROPOSAL DEFENSE
IT Project Management

Date:

To: **Danna May C. Mansul**
Course Adviser

This is to certify that the group working project entitled:

Development of an E-Governance System for Barangay Ugong, Pasig City

Composed of:

1. BELZA, Clarence John G.
2. DE CASTRO, Johanne Christelle A.
3. GREGORIO, Johannes Illych J.
4. GUMILA, Brandan Aeron P.
5. VILLENA, Terrence Luis T.

is hereby given approval to defend their project proposal.


Heimlie N. Vicente
Project Adviser

APPENDIX G

Progress Reports



FEU Institute of Technology

COLLEGE OF COMPUTER STUDIES DEPARTMENT

PROGRESS REPORT

1. Progress reports are required for students taking the course **IT0039**. This will be submitted weekly to monitor and reassurethe academic progress of each group,that the project is going smoothly, and that it will be completed on the expected date.
2. Progress reports are the responsibility of the group andthe Project Adviser. The Project Adviserensures that each group submitted the form by the required date. This will be filed and used for evaluation.

PART A: TO BE COMPLETED BY THE GROUP				
Group Name: LINETECH	Program: Bachelor of Science in Information Technology with specialization in Web and Mobile Application			
Member's Name: 1. Belza, Clarence John G. 2. De Castro, Johanne Christelle A. 3. Gregorio, Johannes Ilyich J. 4. Gumila, Brandan Aeron P. 5. Villena, Terrence Luis T.	Term: [] 1 st <input checked="" type="checkbox"/> 2 nd [] 3 rd	Academic Year: 2022-2023		
Mentoring Day: Wednesday Mentoring Time: 11:30am Mentoring Venue: Zoom	Reporting Date: January 6, 2023			Reporting Week: Week 2
Title of the Project: Developing a Web and Mobile Application for Barangay Ugong, Pasig City as an Aid for Good Governance				
PART B: LIST OF ACTIVITIES DONE (List and describe each activities in detail)				
Date	Activity	Remarks		
Jan 3	Arrangement and organization of groups.	<i>fb 5 mentors</i>		
Jan 6	Sent a "project adviser application" email to sir Vicente.	<i>de signed</i>		

PART C: TO BE COMPLETED BY THE MENTOR				
Grade Legend (To be used by the Mentor in grading student's activity) 95 – 100: Excellent 89 – 94: Very Good 83 – 88: Good 77 – 82: Fair 70 – 76: Poor 69 below: Inadequate				
Member's Name:	Assigned Task (50)	Participation (30)	Attendance (20)	TOTAL
1. Belza, Clarence John G.	50	30	20	100
2. De Castro, Johanne Christelle A.	50	30	20	100
3. Gregorio, Johannes Ilyich J.	50	30	20	100
4. Gumila, Brandan Aeron P.	50	30	20	100
5. Villena, Terrence Luis T.	50	30	20	100

Heinje N. Vicente

Project Adviser

Signature Over Printed Name

01/06/2023

Date



PROGRESS REPORT

1. Progress reports are required for students taking the course **IT0039**. This will be submitted weekly to monitor and reassurethe academic progress of each group,that the project is going smoothly, and that it will be completed on the expected date.
2. Progress reports are the responsibility of the group andthe Project Adviser. The Project Adviserensures that each group submitted the form by the required date. This will be filed and used for evaluation.

PART A: TO BE COMPLETED BY THE GROUP

Group Name: LINETECH	Program: Bachelor of Science in Information Technology with specialization in Web and Mobile Application		
Member's Name: 1. Belza, Clarence John G. 2. De Castro, Johanne Christelle A. 3. Gregorio, Johannes Ilyich J. 4. Gumila, Brandan Aeron P. 5. Villena, Terrence Luis T.	Term: <input type="checkbox"/> 1 st <input checked="" type="checkbox"/> 2 nd <input type="checkbox"/> 3 rd	Academic Year: 2022-2023	
Mentoring Day: Wednesday Mentoring Time: 11:30am Mentoring Venue: ZOOM	Reporting Date: January 10, 2023	Reporting Week: Week 3	
Title of the Project: Developing a Web and Mobile Application for Barangay Ugong, Pasig City as an Aid for Good Governance			

PART B: LIST OF ACTIVITIES DONE (List and describe each activities in detail)

Date	Activity	Remarks
Jan 10	Zoom call and consultation with all mentees under sir Vicente Created group chat for mentees.	✓
Jan 16	Distribution of tasks among group mates (additional research, searching for clients.)	✓

PART C: TO BE COMPLETED BY THE MENTOR

Grade Legend (To be used by the Mentor in grading student's activity)
95 – 100: Excellent 89 – 94: Very Good 83 – 88: Good 77 – 82: Fair 70 – 76: Poor 69 below: Inadequate

