ALL IN GREGORIO: A WEB-BASED BARANGAY E-SERVICES AND INFORMATION MANAGEMENT SYSTEM

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A capstone project proposal presented to the faculty of the Department of Information Technology, Cavite State University - Trece Martires City Campus, Trece Martires City, Cavite in partial fulfillment of the requirements for graduation with the degree Bachelor of Science in Information Technology with Contribution No: _____ Prepared under the supervision of Dr. Khenilyn P. Lewis.

INTRODUCTION

The efficient use and handling of information is very crucial when it comes to administrative works and processes of sociopolitical units such as barangay. This study goes into the development and implementation of an innovative solution entitled “All in Gregorio: A Web-based Barangay E-services and Information Management System”, which aims to modernize the traditional processes of documents and also facilitate residents' information.

The concept of the proposed title “All in Gregorio: A Web-based Barangay E-Services and Information Management System” are based on the difficulties and issues encountered in the traditional information management system and document processes such as mishandling of documents, time-consuming procedures, and to provide a secure protection of residents’ information that are most confidential.

Project Context

Information management is crucial for facilitating effective governance and strengthening local communities. In the Philippines, Barangay is the smallest local government unit. They are gradually grasping the importance of effectively handling information to support decision-making, improve delivering services, and promote community growth. However, in managing information, it should have an efficient way to handle it. It should be convenient to everyone to handle any situation with properness, integrity, security, and confidentiality regarding information management to provide quality service to the barangay community.

In Barangay Gregorio, they manage an enormous amount of information to their system. However, they manually process it in their daily operation. It somehow gives more challenges to the limited Barangay staff to organize and prevent them from data loss. Barangay Gregorio offers several different services but all of them are manually produced. Residents at any age are required to go to the office for requesting forms, and other documents before it can be processed. The office only has a schedule for this certain matter. In this concern, the researchers conducted the study to assist Barangay Gregorio to innovate in more efficient and effective method of services through the use of a Web-based Barangay e-Services and Information Management System to automate the process of collecting, retaining, and securing information for better quality services and harmonious community.

Objectives of the Study

The study aims to develop the All in Gregorio: A Web-based Barangay E-Services and Information Management System.

Specifically, it aims to:

1. design the system capable of:
    a. logging in as an administrator, sub-administrator, or resident;
    b. handling the record of barangay residents' information;
    c. generating barangay ID, barangay clearance, residency, indigency

and other documents;

d. responding to residents' complaints;

e. registering barangay officials and staff;

f. posting program announcements;

g. importing barangay census data; and

h. publishing full disclosure reports

2. develop the system using:

a. HTML as markup language;

b. CSS as style sheet language;

c. Bootstrap as CSS framework;

d. JavaScript as programming language;

e. PHP as programming language;

f. Laravel as PHP framework;

g. MySQL as database;

h. XAMPP as localhost web server;

i. Figma as prototyping tool;

j. Visual Studio Code as code editor; and

k. Desktop/Laptop

3. test the system using:

a. unit testing;

b. integration testing; and

c. system testing

4. evaluate the system using ISO 25010 standards; and

5. prepare an implementation plan

Purpose and Description

The development of the All in Gregorio: A Web-based Barangay E-Services and Information Management System is advantageous for the barangay officials given

that all resident data can now be managed and handled automatically. All of their personal information can be saved in a database, which will reduce the manual effort. Information can be monitored, edited, updated, deleted, and posted in the system, which keeps it well-organized and enables them to work on one platform at once.

The residents of Barangay Gregorio also benefit from the system since they can request the documents online without having to personally meet the officials/staff just to request what they need. Therefore, they can easily accomplish these tasks as long as they have an internet connection wherever they are. Through the system, they can also view important announcements, access full disclosure reports and other necessary information about the barangay.

Future researchers can also profit from the proposed system for they can use it as a guide to enhance their study and as inspiration to create other systems of this kind. This can guide them in developing their own system and give them the knowledge that can help them along the process.

The potential future barangay residents can also benefit from the web-based system since they can learn about the barangay with it. They can view the information regarding the place so once they start living there, they are already aware of some regulations and systems inside the Barangay Gregorio.

Time and Place of the Study

The researchers conducted this study from April 2023 to January 2025. The data gathering was conducted at Barangay Gregorio, Trece Martires City, Cavite.

Scope and Limitation of the Study

The All in Gregorio: A Web-based Barangay E-Services and Information Management System was developed using HTML, CSS, Bootstrap, JavaScript, PHP, Laravel, MySQL, Xampp, Figma, and Visual Studio Code. The system consists of three types of account: resident account for the residents, administrator account for the barangay administrator or official, and sub-administrator account for the other staff of barangay. All of these accounts can access the home page that includes the about us,

barangay officials and staffs, full disclosure reports, e-services, announcements, contact us, and frequently asked questions.

The resident account can register an account which includes providing their personal details, valid IDs for verification, email address, a self-portrait, address information, type of ownership, and the date they started living in the barangay. After registering, the user account is set to pending approval from the admin, and once it's approved, a confirmation email is sent to the resident's provided email address. The residents must use the email address and password sent by the admin to log in to their account. After logging in, they can access the dashboard, which shows the total number of requests, pending and approved requests, the latest request transactions, and the latest filed complaints. Residents can also access their profile information and allows them to view and update the personal details they entered during registration. Residents with user account can request documents such as barangay ID, clearance, indigency, residency, and others by filling out a request form. This form requires them to state the purpose of the request and upload their homeowners association certificate. Residents can also monitor the status of their requests, which could be pending, under review, approved, or rejected. In the complaints module, residents can file complaints by filling out a complaint form, including the type of complaint, its occurrence date and time, a description, and the option to attach images or videos as evidence. They can also track the status of their complaints, whether they are pending, under review, resolved, or rejected. In the settings under account information, residents have the option to update their email and password if necessary. Additionally, the resident user accounts include a help page that provides guidance for navigating the web-based system in case they encounter any difficulties.

The administrator account has a dashboard that contains the total number of registered residents in the system, total requests, and total complaints, which can be viewed by date. The admin can approve or reject pending residents' registrations, and a confirmation email will be sent to the residents' email addresses indicating whether

their registration has been approved or rejected. The admin can also suspend the accounts of active residents if needed in certain situations. The admin account can approve or reject residents' requested documents after reviewing the details. When approving or rejecting, they can also send a response regarding the requests and update the processing fee or cost per document. Once approved, requested documents can be generated and printed. The admin can also resolve or reject residents' complaints, post and delete announcements, publish and delete full disclosure reports, import and delete barangay census forms, register and delete barangay officials and staff, edit their profile information, and register an admin or sub-admin account if needed. In the account information settings, the admin has the option to update their email and password if necessary.

The sub-administrator account also includes a dashboard to view registered residents, total requests, and total complaints and view them by date, approve or reject requested documents, generate documents, resolve or reject complaints, post, update or delete announcements, and import barangay census forms. While it shares many capabilities with the admin account, the sub-admin cannot approve or reject residents' registrations, suspend or delete residents' accounts, or register barangay officials and staff. Instead, the sub-admin's access is limited to viewing the list of registered residents and barangay officials and staff.

Since the system is web-based, the Barangay E-Services and Information Management System requires an internet connection or data, so it cannot be accessed offline. The mode of payment is limited to cash only, which allows the residents to go to the barangay and pay in-person and claim the document themselves. In order to access and utilize the e-services feature, the residents must have an account first through registration before proceeding to the login page.

Conceptual Framework

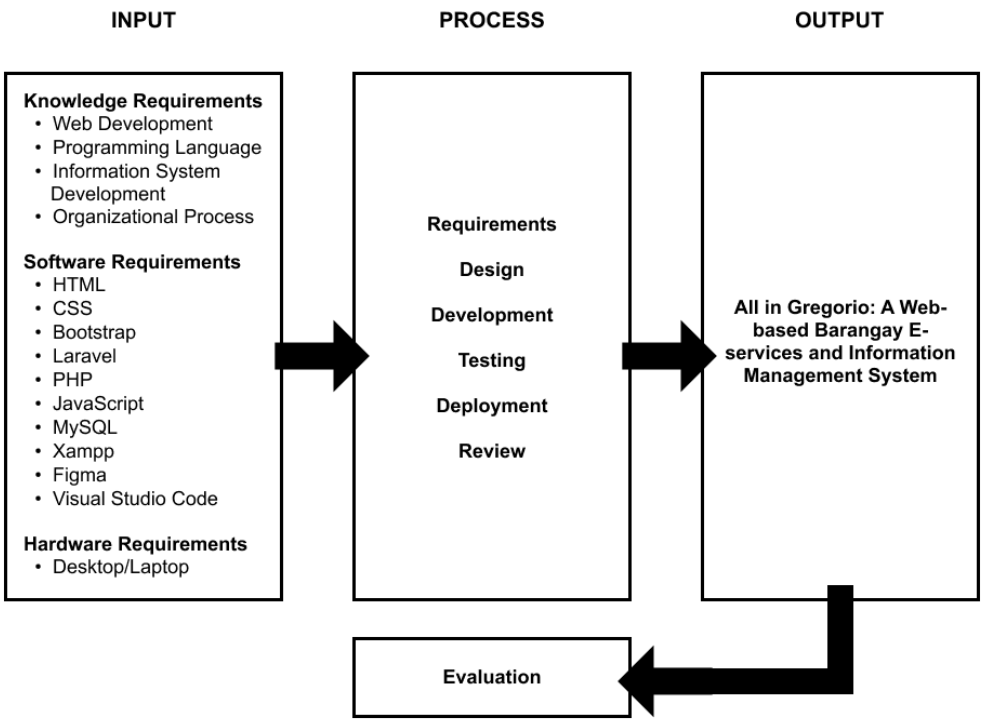

Figure 1. IPO Diagram of All in Gregorio: A Web-based Barangay E-Services and Information Management System

Figure 1 depicts the conceptual framework of the study, which includes the IPO diagram. The diagram consists of input, process, and output. The input section displays the knowledge requirements, software requirements, and hardware requirements of All in Gregorio. In the input section, web development, programming language, information system development, and organizational process are among the knowledge requirements. The software requirements are as follows: HTML as Markup language; CSS as style sheet language; Bootstrap as framework; Laravel as PHP framework; PHP and JavaScript as programming language; MySQL as database, Xampp as localhost web server; Figma as prototyping software; and Visual Studio Code as text editor. Hardware requirements consist of computers or laptops. The Process section covers requirements, design, development, testing, deployment, and review. For the output section, it is the system “All in Gregorio: A Web-based Barangay

E-Services and Information Management System". The conducted study was evaluated using ISO 25010 standard.

Definition of Terms

To make the study understandable, the following terms are defined.

Barangay is the smallest political unit in the country. It is usually made up of 50 and above family counts and often led by the Punong Barangay.

Barangay Chairman is assigned to lead the barangay ordinances in the community.

Barangay Documents are important documents that contain the personal information of a person secured with the Barangay Chairman's Signature and the barangay official seal with the use of its own purpose.

Barangay Officials are the people who maintain the public order, uphold laws and ordinances, and assure the provision of essential services within a community.

Barangay Services refers to mandated planned development projects and programs and implemented government policies and activities in the community.

Barangay System Administrator is the person responsible for managing, maintaining, and overseeing the digital systems and tools used in a barangay. They ensure smooth operation, data security, and system functionality to support the barangay's administrative and community services.

Barangay System Sub-Administrator is a barangay staff member who helps the administrator manage and maintain the barangay's system.

CSS or Cascading Style Sheet Language is a rule-based language that allows you to control the looks of the HTML elements in the browser. It creates great-looking websites.

E-governance defines operations of the government that optimizes operation services and governance through the use of the internet and new media.

E-services or Electronic Services are defined as internet-based online transactions. The users can interact without any physical presence towards a product or a service.

Full disclosure report is a detailed document that transparently presents all relevant information, findings, or issues about a specific system, project, or process, ensuring clarity and accountability.

HTML also known as “Hypertext Markup Language” is a standard markup language to create web pages. It consists of elements that tell the browser how to display the content.

Information Management System is a system that collects, processes and manages all the information given by the user and facilitated by the admin-user.

ISO 25010 Standards is a set of standards that focuses on the quality of a product.

Manual Process refers to a process that involves physical human efforts and one that does not involve machine processes.

MySQL Database was created by Oracle. Its main purpose is to manage databases that handle such crucial information of a system.

Resident is a person who lives in a town or in a particular place or country.

REVIEW OF RELATED LITERATURE

This chapter discusses the related literature of All in Gregorio: A Web-based Barangay e-Services and Information Management System. This written material covers the related literature and studies that are devoid of facts and credible sources and to which the conducted study is related.

Barangay

Barangay is the smallest and basic local government unit that serves the communities in the Philippines. They are responsible for creating and implementing policies, projects, programs, and other activities that will benefit the community. Provinces, cities, and municipalities in the country are composed of barangays that have a population of at least two thousand residents and must be certified by the National Statistics Office. Barangays are the closest government unit that the people have access to, and their basic needs within their community are managed and handled here.

Barangay Officials

In every Barangay, there shall be a Punong Barangay or the Barangay Captain, seven Sangguniang Barangay members or Barangay Kagawad, Sangguniang Kabataan Chairman, Barangay Secretary, and a Barangay Treasurer. They are acknowledged as people in authority in their respective barangays and are mandated to preserve public order and ensure the protection of life, liberty, and property of their residents. The Punong Barangay or Barangay Captain is the highest elected official or the chief executive in a barangay. The Sangguniang Barangay Members or Barangay Kagawad, who were formerly known as councilors, participate in the governance and activities together with other officials in serving their respective barangays. The Sangguniang Kabataan Chairman or SK Chairperson leads the Sangguniang Kabataan in exercising their duties such as organizing programs, projects, and activities, for the youth in their barangay. The Barangay Secretary is responsible for

keeping custody of all the records related to their barangay and managing documents and forms when needed. The Barangay Treasurer keeps custody of the funds of their barangay and handles official receipts for taxes and other significant payments.

Barangay Services

Every Barangay has services that they offer to the residents. They issue documents or forms that are needed by the residents such as barangay clearance, barangay ID, business permit, certificate of residency, and many more. They handle all these documents, and the residents need to go to their respective barangays to access them. Barangay services have requirements before a resident can claim a document and it has a corresponding payment to avail it.

Most Common Primary Barangay Services Documents

Barangay Clearance. It is a document that contains a person's name, address, thumb mark, and signature. It also contains the date it was issued and for what specific purpose. It bears the signature of the Barangay Captain and is sealed with the Barangay's Official Seal.

Barangay Clearance can be used for many purposes such as business permit, working permit, building permit, opening a bank account, getting valid ID, driver's license, police clearance, and many more.

Barangay ID. It is an identification card that is officially recognized as a valid government-issued ID. It contains the proof of residency of a resident such as name, address, date of birth, blood type, nationality, gender, and age.

Certificate of Residency. It is a significant document confirming a person's residency in a barangay or neighborhood. The barangay captains and barangay council members sign this document to confirm its validity. It contains a person's full name, address, barangay of residence, date of birth, and other essential information.

Certificate of Indigency. It is a government-issued document given to people or families who are determined to be less fortunate financially. This document demonstrates the holder's indigence and inability to pay for basic needs like clothing,

housing, and healthcare. In the Philippines, the Department of Social Welfare and Development (DSWD) or the local government unit often issues it.

E-Services

Lindgren and Melin (2017) states that e-services or electronic services is an internet based and interactive self-service processes of users without requiring human interaction in the physical infrastructures. It is said that everything online has a feature of an e-service. However, the study states that the definition of the e-services can be confusing for the reason that it can be used for a wide variety of purposes such as in public services or in e-commerce.

Public E-services. Public e-services are internet-based services that are used by the government to interact with its own citizens and proceedings. With the help of e-services, the government will aim to achieve its objectives towards interactions with the citizens, to make efficient and effective organizations, and to establish good governance and transparency in a society (Lindgren, 2013).

Information Management System

An information management system (IMS) is a computer system that helps an organization gather, maintain, retrieve, and modify information. It is intended to operate with a particular sort of data, such as medical records or product data. They are used to assist any organizations in the industry, such as in healthcare or financial services (Malak, 2023).

According to Indeed Editorial Team (2023), an information management system (IMS) is any software architecture that supports the gathering, storage, organization, and exchanging of information. Information management refers to a set of organizational operations concerned with gathering, storing, and disseminating information to stakeholders. In this regard, information refers to any detail that enables an organization to make an assessment.

Types of Information Management System

The following types of information management system were stated in the topic of Types of Information Management System by Admin (2022):

Process Control

A process control system is used to govern and control physical and industrial operations. It is intended to continually monitor and modify processes such as petroleum processing, metal fabrication or automobile assembly to maintain ideal conditions and efficient performance.

Management Reporting System

This type of information management system is designed in creating reports in finances and management levels operations. Middle-level managers typically utilize a management reporting system to generate regular reports by comparing former and current financial performance to determine financial progress.

Inventory Control System

Inventory control system is a computer system that tracks inventory activities and processes comprising theft, spoilage, and inventory in hand, that assist the management to identify what products are out of stock or should be re-stock or outsell, either at local retail shops or in the company warehouse.

Human resources

Management can govern the flow of information throughout the organization with the use of office automation and corporate collaborative information systems. In office automation information systems, it allows any electronic communication device to be used by management in the organization for communication with other stakeholders. Human resources include different communication methods, such as landline phones, cell phones, intranet or internet, voicemail, multimedia, file sharing, and conferencing.

Accounting and Finance System

This system maintains to monitor an organization's assets and investments and compiles every financial record required by law for payroll, local taxes, federal, state, and pension funds. The accounting and finance systems generate financial audit reports as well as annual reports. It also eases the daily tracking of usual transactions regarding revenue from sales, profits, and bank transfers. It is also possible to create monthly reports, such as the balance sheet and profit and loss statement. Furthermore, it assists managers in tracking current financial accomplishments as opposed to previous performances and objectives for the organization's development.

Barangay Management System

The study entitled "Barangay Management System" is a web-based system designed to enable Barangay officials as well as residents to effectively control and manage their regular operations and transactions. The system aims to automate the current manual process and transactions in Barangay Aguada in Isabela.

The Barangay Management System consists of several functional features. The system allows residents to register and update their profile through the system. The barangay staff manage the list of registration requests and approve legitimate registrations. It also allows complainants to file complaints by submitting forms, upload photos and videos and receive status updates via SMS. It can also manage the new complaints, pending complaints, resolved complaints, and discarded complaints. It also supports viewing a list of requests such as new requests, pending requests and processed requests which the barangay secretary can receive and process the requested documents by residents, verify its authenticity, forward the requests to their barangay chairman for approval before it can finally be printed. The system enables users to add new users, active or deactivate users, and view unused accounts (Carpio, 2020).

Web-bon: The Design and Development of a Web-based Barangay Information and Record Management System

Olipas, *et al*. (2019), proposed the Web-bon: The Design and Development of a Web-based Barangay Information and Record Management System. The proponents aimed to design the system to resolve issues, give solutions regarding record management, and improve the quality of service in Barangay Bongabon in Nueva Ecija. The system provided features such as record keeping, retrieving, viewing, searching, and accessing files and records, and generating real-time reports. The system also included a database regarding Barangay Bongabon residents' information. It can also provide a text message service (SMS) to be able to send important announcements and events or programs in the Barangay.

INCOURT: A Web-Based Court Reservation and Scheduling Application for Barangay Kalaklan, Olongapo City using Progressive Web Framework.

According to Ignacio (2023), the Web-Based Court Reservation and Scheduling Application called "INCOURT" aims to lessen the personal transaction of people during the reservation of the court. Additionally, it automates scheduling and reservations, eliminating the need for manual labor and eliminate human errors. Automation makes reservations and scheduling more accurate through a web-based system and prevents date duplication. The web-based system, which organizes all the essential information, and allows actions of monitoring, updating, viewing, and deleting information.

Development of an Information-Based Dashboard: Barangay Resident Information System and Services (BRISS) for Decision Support towards e-Governance

The Study entitled "Development of an Information-Based Dashboard: Barangay Resident Information System and Services (BRISS) for Decision Support towards e-Governance" was developed to address the community's societal issues. Its main purpose is to aid the barangay's budget allocations and decision making using

the developed Barangay Information Profiling System (BIPS) and to provide good governance through E-Government.

After the collection of profile data, statistical information is provided to the labor and employment, family income and expenditures, demography by population and age, water sanitation, type of housing and education. The system has a profiling module that allows each household to provide basic information such as the photo of the household, family name, contact number, address and other necessary information based on the required statistical information. The system also has a Geo-Information Module to identify the geographical location of the members of the community and map each barangay governed. Additionally, the system also has a Barangay Dashboard which displays the collected resident data counts. It can be used to align the budget of the government funds and to attract other agencies and organizations to support the community (Lacasandile and Labanan, 2020).

oneBarangay: An e-Government System for Online Transaction Processing of Barangay Malanday Main Office through Web and Mobile Application with Implementation OCR Technologies

The project entitled “oneBarangay: An e-Government System for Online Transaction Processing of Barangay Malanday Main Office through Web and Mobile Application with Implementation OCR Technologies” was developed to automate and digitize the transactional processes of barangays. Its objective is to aid the standard procedures and secure document transactions to their Barangay Main Office. The system also helps the barangay to dispatch and automate the processing of documents concerning fundamental necessities.