Member's Name:	Assigned Task (50)	Participation (30)	Attendance (20)	TOTAL
1. Belza, Clarence John G.	50	30	20	100
2. De Castro, Johanne Christelle A.	50	30	20	100
3. Gregorio, Johannes Ilyich J.	50	30	20	100
4. Gumila, Brandan Aeron P.	50	30	20	100
5. Villena, Terrence Luis T.	50	30	20	100

Henette N. Vicente

Project Adviser

Signature Over Printed Name

01/10/2023

Date



PROGRESS REPORT

- Progress reports are required for students taking the course IT0039. This will be submitted weekly to monitor and reassure the academic progress of each group, that the project is going smoothly, and that it will be completed on the expected date.
- Progress reports are the responsibility of the group and the Project Adviser. The Project Adviser ensures that each group submitted the form by the required date. This will be filed and used for evaluation.

PART A: TO BE COMPLETED BY THE GROUP

Group Name: LINETECH	Program: Bachelor of Science in Information Technology with specialization in Web and Mobile Application		
Member's Name: 1. Beliza, Clarence John G. 2. De Castro, Johanne Christelle A. 3. Gregorio, Johannes Ilych J. 4. Gumila, Brandan Aeron P. 5. Vilena, Terrence Luis T.	Term: <input type="checkbox"/> 1 st <input checked="" type="checkbox"/> 2 nd <input type="checkbox"/> 3 rd	Academic Year: 2022-2023	
Mentoring Day: Wednesday Mentoring Time: 11:30am Mentoring Venue: ZOOM	Reporting Date: January 30, 2023	Reporting Week: Week 5	
Title of the Project: Developing a Web and Mobile Application for Barangay Ugong, Pasig City as an Aid for Good Governance			

PART B: LIST OF ACTIVITIES DONE (List and describe each activities in detail)

Date	Activity	Remarks
Jan 25	2nd meeting with sir Vicente, annotation of revision for Chapter 1.	pl with revisions
Jan 26	Meeting with client, discussion of possible revisions, courses of action; Request for change of title	pl
Jan 30	3rd meeting with sir Vicente for approval of new replacement title.	pl with revisions

PART C: TO BE COMPLETED BY THE MENTOR

Grade Legend (To be used by the Mentor in grading student's activity)
 95 – 100: Excellent 89 – 94: Very Good 83 – 88: Good 77 – 82: Fair 70 – 76: Poor 69 below: Inadequate

Member's Name:	Assigned Task (50)	Participation (30)	Attendance (20)	TOTAL
1. Beliza, Clarence John G.	50	30	20	100
2. De Castro, Johanne Christelle A.	50	30	20	100
3. Gregorio, Johannes Ilych J.	50	30	20	100
4. Gumila, Brandan Aeron P.	50	30	20	100
5. Vilena, Terrence Luis T.	50	30	20	100

Heinlie N. Vicente

Project Adviser

Signature Over Printed Name

01/30/2023

Date



PROGRESS REPORT

1. Progress reports are required for students taking the course **IT0039**. This will be submitted weekly to monitor and reassurethe academic progress of each group,that the project is going smoothly, and that it will be completed on the expected date.
2. Progress reports are the responsibility of the group andthe Project Adviser. The Project Adviserensures that each group submitted the form by the required date. This will be filed and used for evaluation.

PART A: TO BE COMPLETED BY THE GROUP			
Group Name: LINETECH	Program: Bachelor of Science in Information Technology with specialization in <u>Web and Mobile Application</u>		
Member's Name: 1. Belza, Clarence John G. 2. De Castro, Johanne Christelle A. 3. Gregorio, Johannes Ilych J. 4. Gumila, Brandan Aeron P. 5. Villena, Terrence Luis T.	Term: [] 1 st [✓] 2 nd [] 3 rd	Academic Year: 2022-2023	
Mentoring Day: Wednesday Mentoring Time: 1130am Mentoring Venue: ZOOM	Reporting Date: February 6, 2023	Reporting Week: Week 6	
Title of the Project: Developing a Web and Mobile Application for Barangay Ugong, Pasig City as an Aid for Good Governance			

PART B: LIST OF ACTIVITIES DONE (List and describe each activities in detail)		
Date	Activity	Remarks
Jan 31	Start of revision for new title; Setting a meeting with client.	jl
Feb 1	Sent request for client profile as well as additional questions and clarifications	jl
Feb 6	Presenting revised Chapter 1	jl ! minor revisions

PART C: TO BE COMPLETED BY THE MENTOR				
Grade Legend (To be used by the Mentor in grading student's activity)		95 – 100: Excellent	89 – 94: Very Good	83 – 88: Good
Member's Name:		77 – 82: Fair	70 – 76: Poor	69 below: Inadequate
1. Belza, Clarence John G.	50	30	20	100
2. De Castro, Johanne Christelle A.	50	30	20	100
3. Gregorio, Johannes Ilych J.	50	30	20	100
4. Gumila, Brandan Aeron P.	50	30	20	100
5. Villena, Terrence Luis T.	50	30	20	100

Hilentje M. Vicente
 Project Adviser
 Signature Over Printed Name

02/06/2023

Date



PROGRESS REPORT

1. Progress reports are required for students taking the course **T0039**. This will be submitted weekly to monitor and reassurethe academic progress of each group,that the project is going smoothly, and that it will be completed on the expected date.
2. Progress reports are the responsibility of the group andthe Project Adviser. The Project Adviserensures that each group submitted the form by the required date. This will be filed and used for evaluation.