The system displays announcements on the dashboard for barangay officials and residencies. It also allows users to make appointment schedules for reservations, rescheduling, document cancellations and on-site visits. It has email, push and app notifications for the announcements and appointments set by the barangay officials and residents. In addition to these, the system’s main feature is having an Optical

Character Recognition (OCR) that directly transfers the resident's given information into a paper data (Garon, *et al*., 2022).

Table 1. Related studies of All in Gregorio: A Web-based Barangay E-Services and Information Management System

FEATURES	DEVELOPMENT OF AN INFORMATION-BASED DASHBOARD: BARANGAY RESIDENT INFORMATION SYSTEM AND SERVICES (BRISS) FOR DECISION SUPPORT TOWARDS E-GOVERNANCE	ONEBARANGAY: AN E-GOVERNMENT SYSTEM FOR ONLINE TRANSACTION PROCESSING OF BARANGAY MALANDAY MAIN OFFICE THROUGH WEB AND MOBILE APPLICATION WITH IMPLEMENTATION OCR TECHNOLOGIES	BARANGAY MANAGEMENT SYSTEM	WEB-BON: THE DESIGN AND DEVELOPMENT OF A WEB-BASED BARANGAY INFORMATION AND RECORD MANAGEMENT SYSTEM	INCOURT: A WEB-BASED COURT RESERVATION AND SCHEDULING APPLICATION FOR BARANGAY KALAKLAN, OLONGAPO CITY USING PROGRESSIVE WEB FRAMEWORK.	ALL IN GREGORIO: A WEB-BASED BARANGAY E-SERVICES AND INFORMATION MANAGEMENT SYSTEM
Web-based	✓	✓	✓	✓	✓	✓
Log In and Sign Up Module			✓	✓	✓	✓
Admin Management Module			✓	✓	✓	✓
Household Profiling Module	✓		✓	✓		✓
Barangay Dashboard	✓		✓	✓	✓	✓
User Management Module		✓	✓	✓	✓	✓
Announcement Module		✓	✓	✓		✓
OCR Module		✓				
Generate PDF Documents			✓	✓		✓

Table 1 shows the related studies of All in Gregorio: A Web-based Barangay E-Services and Information Management System. The related studies consist of five (5) studies such as Development of an Information-Based Dashboard: Barangay Resident Information System and Services (BRISS) for Decision Support towards e-Governance, oneBarangay: An e-Government System for Online Transaction Processing of Barangay Malanday Main Office through Web and Mobile Application with Implementation OCR Technologies, Barangay Management System, Web-bon: The Design and Development of a Web-based Barangay Information and Record

Management System, and INCOURT: A Web-Based Court Reservation and Scheduling Application for Barangay Kalaklan, Olongapo City using Progressive Web Framework. Based on the table, all of the studies are web-based system. The Barangay Management System, Web-bon, and All in Gregorio have the most same features provided. In the login and sign up module and admin management module, only the four studies such as barangay management system, Web-bon, All in Gregorio, and INCOURT have that feature. Among all the five studies, only oneBarangay, and INCOURT have no household profiling module. Among all the studies, only oneBarangay has no barangay dashboard. In the user management Module, only the BRISS have no such features. In announcement module, the BRISS, and INCOURT does not have those features. Among all five studies, the oneBarangay only has the OCR module. In generating PDF documents, only the BRISS have the feature among the 5 studies.

HTML as markup language

According to Hayes (2022), HyperText Markup Language is a basic scripting language used to create the structure of web browsers and can be viewed on the world wide web or the Internet. It has a syntax that consists of elements and attributes that are used to display the headings, paragraphs, images, links, and other parts of the web. HTML is composed of word codes that are saved as an HTML file. The codes contain the elements, attributes, and tags of HTML which will create the structure of a web page. In order to view the created structure of the HTML file, it must be viewed through a browser. The browser will translate the codes and display them on a web browser that is perceivable by the end user.

CSS as style sheet language

According to Boston University (2020), CSS or Cascading Style Sheet is created by Håkon Wium Lie to enable web designers to alter the design, colors, and fonts of their websites. Websites were initially solely intended for use by scholars,

therefore aesthetics were unimportant. But as websites proliferated, so did the demand for attractive design.

In 1998, After CSS 2 was published, CSS 3 development started. CSS 3 was significantly different from previous versions since it was issued as a collection of separate documents known as modules rather than as a single, comprehensive standard. Each module addressed a single area of the overall specification that was very small and either added new functionality or improved and extended existing features. Each and every improvement and addition to the specification was created with prior CSS versions in mind.

PHP as a programming language

According to Kolade (2021), PHP is used for web development which is a scripting and general-purpose language for the server side. It is also considered an open-source language which means that it is available and free for everyone to use. PHP is usually used to create and manage interactive websites, graphical user interfaces, databases, and many more. In terms of databases, PHP is integrated with MySQL, Oracle, Microsoft SQL Server, and other popular databases which gives developers more options to choose what they prefer to develop. It is also available to many operating systems such as Windows, Mac OS, and Linux. PHP also supports many web servers which makes it flexible and usable on different platforms.

Laravel as PHP Framework

Laravel is a free, open-source PHP framework that helps developers build web applications more easily and quickly. It offers tools for common tasks like routing, authentication, and managing databases, making it easier to create secure and maintainable websites. Laravel uses the Model-View-Controller (MVC) pattern, which helps keep code organized and easy to manage (Taylor, 2023).

Javascript as a Programming Language

Javascript is a programming language developed by Netscape Communications Corporation. To make the most of Java's success, its first name

LiveScript was replaced with Javascript. As a result of providing dynamic and interactive elements on websites, JavaScript quickly established itself as an essential language for web development. JavaScript has gained recognition and widened its uses within web development throughout time, finding use in server-side development, mobile app development, and other areas. One of the most popular programming languages in use today is JavaScript thanks to its ongoing development and wide adoption (Mozilla, 2023).

XAMPP as a local host server

It is a free, open-source, cross-platform web server that enables programmers and even regular users to design, test, and debug programs on a local host. Developers can use this to host websites or other programs on their own computers even without a network connection. Prior to a website being live online, it serves as a testing platform to identify bugs and evaluate the functionality and other features. Many operating systems including Windows, Linux, and macOS, use XAMPP and it also includes MariaDB Database and Apache HTTP Server, as well as an interpreter for programming languages like PHP (Codetej, 2021).

Figma as a prototyping application

Figma was developed in 2016 by Figma Inc. The tool was developed to solve the difficulties of traditional design tools and to enable teamwork. Figma has emerged as a go-to tool for designers and design teams due to its web-based architecture and real-time collaboration features, which help them collaborate on design projects more effectively (Figma, 2016).

Bootstrap as framework

According to Jordana (2023), Bootstrap is an open-source and free-use CSS framework that is intended to provide responsiveness and a mobile-first front-end website that contains a library of syntax template designs. HTML, CSS, and JavaScript were already included in the framework, which promotes an easier and faster way of web development for web developers.

Bootstrap was originally developed by a web developer and a designer, Mark Otto and Jacob Thornton of Twitter in mid-2010. It was purposely developed as an internal solution for Twitter's underlying issues regarding inconsistencies in web engineering. It is also known as “Twitter Blueprint”. Bootstrap was released as an open source framework in 2011 on Github (Otto & Thornton, n.d.).

MySQL as database

According to Richard (2023), MySQL is an open-source Relational Database Management System (RDMS) that includes a client-server paradigm. A relational database management system (RDBMS) is software designed to generate and manage databases based on the model of relational databases. MySQL generates a database for storing and modifying data, establishing the linkages of each table. Clients can submit requests to MySQL by inputting specified SQL statements. The server program will respond with the required information, which will be visible to the clients.

Desktop

Desktop refers to a computer display consisting of different kinds of related devices or objects such as telephone, documents, project folders, reference sources, etc. It is contrasted in the desktop container which is a personal computer device that is mostly seen in a table or desk (Kirvan & Posey, 2023).

Flash Drive

Flash Drive or thumb drive was created by IBM, Trek Technology and Netac Technology in the year 2000. With the use of Flash Memory Technology, flash drives enable quick, trustworthy, and rewritable data storage in a small package. It became a popular option for transferring and transmitting data between computers and devices because of its practicality and adaptability.

Over that time, flash drives have developed, offering larger storage capacity and faster transfer rates, turning into an essential tool for data storage and transfer across a variety of industries (Computer History Museum, 2023).

Synthesis

The related literature and cited works that were discussed are essential to the study and contain details that further explain and introduce the study of the researchers. It assists in the readers' comprehension of the subject matter and provides them with sufficient information about the proposed system. In addition, the barangay was given an introduction explaining what it is as well as its subtopics, which include the officials and staff of the barangay, its services, and the most common barangay documents. The definition of e-services and public e-services were also further discussed. The information management system and its types were introduced and enumerated one by one with a corresponding discussion for each of them. In terms of the system’s technical background, the programming languages, software requirements, and the hardware requirements were also explained appropriately.

Information management systems have been applied in the five relevant studies that the researchers have gathered, according to the comparison table of related studies, and these can be utilized as a point of reference for developing the proposed system. All of the studies are web-based which is similar to the researchers’ study, and they all aim to replace manual labor with automation. Through the use of information management systems, storing, organizing, monitoring, creating, and updating information can be accomplished in a single platform with the help of a database. The majority of the related studies and the proposed study of the researchers incorporate the main features of an information management system, and this can help them have better control and access to all important information.

METHODOLOGY

This chapter outlines the research methodology of the study. This comprises the materials, project design and development, and data collection and analysis methodologies.

Design of Software, Systems, Product, and/or Processes

Requirements Analysis

The requirement analysis of All in Gregorio: A Web-based Barangay E-Services and Information Management System discuss the current process flow of Barangay Gregorio, Trece Martires City, Cavite.

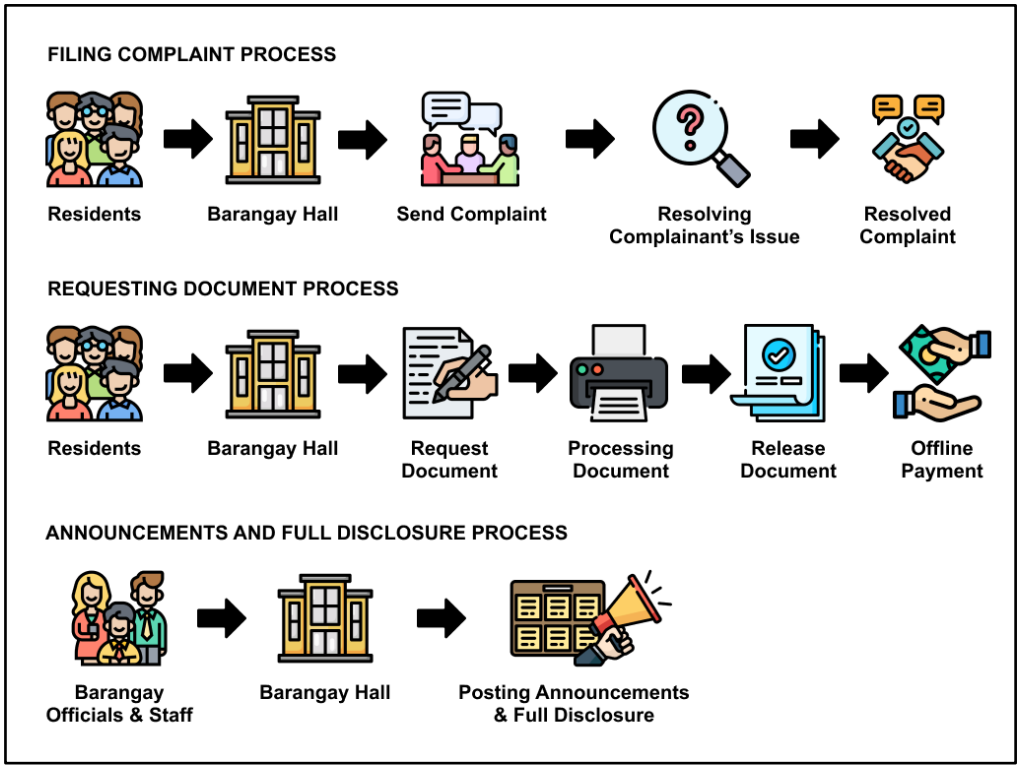

Figure 2. Current process flow of Barangay Gregorio, Trece Martires City, Cavite

The current process flow of Barangay Gregorio, Trece Martires City, consists of three main activities. First is the filing complaint process, where residents visit the barangay hall to submit their complaints. These issues are then reviewed and resolved by barangay officials to make sure that effective solutions are provided. The second activity is the requesting document process, where residents request necessary

documents at the barangay hall. These requests undergo processing, and then the documents are released to the residents, with payments completed offline. Lastly, the announcements and full disclosure process involves barangay officials preparing and posting announcements and disclosures at the barangay hall to keep the community informed and engaged.

Requirements Documentation

The All in Gregorio: A Web-based Barangay E-Services and Information Management System has the following modules:

Services Module

This module contains all the services offered within the Barangay Gregorio such as barangay ID, barangay clearance, certificate of residency, indigency certificate and other documents. Using the user account, the resident can access the services and fill out the necessary information to request the document and other services that they need.

Request Module

Under this module, the administrator and sub-administrator can view, approve, or reject all the requested documents by the residents. The requested documents contain the name of the resident, type of document, purpose, date requested, and the status of the requested document whether it is pending, under review, rejected, and approved. Residents can also use this module to request documents and view them based on their status or view all at once.

Residents Module

In this module, there is a table that contains all the essential information of the residents in Barangay Gregorio such as their profile picture, full name, home address, civil status, gender, date of birth, any valid identification cards, voter status, type of ownership, and date they started living in barangay. Both the admin and sub-admin can view all the list of registered residents, but only the admin can suspend or delete an account.

Barangay Officials and Staff Module

This module enables the admin to register, view, edit, and delete barangay officials and staff, while the sub-admin is limited to viewing the list only. The residents can view all the barangay officials and staff through the home page which contains the profile picture, name, and position of each barangay officials and staff.

Announcements Module

This module allows the admin and sub-admin to post and delete announcements. Each announcement includes details such as the title, type, background image, and content. Once posted, the announcements are displayed on the system's home page, ensuring they are easily accessible for residents to view and stay informed.

Complaints Module

In this module, the residents can send complaints that will be viewed by the admin and the sub-admin. The admin and sub-admin account can review the complaint from the residents containing the type of complaint, description, date occurred, and evidence. They can send a response to address the issue. They can also update the status of the complaints which are categorized by under review, resolved and rejected.

Census Module

In this module, there are downloadable form templates that can be used in bulk importing residents' information in the system which have three types such as the census form itself, house occupant form, and vehicle form. This module also allows the admin to view and delete the residents' record of information.

Full Disclosure Module

In this module, the admin can publish full disclosure reports such as barangay financial reports, budget, summary of income and expenditures, annual procurement plan and other types of reports for transparency. Residents can access these reports through the home page and have the option to download the uploaded files.

Account Management Module

In this module, there are three different types of account modules. The resident account, admin account, and sub-admin account. These accounts are assigned depending on the user's role and access permissions. Admin account is for the barangay administrator or official, sub-admin account is for the staff, and the resident account is for the residents.

Use Case Diagram

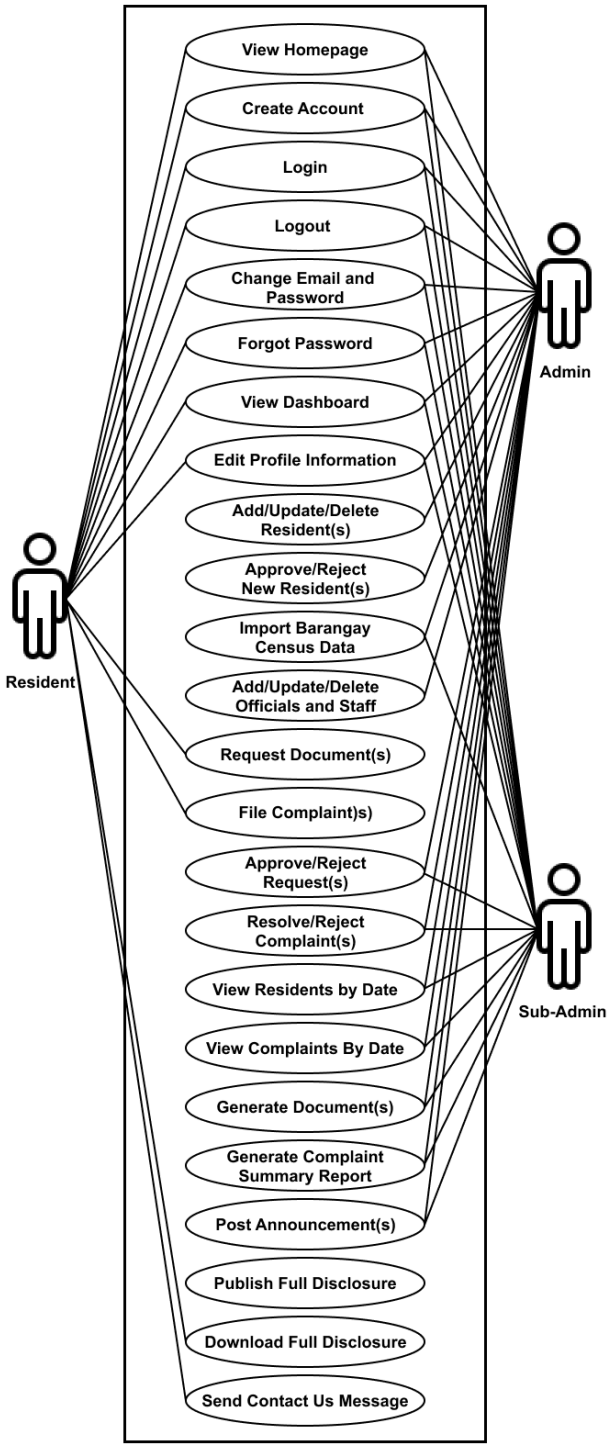

Figure 3. Use case diagram for All in Gregorio: A Web-based Barangay E-Services and Information Management System

Figure 3 shows the use case diagram for All in Gregorio: A Web-based Barangay E-Services and Information Management System that illustrates the

interactions between three user roles which are the Admin, Sub-Admin, and Resident along with the system functionalities. Residents can perform basic actions like viewing the homepage, creating accounts, logging in, and requesting documents or filing complaints. Admins oversee critical operations such as managing residents, approving or rejecting requests, generating documents, resolving or rejecting complaints, importing census data, posting announcements and publishing full disclosures reports. Sub-admins can assist the administrator in approving or rejecting requests, generating documents, resolving complaints, posting announcements, and importing census data. This diagram highlights the collaboration between users and the system for efficient and transparent management.

System Development

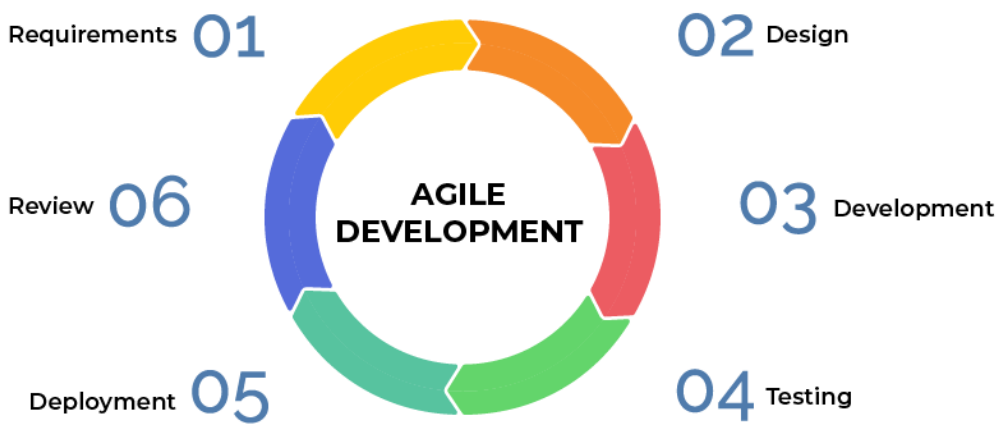

Figure 4. Agile Methodology

Requirements. This is the phase where the researchers gather the needs and expectations of the users. The goal is to understand what the end-users want and what problems the software will solve.

Design. In this phase, the researchers create a blueprint of the software's structure. They decide on the architecture, user interface, and overall system design to make sure it meets the requirements.

Development. During development, the actual coding happens. Researchers write the software's functionality, integrating features and ensuring the system's objectives according to the design.