PART A: TO BE COMPLETED BY THE GROUP

Group Name: LINETECH	Program: Bachelor of Science in Information Technology with specialization in Web and Mobile Application	
Member's Name: 1. Belza, Clarence John G. 2. De Castro, Johanne Christelle A. 3. Gregorio, Johannes Ilyich J. 4. Gumila, Brandan Aeron P. 5. Villena, Terrence Luis T.	Term: [] 1 st <input checked="" type="checkbox"/> 2 nd [] 3 rd	Academic Year: 2022-2023
Mentoring Day: Wednesday Mentoring Time: 11:30am Mentoring Venue: ZOOM	Reporting Date: February 10, 2023	Reporting Week: Week 7
Title of the Project: Developing an Automated Barangay Mangamenet System for Barangay Ugong, Pasig City as an Aid for Good Governance		

PART B: LIST OF ACTIVITIES DONE (List and describe each activities in detail)

Date	Activity	Remarks
Feb 9	Tweak of title from Developing a Web and Mobile Application for Barangay Ugong, Pasig City as an Aid for Good Governance to Developing an Automated Barangay Mangamenet System for Barangay Ugong, Pasig City as an Aid for Good Governance	fb
Feb 10	Start of revision for Chapter 1 and started draft for Chapter 2	fb

PART C: TO BE COMPLETED BY THE MENTOR

Grade Legend [To be used by the Mentor in grading student's activity)

95 – 100: Excellent 89 – 94: Very Good 83 – 88: Good

77 – 82: Fair

70 – 76: Poor

69 below: Inadequate

Member's Name:	Assigned Task (50)	Participation (30)	Attendance (20)	TOTAL
1. Belza, Clarence John G.				100
2. De Castro, Johanne Christelle A.				100
3. Gregorio, Johannes Ilyich J.				100
4. Gumila, Brandan Aeron P.				100
5. Villena, Terrence Luis T.				100

Heintje N. Vicente

Project Adviser

Signature Over Printed Name

February 10, 2023

Date



PROGRESS REPORT

1. Progress reports are required for students taking the course **IT0039**. This will be submitted weekly to monitor and reassurethe academic progress of each group,that the project is going smoothly, and that it will be completed on the expected date.
2. Progress reports are the responsibility of the group andthe Project Adviser. The Project Adviserensures that each group submitted the form by the required date. This will be filed and used for evaluation.

PART A: TO BE COMPLETED BY THE GROUP		
Group Name: LINETECH	Program: Bachelor of Science in Information Technology with specialization in Web and Mobile Application	
Member's Name: 1. Belza, Clarence John G. 2. De Castro, Johanne Christelle A. 3. Gregorio, Johannes Ilych J. 4. Gumila, Brandan Aeron P. 5. Villena, Terrence Luis T.	Term: <input type="checkbox"/> 1 st <input checked="" type="checkbox"/> 2 nd <input type="checkbox"/> 3 rd	Academic Year: 2022-2023
Mentoring Day: Wednesday Mentoring Time: 11:30am Mentoring Venue: ZOOM	Reporting Date: February 20, 2023	Reporting Week: Week 8
Title of the Project: Development of an E-Governance System for Barangay Ugong, Pasig City		

PART B: LIST OF ACTIVITIES DONE (list and describe below each activity with its detail)		
Date	Activity	Remarks
Feb 16	Submitted physical copy of chapter 2 draft	
Feb 18	Zoom meeting regarding revised chapter 1's and chapter 2's revision and draft respectively.	
Feb 20	Face-to-face meeting regarding re-revised chapter 1's and chapter 2's revision and draft respectively	

PART C: TO BE COMPLETED BY THE MENTOR				
Grade Legend (To be used by the Mentor in grading student's activity) 95 – 100: Excellent 89 – 94: Very Good 83 – 88: Good 77 – 82: Fair 70 – 76: Poor 69 below: Inadequate				
Member's Name:	Assigned Task (50)	Participation (30)	Attendance (20)	TOTAL
1. Belza, Clarence John G.				100
2. De Castro, Johanne Christelle A.				100
3. Gregorio, Johannes Ilych J.				100
4. Gumila, Brandan Aeron P.				100
5. Villena, Terrence Luis T.				100

Heintje N. Vicente
 Project Adviser
 Signature Over Printed Name

February 20, 2023

Date



PROGRESS REPORT

1. Progress reports are required for students taking the course **IT0039**. This will be submitted weekly to monitor and reassure the academic progress of each group, that the project is going smoothly, and that it will be completed on the expected date.
2. Progress reports are the responsibility of the group and the Project Adviser. The Project Adviser ensures that each group submitted the form by the required date. This will be filed and used for evaluation.