Testing. After development, the researchers will perform the unit, integration, and system testing to test the functionality of the developed system. Detecting errors and bugs will also be done and resolving those issues before the deployment.

Deployment . In this phase, the system will now be live and accessible to the users. Following this, includes providing live support to the end users in case of having issues to be solved as soon as possible.

Review. After deployment, the researchers will conduct a survey and/or interview to collect end-users' feedback. The researchers will evaluate the collected feedback before proceeding with iteration and testing to ensure that the system's quality, functionality, and performance meet and maintain the standards.

System Testing

The researchers used the three levels of software testing for their study "All in Gregorio: A Web-based Barangay E-Services and Information Management System" which are Unit testing, Integration Testing, and System Testing.

Unit testing. The system program underwent evaluation focusing on individual software components. The goal was to verify the functionality of the developed system. Each module was tested by the researchers and IT professionals to ensure quality after completing the system development.

Integration testing. This phase identified interface errors between modules and functions, assessing the efficiency of units during integration. The combined modules were tested to confirm seamless functionality as a unified system.

System testing. The whole system was tested to make sure it met quality standards. This phase confirmed that everything worked properly and communicated well with other systems.

System Evaluation

The web-based system was evaluated using the ISO 25010 Standards that consists of eight characteristics, such as Functional Suitability, Performance Efficiency, Compatibility, Usability, Reliability, Security, Maintainability, and Portability.

Figure 5. ISO/IEC 25010 product quality model

Functional Suitability

This characteristic represents the degree to which a product or system provides functions that meet stated and implied needs when used under specified conditions. This characteristic is composed of the following sub-characteristics:

Functional completeness. It is the degree to which the set of functions covers all the specified tasks and user objectives.

Functional correctness. It is the degree to which a product or system provides the correct results with the needed degree of precision.

Functional appropriateness. It is the degree to which the functions facilitate the accomplishment of specified tasks and objectives.

Performance efficiency

This characteristic represents the performance relative to the amount of resources used under stated conditions. This characteristic is composed of the following sub-characteristics:

Time behaviour. It is the degree to which the response and processing times and throughput rates of a product or system, when performing its functions, meet requirements.

Resource utilization. It is the degree to which the amounts and types of resources used by a product or system, when performing its functions, meet requirements.

Capacity. It is the degree to which the maximum limits of a product or system parameter meet requirements.

Compatibility

The degree to which a product, system or component can exchange information with other products, systems or components, and/or perform its required functions while sharing the same hardware or software environment. This characteristic is composed of the following sub-characteristics:

Co-existence. It is the degree to which a product can perform its required functions efficiently while sharing a common environment and resources with other products, without detrimental impact on any other product.

Interoperability. It is the degree to which two or more systems, products or components can exchange information and use the information that has been exchanged.

Usability

The degree to which a product or system can be used by specified users to achieve specific goals with effectiveness, efficiency and satisfaction in a specified context of use. This characteristic is composed of the following sub-characteristics:

Appropriateness and recognizability. It is the degree to which users can recognize whether a product or system is appropriate for their needs.

Learnability. It is the degree to which a product or system can be used by specified users to achieve specific goals of learning to use the product or system with effectiveness, efficiency, freedom from risk and satisfaction in a specified context of use.

Operability. It is the degree to which a product or system has attributes that make it easy to operate and control.

User error protection. It is the degree to which a system protects users against making errors.

User interface aesthetics. It is the degree to which a user interface enables pleasing and satisfying interaction for the user.

Accessibility. It is the degree to which a product or system can be used by people with the widest range of characteristics and capabilities to achieve a specified goal in a specified context of use.

Reliability

The degree to which a system, product or component performs specific functions under specified conditions for a specified period of time. This characteristic is composed of the following sub-characteristics:

Maturity. It is the degree to which a system, product or component meets needs for reliability under normal operation.

Availability. It is the degree to which a system, product or component is operational and accessible when required for use.

Fault tolerance. It is the degree to which a system, product or component operates as intended despite the presence of hardware or software faults.

Recoverability. It is the degree to which, in the event of an interruption or a failure, a product or system can recover the data directly affected and re-establish the desired state of the system.

Security

The degree to which a product or system protects information and data so that persons or other products or systems have the degree of data access appropriate to their types and levels of authorization. This characteristic is composed of the following sub-characteristics:

Confidentiality. It is the degree to which a product or system ensures that data are accessible only to those authorized to have access.

Integrity. It is the degree to which a system, product or component prevents unauthorized access to, or modification of, computer programs or data.

Non-repudiation. It is the degree to which actions or events can be proven to have taken place so that the events or actions cannot be repudiated later.

Accountability. It is the degree to which the actions of an entity can be traced uniquely to the entity.

Authenticity. It is the degree to which the identity of a subject or resource can be proved to be the one claimed.

Maintainability

This characteristic represents the degree of effectiveness and efficiency with which a product or system can be modified to improve it, correct it or adapt it to changes in environment, and in requirements. This characteristic is composed of the following sub-characteristics:

Modularity. It is the degree to which a system or computer program is composed of discrete components such that a change to one component has minimal impact on other components.

Reusability. It is the degree to which an asset can be used in more than one system, or in building other assets.

Analysability. It is the degree of effectiveness and efficiency with which it is possible to assess the impact on a product or system of an intended change to one or more of its parts, or to diagnose a product for deficiencies or causes of failures, or to identify parts to be modified.

Modifiability. It is the degree to which a product or system can be effectively and efficiently modified without introducing defects or degrading existing product quality.

Testability. It is the degree of effectiveness and efficiency with which test criteria can be established for a system, product or component and tests can be performed to determine whether those criteria have been met.

Portability

The degree of effectiveness and efficiency with which a system, product or component can be transferred from one hardware, software or other operational or usage environment to another. This characteristic is composed of the following sub-characteristics:

Adaptability. It is the degree to which a product or system can effectively and efficiently be adapted for different or evolving hardware, software or other operational or usage environments.

Installability. It is the degree of effectiveness and efficiency with which a product or system can be successfully installed and/or uninstalled in a specified environment.

Replaceability. It is the degree to which a product can replace another specified software product for the same purpose in the same environment.

Data Analysis

Mean is used to analyze and interpret evaluation results gathered using Cavite State University Trece Martires City Campus software evaluation instrument. Table 2 is the basis for the interpretation of the computed mean.

Table 2. Descriptive interpretation of the mean for the performance evaluation of the All in Gregorio: A Web-based Barangay E-Services and Information Management System

NUMERICAL SCALE	VERBAL INTERPRETATION
4.51 - 5.00	Excellent
3.51 - 4.50	Very Good
2.51 - 3.50	Good
1.51 - 2.50	Fair
1.00 - 1.50	Poor

Table 2 shows the descriptive interpretation of the mean for the performance evaluation of All in Gregorio: A Web-based Barangay E-Services and Information

Management System. The numerical scale ranging from 1.00 to 1.50 corresponds to poor performance, 1.51 to 2.50 corresponds to fair performance, 2.51 to 3.50 corresponds to good performance, 3.51 to 4.50 corresponds to very good performance, and numerical scale ranging from 4.51 to 5.00 corresponds to excellent performance.

Implementation Plan

Table 3. Implementation plan of the project

STRATEGY	ACTIVITY	PERSON INVOLVED	DURATION
Approval from Barangay Gregorio Officials and Staff	Letters	Researchers, Barangay Officials and Staffs	1 day
System Deployment	Deploying the web-based system to web hosting and turnover of the system	Researchers, Barangay Officials and Staffs	1 day
Information Distribution	Manuals	Researchers, Barangay Officials and Staffs	2 days
Training	Demonstration and Tutorials	Researchers, Barangay Officials and Staffs and Residents	2 hours

Table 3 shows the strategy of the implementation plan of the All in Gregorio: A Web-based Barangay E-Services and Information Management System. First, the researchers will get approval from the Barangay Gregorio officials and staff, which will take one day. After approval, the system will be deployed and handed over to the Barangay Officials and Staff, also within one day. The researchers will then distribute system manuals to ensure everyone understands how to use the system, which will take two days. Finally, a 2-hour training session will be held to demonstrate the system and guide the officials, staff, and residents. The plan is designed to make the process smooth and easy for all involved.

RESULT AND DISCUSSION

This chapter illustrates and discusses the system design, system development, system testing, evaluation of the system and the implementation result.

System Design

The Barangay e-Services and Information Management system for Barangay Gregorio is designed to improve local governance through a digital platform. It aims to improve the efficiency and accessibility of services and operations provided by the barangay to its community. The system has an easy-to-use interface for admin(s), sub-admin(s), and resident(s), allowing each to manage their tasks with ease. Residents can easily request documents such as barangay clearance, ID, or certificates, file complaints, and view announcements and disclosures, through their available devices. For barangay officials and staff, it simplifies service management, allowing them to handle resident information, census, requests, resolving complaints, share real-time updates, and publish full disclosures for transparency. It is also developed with enhanced security and deployed with secure and reliable web hosting. This system strengthens the community to be more inclusive and well-connected.

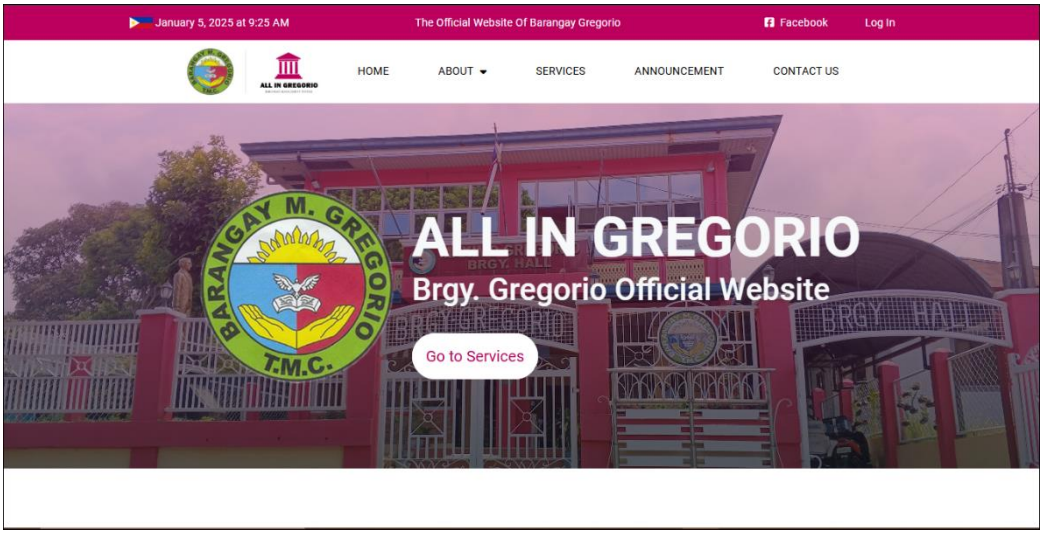

Figure 6. Header section of the homepage

Figure 6 displays the header section of the homepage, which features the navigation menu. It includes links to the Home, About, Services, Announcements, and Contact Us pages, along with the log in, where you can also access the signup page.

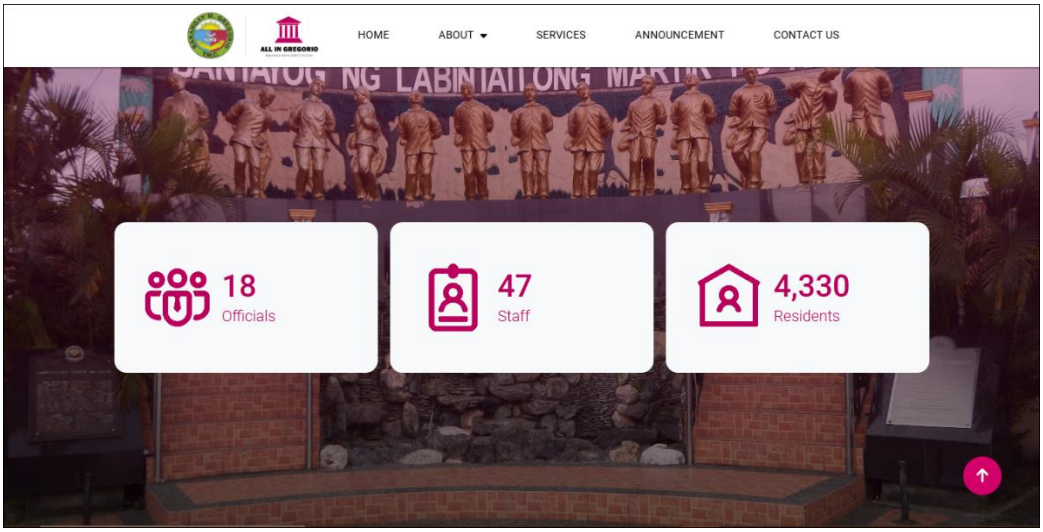

Figure 7. Statistics section of the homepage

Figure 7 shows the statistical data, including the total number of barangay officials (with SK officials included), the total number of staffs, and the current population of the barangay.

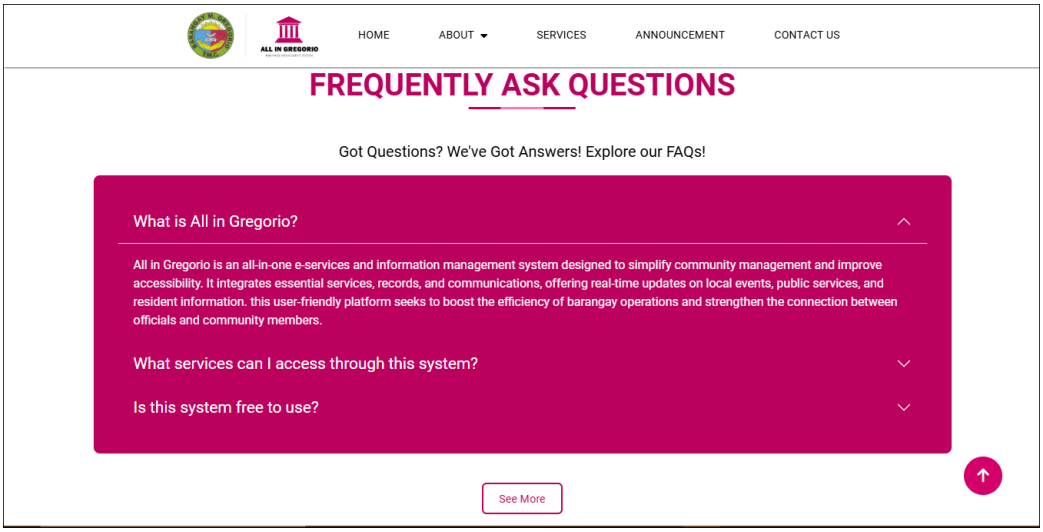

Figure 8. Frequently ask questions section of the homepage

Figure 8 displays the Frequently Asked Questions (FAQs) section on the homepage. It provides a list of common questions along with their answers. This section is designed to help users quickly find solutions to common questions or concerns about the system, services, and processes in the barangay.

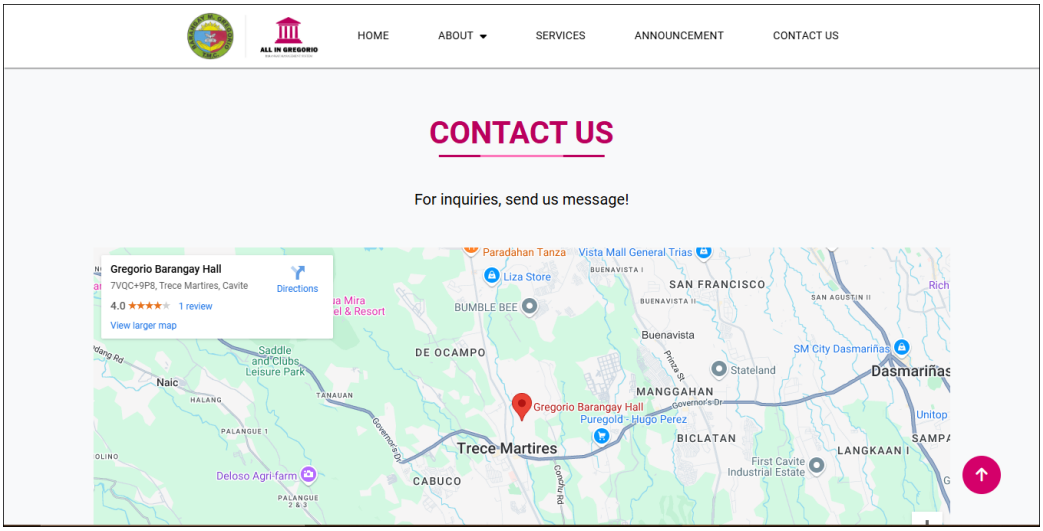

Figure 9. Contact us section of the homepage

Figure 9 displays the contact us section on the homepage which designed for users to reach out for help or inquiries. It provides all the necessary information such as maps, address, contact number, email address, working hours, and a simple form where users can fill out their name, email, contact number, subject, and message and send it to the barangay official or staff.

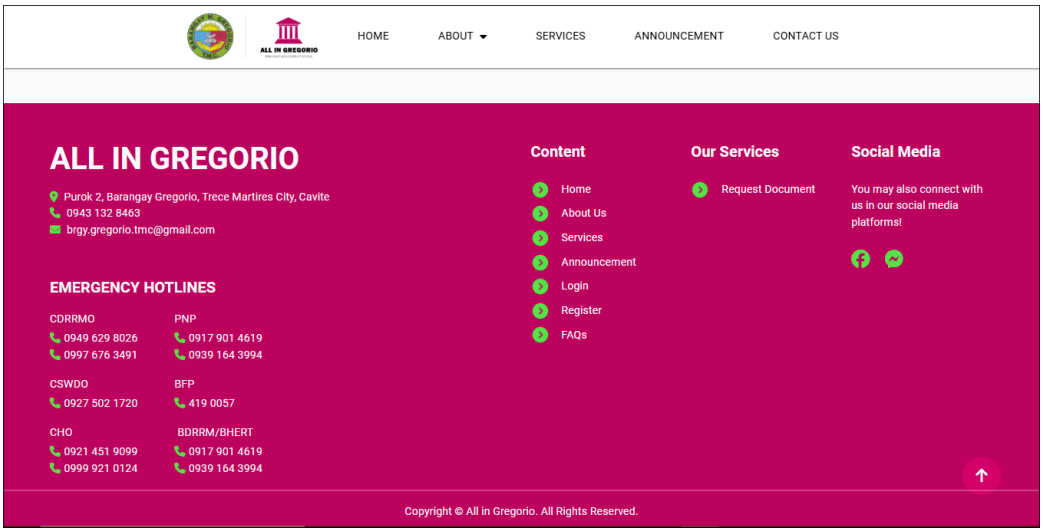

Figure 10. Footer of the homepage

Figure 10 shows the footer of the homepage, which includes important contact information like emergency hotlines, the barangay's address, contact number, and

email address. It also has links that allow users to easily navigate to other pages on the site.

Figure 11. About us page

Figure 11 shows the about us page, which provides important background information of the barangay about its history, and geodemographic data, allowing residents to understand more about the barangay history and community. This page also includes barangay officials and staff section which shows photos, names, and positions of the officials helping residents and visitors get to know the people who is in charge and currently serving the community.

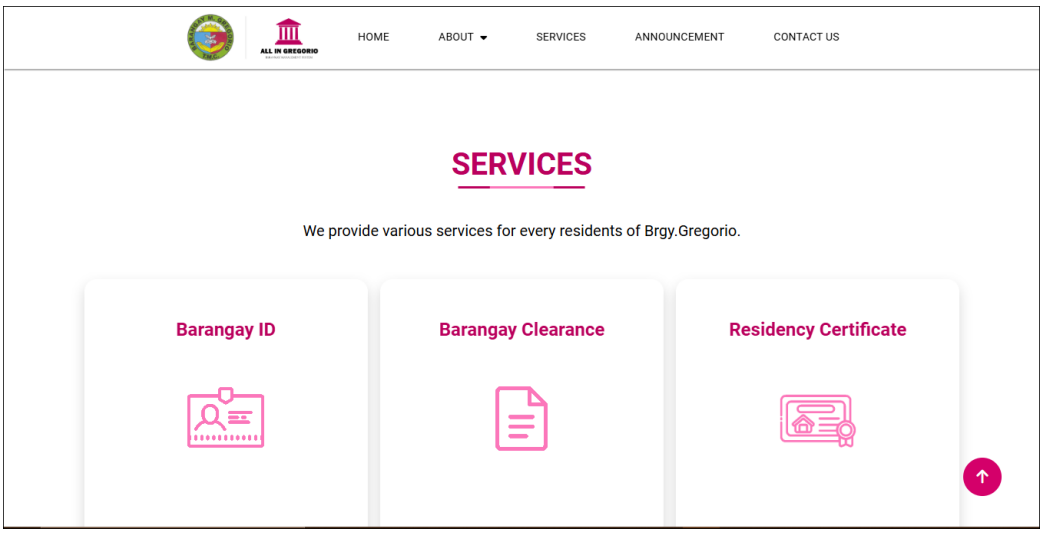

Figure 12. Services page

Figure 12 shows the service page where the list of available services is located. These services include barangay ID, barangay clearance, residency certificate, indigency certificate, and specialized documents.