PART A: TO BE COMPLETED BY THE GROUP

Group Name: LINETECH	Program: Bachelor of Science in Information Technology with specialization in Web and Mobile Application		
Member's Name: 1. Belza, Clarence John G. 2. De Castro, Johanne Christelle A. 3. Gregorio, Johannes Ilyich J. 4. Gumiila, Brandan Aeron P. 5. Villena, Terrence Luis T.	Term: <input type="checkbox"/> 1 st <input checked="" type="checkbox"/> 2 nd <input type="checkbox"/> 3 rd	Academic Year: 2022-2023	
Mentoring Day: Wednesday Mentoring Time: 11:30am Mentoring Venue: ZOOM	Reporting Date: February 27, 2023	Reporting Week: Week 9	
Title of the Project: Development of an E-Governance System for Barangay Ugong, Pasig City			

PART B: LIST OF ACTIVITIES DONE (List and describe each activities in detail)

Date	Activity	Remarks
Feb 21	Start of revision for Chapter 2 and draft of chapter 3	ok
Feb 27	Face-to-face meeting regarding revised chapter 2's and chapter 3's presentation and draft respectively. Updated certain parts of chapter 1 and chapter 2.	ok

PART C: TO BE COMPLETED BY THE MENTOR

Grade Legend (To be used by the Mentor in grading student's activity)

95 – 100: Excellent 89 – 94: Very Good 83 – 88: Good

77 – 82: Fair

70 – 76: Poor

69 below: Inadequate

Member's Name:	Assigned Task (50)	Participation (30)	Attendance (20)	TOTAL
1. Belza, Clarence John G.				100
2. De Castro, Johanne Christelle A.				100
3. Gregorio, Johannes Ilyich J.				100
4. Gumiila, Brandan Aeron P.				100
5. Villena, Terrence Luis T.				100

Helga N. Vicente
Project Adviser
Signature Over Printed Name

February 27, 2023

Date

APPENDIX H

Functional Requirements Specifications (FRS)

Development of an E-Governance System for Barangay Ugong, Pasig City
Target Date of Implementation: May – July 2023

FUNCTIONAL REQUIREMENTS SPECIFICATION (DRAFT 1)

Development of an E-Governance System for Barangay Ugong, Pasig City MODULES	
• User Module	- Responsible for managing the accounts of the local government unit's employees along with the relevant data. Facilitates the login and log out functions as well as registering users.
• Eservices Module	- Lists all available services offered by the local government unit, along with relevant requirements and procedures. This also handles the appointment system for on-site documents submissions, bather reports and clinical appointments for the adjacent medical unit.
• Records Module	- Serves as the data repository of the system; users may view the relevant documents through this module. It also handles the reports and visualization of data.
• Documents Recognition Module	- Uses Optical Character Recognition (OCR) software to recognize and digitize the data on a written document, which is then uploaded to the database of the system.
• Announcement Module	- This module handles information dissemination for the events and current activities that the local government unit is currently undertaking, as well as any relevant emergency notices.

PROJECT ASSUMPTIONS

- Test cases will be prepared and will be used during the User Acceptance Testing. Client is required to participate during testing particularly in the execution of the test cases and the verification of results.
- Major revisions and/or change in processing specifications, new reports and creation of new extraction programs other than those covered in this document are not part of the deliverables to meet target date <period> for programming, system integration testing, user acceptance testing including system deployment and turnover to the client. Otherwise, project schedule will be adjusted accordingly.
- Changes or revision on the pro-forma of the report maybe requested as necessary. However, this has to be subjected for another round of enhancement and appropriate project scheduling and manpower assignments.

Prepared by:


Brandon Aaron P. Guimilia
QA Engineer
<Project Name>

Containing:


Clarence John G. Belza
Group Leader
<Project Name>

Noted by:

Danna May C. Manalo
Course Adviser
FEU Institute of Technology

Assisted by:

Johanne Christelle A. De Castro
Johannes Lynch J. Gregorio
Terrence Luis T. Villena
Team Members


Belinda N. Vicente
Project Advisor
FEU Institute of Technology

Dr. Ace C. Lagman
Director for IT
FEU Institute of Technology

Accepted by:


Felly C. Bangbas
Ugong Office Secretary

APPENDIX I

Sample Survey Question

1. Is it needlessly difficult to understand how to use the system?
2. Did you encounter any errors while accessing the website?
3. from a scale of 1 to 5, how user friendly is our website?
4. Did the function cater to your needs as a resident of the barangay?
5. Did the system stall or cause a long feedback time? How long was it?
6. Did the system cause other conflicts with other systems currently installed on the device?
7. How many transactions can be performed in a given length of time?

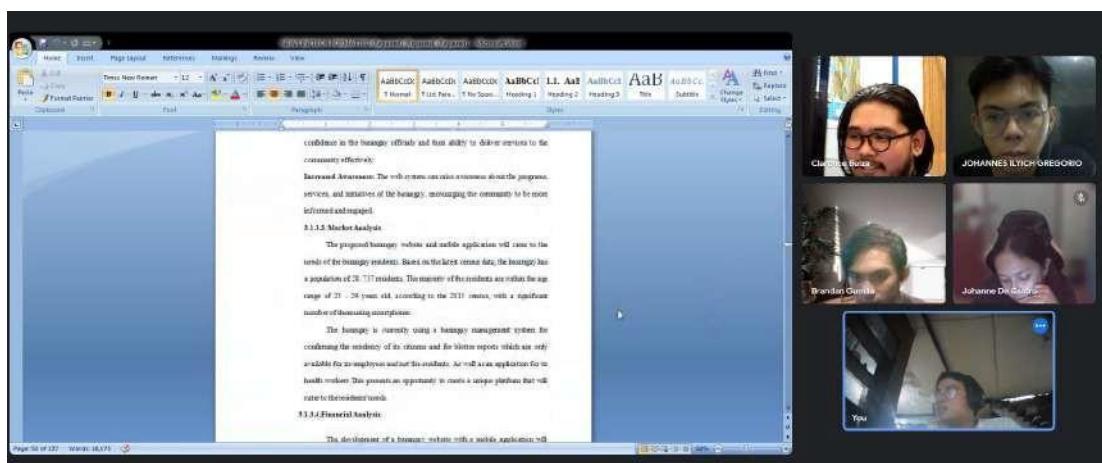
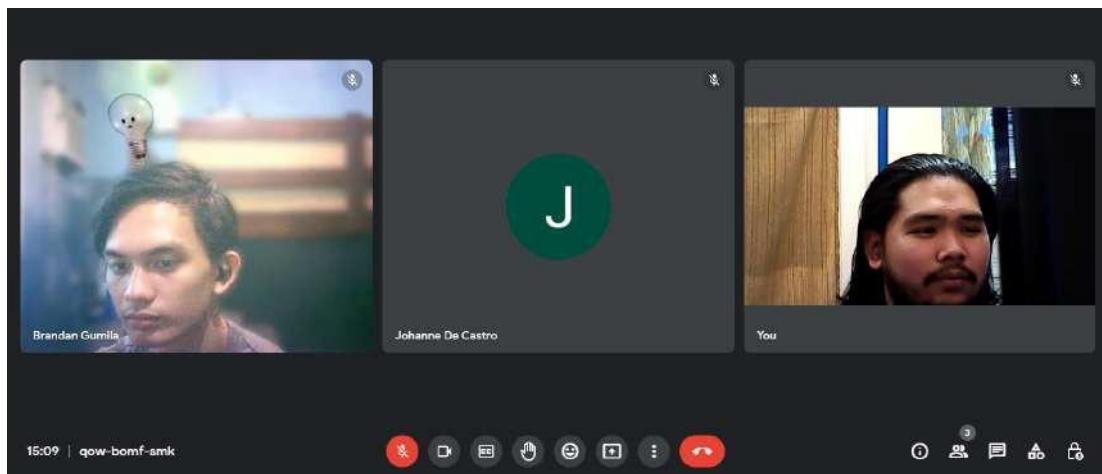
APPENDIX J