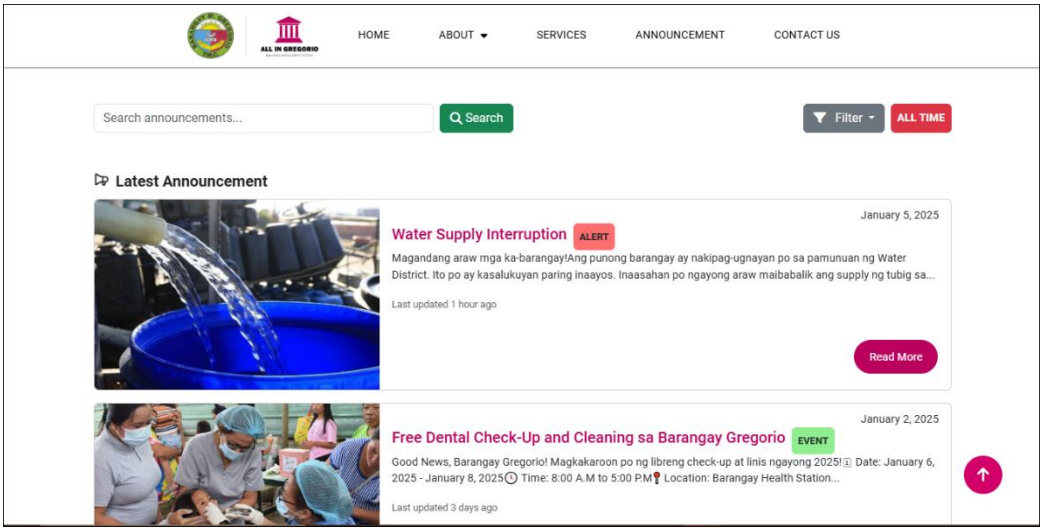

Figure 13. Announcement page

Figure 13 shows the announcement page located in the homepage. It displays the events and updates related to the barangay. Any announcement created by the admin or sub-admin will be posted on the announcement page. The latest news will be automatically shown in the announcement section on the homepage.

Figure 14. Barangay full disclosure page

Figure 14 shows the full disclosure of the barangay. This page contains the various reports that the barangay posting in their bulletin board. It includes barangay financial report, barangay budget, summary of income and expenditures, 20%

component of the IRA utilization, annual procurement plan, list of notices of award, and itemized monthly collection & disbursement.

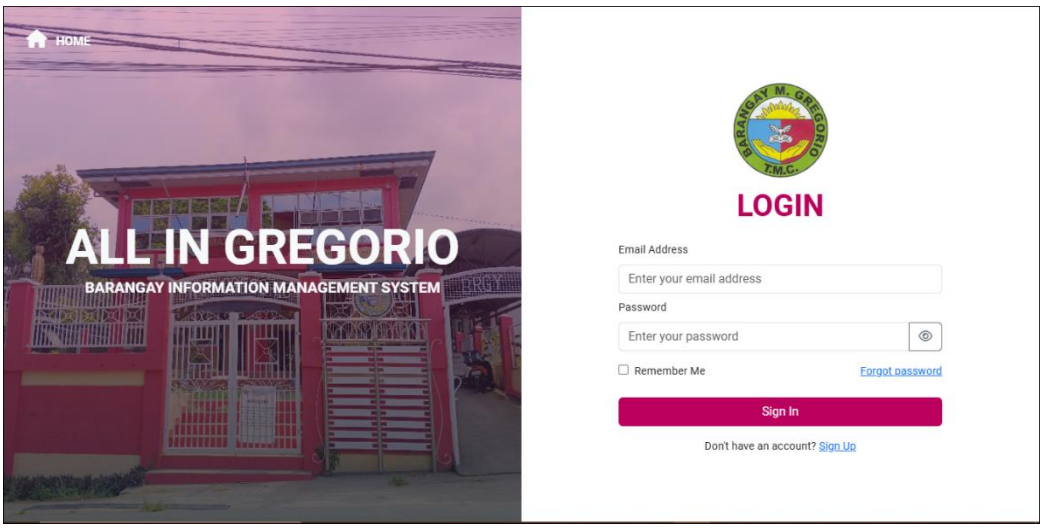

Figure 15. Login page

Figure 15 shows the login page located on the homepage which allows the admin, sub-admins, and resident to enter their email address and password to access all the dashboard and all features in the system.

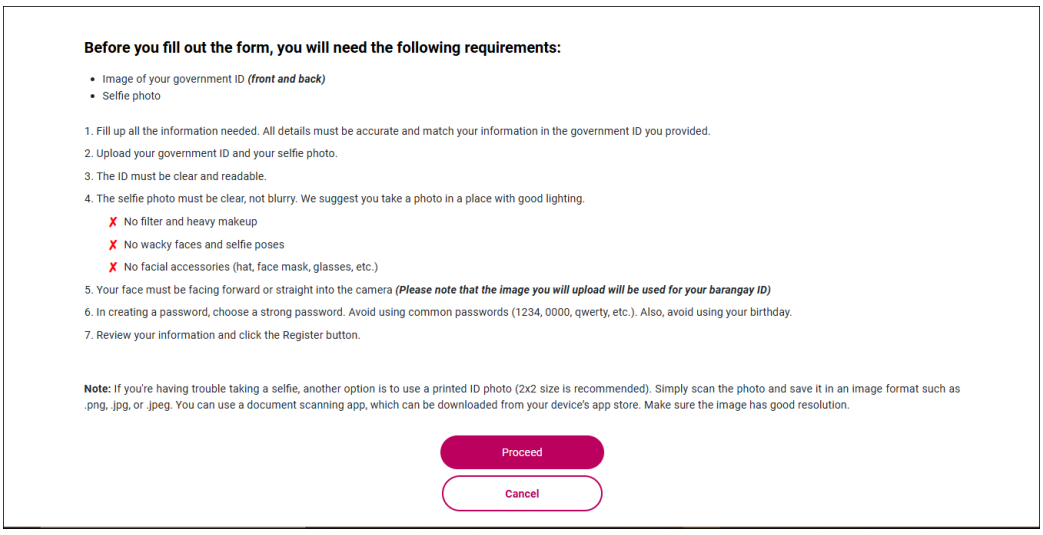

Figure 16. Procedures and guidelines page

Figure 16 shows the procedures and guidelines page, which is the first step before registration. It provides residents with detailed instructions on the requirements they need to know before the registration, ensuring clarity and reducing confusion.

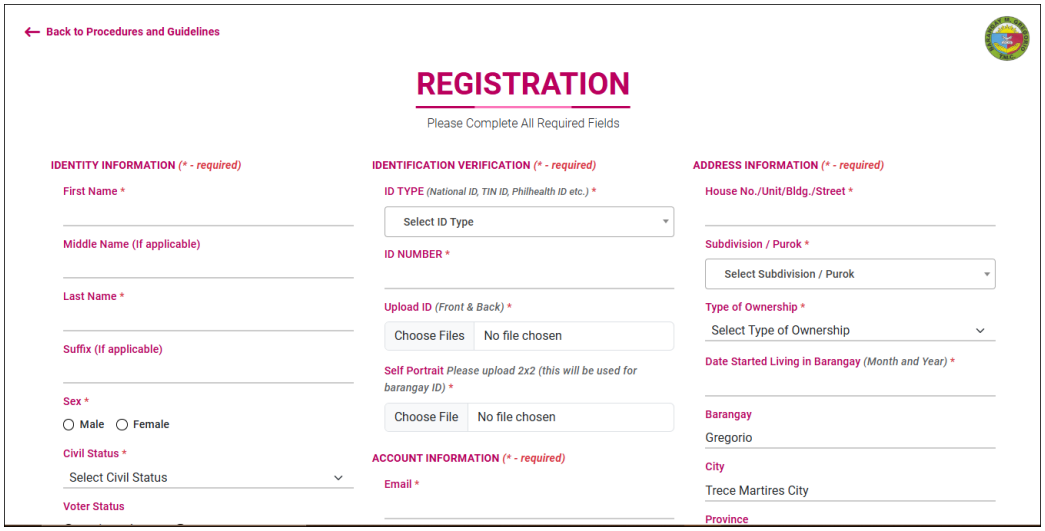

Figure 17. Registration page

Figure 17 shows the registration page where residents can fill out all the required fields in the form. All the information provided will be verified by the admin before approval. The registration may be rejected if the information is inaccurate or unclear.

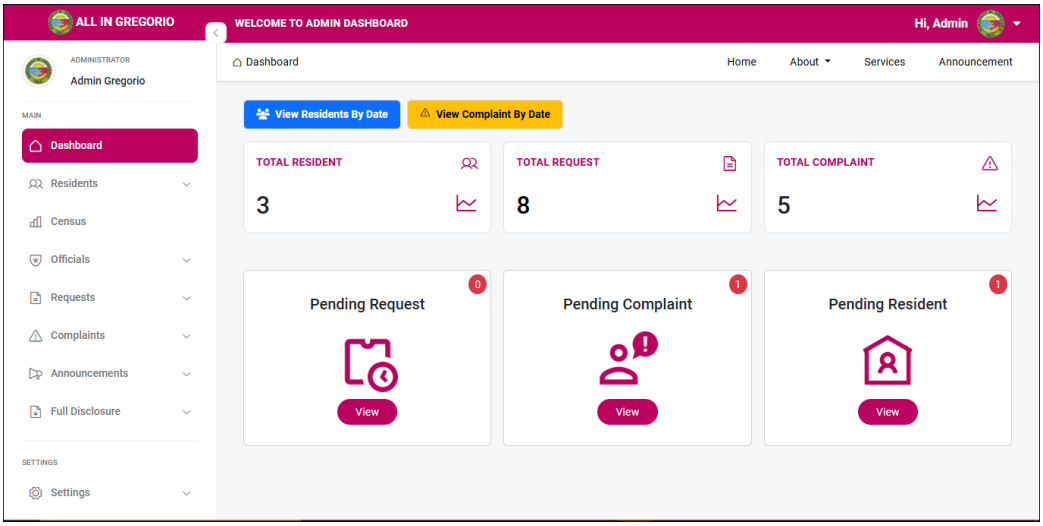

Figure 18. Admin dashboard

Figure 18 shows the admin dashboard, which displays all the functions the admin can manage. It includes a statistical count of the total number of residents, requests, and complaints. It also displays the main functions of the system such as manage residents, view residents by date, import census data, manage officials and

staff, monitor requests and complaints, view complaints by date, post announcements, publish full disclosures, update account and profile information.