Title Defense Grade sheets

FEU INSTITUTE OF TECHNOLOGY					
Title Proposal Presentation Summary Form 1st Term Academic Year 2022-2023 IT0037 System Analysis and Design					
Group Name: TEAM 0					
Name of the Proponent: Villena, Terrence Luis T. Mayor, Don Patrick Lagnada, Ryan Christian L. Gumila, Brandan Aeron					
Course Date/Time Venue BSIT with Specialization in Web and Mobile Application Nov 8, 2022 / 10:00-11:00 AM Zoom					
SUMMARY OF THE PROPOSED FILES					
The Development of Barangay Ugong, Pasig City Website/System Development of Management System for Palaya Petroleum Corporation Development of Online Booking/Reservation System for The Barbery					
ACCEPTED NO ACCEPTED					
REMARKS					
Magcuya, Juan Paulo -Web and Mobile Application for Barangay Ugong, Pasig City as an Aid for Good Governance -donators - donors/benefactors					
mobile -citizens -cms -hotlines (clickable) -live cctv streams					
-citizen - live CCTV streams, -hotlines, -CMS (announcement) - vaccinations, schedule of check-ups, pregnant and senior citizens					
Enriquez, John Benedic Suggestion for features and Concerns -SMS notification (push) there could be an option for enrollment -Security features on Master list of all Residents -Demographic of Barangay -Assistance for Bulal					
Ortega, John Heland Jasper					
DEFENSE GRADE					
PANEL MEMBERS		GROUP GRADE		INDIVIDUAL GRADE	
Ortega, John Heland Jasper		80		Villena, Terrence Luis T. 92 Lagnada, Ryan Christian L. 90 Gumila, Brandan Aeron 92 Mayor, Don Patrick 0	
Enriquez, John Benedic		87			
Magcuya, Juan Paulo		88			
Average		85.00		91.33 90.00 91.33 0.00	
Title Defense Grade		86.90		86.50 86.90 0.00	
Accepted by:					
Ortega, John Heland Jasper		Enriquez, John Benedic		Magcuya, Juan Paulo	
Panel Member 1		Panel Member 2		Panel Member 3	
Noted by:					
Manuel B. Garcia			Ace C. Lagman		
Course Advisor			Academic Director, Information Technology		

APPENDIX K

Pictures During Planning



APPENDIX L

Curriculum Vitae



PERSONAL

- Name: Clarence John Belza
- Address: 123 Everlasting St., Sakaynay 3020 Meycauayan City
- Phone number: (+63) 922 291 1724
- Email: clarencebelza20@gmail.com
- Date of birth: 20-05-1999
- Place of birth: Meycauayan City
- Gender: Male
- Nationality: Filipino
- Marital status: Single

INTERESTS

- Building plastic model kits
- Reading books and other literature
- Listening to music

CLARENCE JOHN BELZA

Aspiring full stack developer with a hunger to learn more and create innovative systems and designs which are applicable to my field of choice. Seeking opportunity to apply analytical and organisational skills in the experimental design and execution phases of the LINETECH project.

EDUCATION AND QUALIFICATIONS

Dec 2019 - Apr 2024	Bachelor of Science in Information Technology FEU Institute of Technology, Manila
Aug 2018 - Apr 2019	Bachelor of Science in Accountancy University of Santo Tomas, Manila
Jun 2016 - May 2018	Accountancy and Business Management Sophia School, Meycauayan City Senior High School

SKILLS

Microsoft Word	★★★★★
HTML, CSS, Javascript	★★★★★
Public Speaking	★★★★★
Leadership	★★★★★



Johanne Christelle A. De Castro

✉ johannechrstll@gmail.com ☎ 09088753147 ⌂ Blk 23 Lot 14 Robinsons Homes, Antipolo City

📅 16/03/2001 🏵 Filipino 🙃 Female

Profile

A committed and goal-driven individual pursuing an Information and Technology degree specializing in Web and Mobile Applications. Aims to acquire valuable knowledge and skills allowing me to grow holistically and reach my fullest potential.

Education

Bachelor of Science in Information Technology Specialized in Web and Mobile Application, FEU Institute of Technology	2019 – present Manila, Philippines
General Academic Strand - Tourism, FEU High School	2017 – 2019 Manila, Philippines

Skills

Microsoft Office Applications Microsoft Word, Microsoft Excel, Microsoft Powerpoint, etc.	● ● ● ●	Programming Languages HTML and CSS, PHP, Python, Java, JavaScript, Swift, C++, SQL	● ● ● ●
English and Filipino Language	● ● ● ●		

Organizations

Alliance of Information Technology Students (AITS), member	2019 – 2020
---	-------------

Certificates

CyberOps Associate, Cisco December 2022	DevNet Associate, Cisco August 2022	IT Specialist: Databases, Certiport July 2022
Switching, Routing & Wireless Essentials, Cisco April 2022	Introduction to Networks, Cisco December 2021	



JOHANNES ILYICH GREGORIO

CV

Blk 3 Lt 33 Lerida St. Tirrea Nova Royale 3 Bagumbong, Caloocan City, 1421 Caloocan 09282693735 gregorijoannes@gmail.com

EDUCATION AND QUALIFICATIONS

Bachelor of Science in Information Technology
Far Eastern University Institute of Technology, Manila City
Ongoing college student:

Aug 2020 - Jul 2024

INTERESTS

Reading, Exercise, Brushing up on the recent advancements,

An aspiring student that wishes to become a proper developer after finishing college, wishes to complete the capstone system in due time alongside with his project team.

SKILLS

Microsoft Word	Skillful
PowerPoint	Intermediate
Microsoft Excel	Intermediate
Draw.io	Intermediate
Swift	Intermediate
PHP and CodeIgniter	Intermediate

TERRENCE LUIS T. VILLENA



Personal

- Address
44 A Baesa Road, Barangay Baesa
1106 Quezon City
- Phone number
09563165171
- Email
terrencevilleena@gmail.com
- Date of birth
10-01-2002
- Place of birth
Manila
- Nationality
Filipino

Interests

- Musical Performances
- Songwriting
- Sports
- Reselling
- Exercise

To obtain employment with a reputable company where I can fully utilize my skills and business studies background.

Education and Qualifications

TVL-ICT: Programming
UST Angelicum College, Quezon City

- Primary education
-

Bachelor of Science in Information Technology with Specialization in Web and Mobile Applications
FEU Institute of Technology, Manila

- Tertiary Education
- Cisco CCNA: Switching, Wireless and Routing Essentials Certificate

Present

References

Maria Theresa Tanedo
09271518469
teretanedo@gmail.com

BCCT

Skills

Programming	● ● ● ○ ○
Graphic Design	● ● ● ○ ○
Musical Production	● ● ● ○ ○
Video Editing	● ● ● ○ ○



Curriculum Vitae

Personal

Name	Brandan Aeron Gumila
Address	Block 1 Lot 27 Summerfield Residences, Maybunga, 1607 Pasig
Phone number	09452701219
Email	brandangumila44@gmail.com
Date of birth	17-05-2001
Place of birth	Cabanatuan City
Gender	Male

Resume objective

To leverage my technical and problem-solving skills in a challenging IT role that allows me to contribute to the success of the organization and grow as a professional. Committed to staying well-informed of emerging technologies and industry trends to deliver best-in-class IT solutions that exceed expectations.

Education and Qualifications

- | | |
|---------------------|--|
| Jun 2016 - Mar 2018 | Junior High School
Arellano University, Pasig |
| Jun 2018 - May 2020 | Senior High School - Science, Technology, Engineering, and Mathematics (STEM)
Arellano University, Pasig |
| Jan 2020 - Present | Bachelor of Science in Information Technology with specialization in Web and Mobile Application
FEU - Institute of Technology, Manila |

Interests

Sports, Gaming,

Skills

Communication Skills	● ● ● ● ●
Teamwork	● ● ● ● ●
Programming/Coding	● ● ● ● ●

Appendix L

Accessible Website Design Guidelines – ICTO-NCDA Joint Circular No. 1-2010

Joint Circular No. 1, series of 2010
June 29, 2010

**TO : ALL AGENCIES AND INSTRUMENTALITIES OF THE EXECUTIVE BRANCH OF THE
PHILIPPINE GOVERNMENT**

SUBJECT : ACCESSIBLE WEBSITE DESIGN GUIDELINES

WHEREAS, the Philippines ratified the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) on April 15, 2008, which recognizes the need to promote, protect and ensure the full and equal enjoyment of all human rights and fundamental freedoms by all persons with disabilities and to promote respect for their inherent dignity.

WHEREAS, Article 9 of the convention encourages states to take appropriate measures to ensure access of persons with disabilities on equal basis with others to the physical environment, transportation, information and communications including information and communications technologies and systems and all other facilities and services that may be open to the public.

WHEREAS, the United Nations General Assembly adopted Resolution 56/183 on December 21, 2001 which endorsed the holding of the World Summit on the Information Society (WSIS) in two phases (Geneva and Tunis) to develop and foster a clear statement of political will and take concrete steps to establish the foundations for an Information Society for all, reflecting all the different interests at stake and to put Geneva's Plan of Action into motion as well as to find solutions and reach agreements in the fields of Internet governance, financing mechanisms, and follow-up and implementation of the Geneva and Tunis documents.

WHEREAS, the first phase of the World Summit on the Information Society from 10-12 December 2003 draws as an outcome the Geneva Declaration of Principles which affirms that everyone, everywhere, should have the opportunity to participate and no one should be excluded from the benefits the Information Society offers. It also recognizes the special needs of the marginalized and vulnerable groups of society including the special needs of older persons and persons with disabilities to build an Information Society for All.

WHEREAS, the second phase of the World Summit on the Information Society from 16-18 November 2005 outlined as an outcome the Tunis Commitment which obligates participating states to promote universal, ubiquitous, equitable and affordable access to ICTs, including universal design and assistive technologies, for all people, especially those with disabilities, everywhere, to ensure that the benefits are more evenly distributed between and within societies, and to bridge the digital divide in order to create digital opportunities for all and benefit from the potential offered by ICTs for development.

WHEREAS, the Standard Rules on the Equalization of Opportunities for Persons with Disabilities was also adopted by the United Nations General Assembly at its 48th session on 20 December 1993, by virtue of Resolution 48/96 which recognizes the overall importance of accessibility in the process of the equalization of opportunities in all spheres of society. It also encourages States to develop strategies to make information services and documentation accessible for different groups of persons with disabilities and to ensure that new computerized information and service systems offered to the general public are either made initially accessible or are adapted to be made accessible to persons with disabilities.

WHEREAS, the Philippines is a signatory to the Manila Declaration on Accessible ICT which recognizes the importance of promoting the implementation of the Manila ICT Design Recommendations which sets the minimum threshold of accessibility with reasonable accommodation for website access, to eliminate web-based information barriers.

WHEREAS, the United Nations Economic and Social Affairs at its fifty-eighth session, adopted resolution 58/4 of 22 May 2002 on promoting an inclusive, barrier-free and rights-based society for people with disabilities in the Asian and Pacific region in the twenty-first century, by which it proclaimed the extension of the Asian and Pacific Decade of Disabled Persons, 1993-2002, for another decade, 2003-2012. The resolution emphasizes seven (7) areas of priorities and concerns, which include Access to information and communications, including information, communication and assistive technologies that calls for governments to adopt ICT accessibility guidelines for persons with disabilities in their national ICT policies and specifically include persons with disabilities as their target beneficiary group with appropriate measures.

WHEREAS, Presidential Decree 1480 issued on June 11, 1978 provided for the restructuring of the National Computer Center and vested it among other things with the mandate 'to formulate policies and prescribe standards on the acquisition and utilization of computers and related devices, data communications, information systems, and manpower development in support of national computerization objectives'

Section 1 Title: Accessible Website Designs

Pursuant to Article 9 of the UNCRPD which explicitly identifies Information Communication Technology (ICT), which includes government websites to be accessible to all types of citizens with disabilities: the blind, visually impaired, the deaf, the mobility impaired and consistent with the State policy to empower citizens, including those with disabilities access to vital information provided by government through websites of its departments, institutions and instrumentalities, this Circular hereby enjoins all government agencies to implement accessible website design in accordance with the technical guidelines set forth under Section 2 of this Joint Circular.

Section 2. Accessible Design Guidelines

As recommended by the Web Design Accessibility Recommendation (WDAR) checkpoints

of the Philippine Web Accessibility Group (PWAG), the following guidelines are hereby promulgated:

Maturity Stage 1 (MS 1) Checkpoints

MS 1-1 Provide an Access Instruction page for visitors explaining the accessibility features of the web site. Put an e-mail hyperlink for visitors to communicate web page accessibility problems.

MS 1-2 Avoid using words such as “This” or “Click Here” in creating links. Use descriptive hyperlinks to support text browsers.

MS 1-3 Attach ALT(alternative) text to graphic images so that assistive computer technology such as screen readers can reach the content.

MS 1-4 Provide a “D” hyperlink to a page providing descriptive text of photographs that contribute meaningful content to the page.

MS 1-5 Provide text transcriptions or descriptions for all audio and video clips.

MS 1-6 Provide alternative mechanisms for online forms such as e-mail or voice/TTY phone numbers since forms are not supported by all browsers.

MS 1-7 Avoid access barriers like: PDF files with no equivalent HTML or ASCII files, non-linear page formats, frame formats and content that requires user to download software to access it.

Maturity Stage 2 (MS 2) Checkpoints

MS 2-1 For ALT texts:

MS 2-1-1 Decorative images must contain null ALT text or ALT="".

MS 2-1-2 Anchor elements within the Image Maps must contain ALT texts.

MS 2-1-3 ALT texts that have more than 80 characters long must instead be changed to “D”

hyperlink.

MS 2-2 Provide a Site Map with a link appearing on every page.

MS 2-3 All pages must provide a link back to the home page.

MS 2-4 Use Access keys in creating shortcuts to important links and form controls.

MS 2-5 Provide a "Skip to Content" link in every page.

MS 2-6 Make the language that you use in your web site easy to understand.

MS 2-7 Do not use blinking, rolling or scrolling markup tags on your web pages.

MS 2-8 Provide a LABEL text and ALT text on the input elements of your forms.

MS 2-9 Avoid using the FONT SIZE markup in your web pages or change the size to relative units.

MS 2-10 Provide a Search form within your site.

MS 2-11 Layout must be navigable even if the page style is turned off.

MS 2-12 Website content must appear clearly even when colors are turned off.

Section 3. Training.

The National Council for Disability Affairs shall conduct training for all duly designated webmasters on scheduled dates as seen in the Attachment.

Section 4. Funding.

Expenses in compliance to this order shall be taken from the one (1) percent allocation for persons with disabilities and the senior citizens as provided by the General Appropriations Act (GAA).

Section 5. Supplementary Rules.

NCDA and NCC shall, jointly or separately issue other rules and regulations as maybe necessary to effect the objectives of this Joint Circular.

Section 6. Effectivity. This Joint Memorandum Circular shall take effect immediately after its publication to a newspaper of general circulation in the Philippines.

ORIGINAL SIGNED
ROSIE LOVELY T. ROMULO
Undersecretary
National Council on Disability Affairs

ORIGINAL SIGNED
ANGELO TIMOTEO M. DIAZ DE RIVERA
Director General
National Computer Center