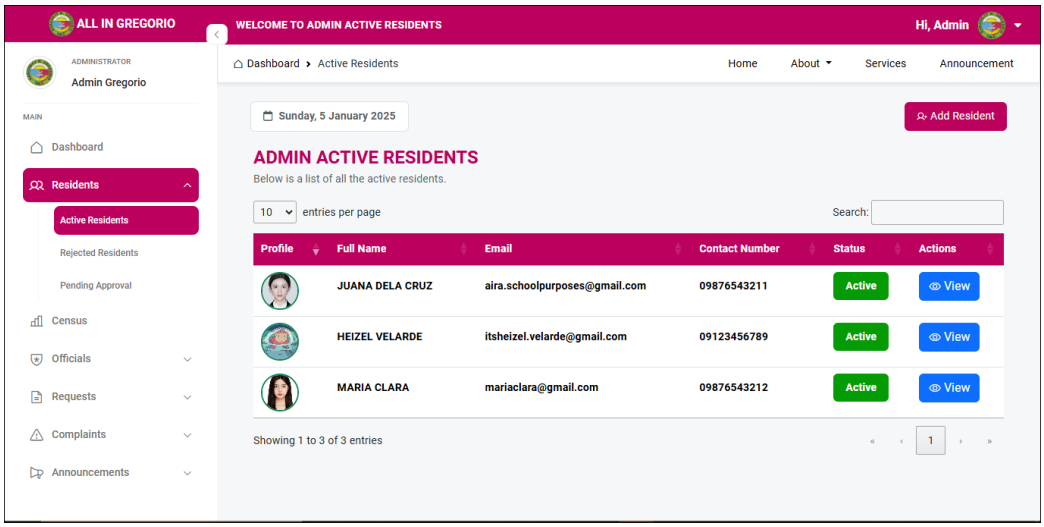

Figure 19. Residents menu

Figure 19 shows the Residents menu, where the admin can manage residents in three categories: Active, Rejected, and Pending. The Active Residents section list all approved residents. The Rejected Residents section contains those who were denied. The Pending Residents section shows residents awaiting admin verification before approval or rejection.

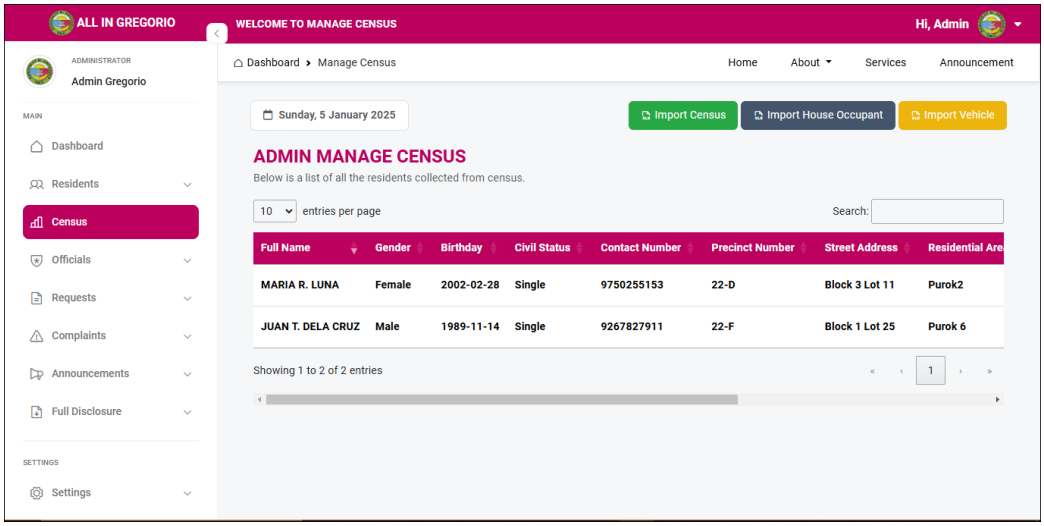

Figure 20. Census menu

Figure 20 shows the Census menu, where the admin and sub-admin can import data from the barangay census form using an Excel file. They can also view and delete the census data.

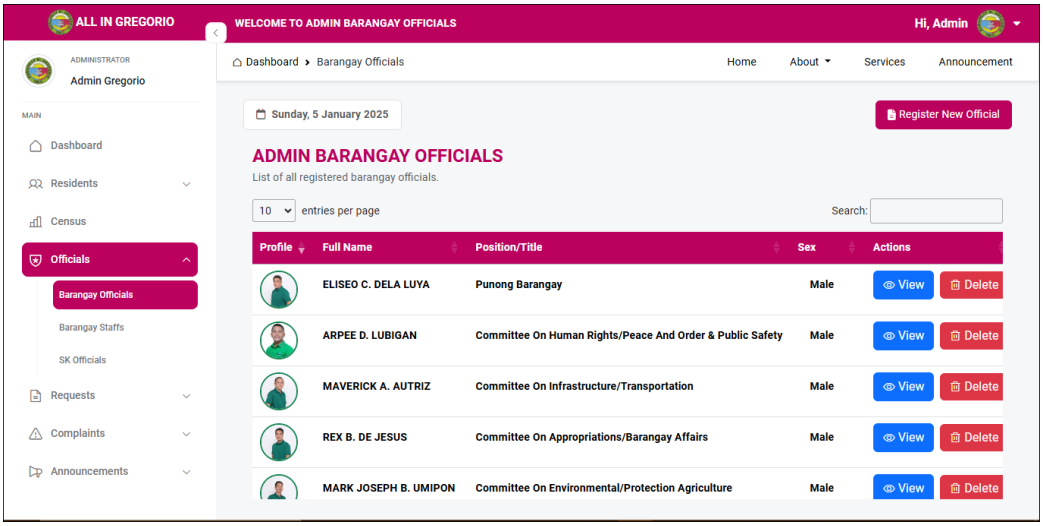

Figure 21. Officials menu

Figure 21 shows the Officials menu, which displays a list of all barangay officials and staff on the admin and sub-admin side. Only the administrator is authorized to delete registered officials and staff.

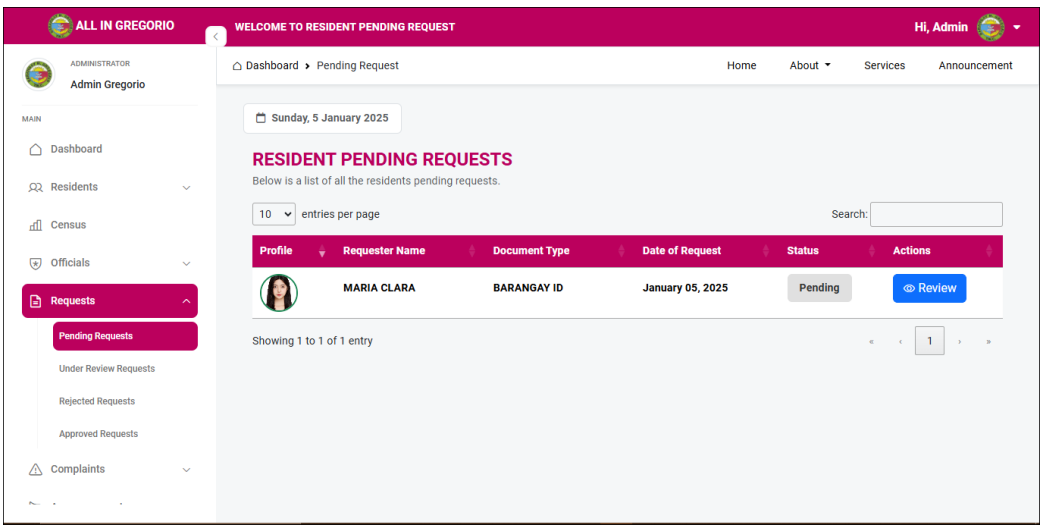

Figure 22. Requests menu

Figure 22 shows the Requests menu, where the admin and sub-admin can manage requests in various statuses: pending, under review, rejected, and approved. The Pending Requests section contains newly submitted requests. In the Under Review Requests section, requests are being verified before approval or rejection are located here. Rejected Requests stores all rejected documents, while Approved Requests displays all approved documents.

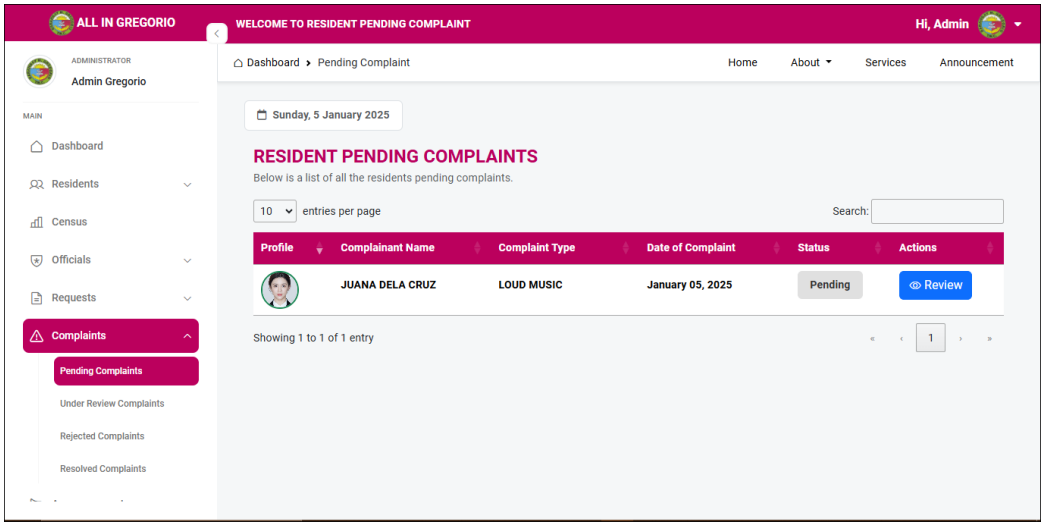

Figure 23. Complaints menu

Figure 23 shows the Complaints menu, where the admin and sub-admin can manage complaints in various statuses. Pending Complaints contains newly filed complaints. Under Review Complaints displays complaints that are being verified. Rejected Complaints stores all complaints that were denied, and Resolved Complaints shows complaints that have been addressed and resolved by the barangay.

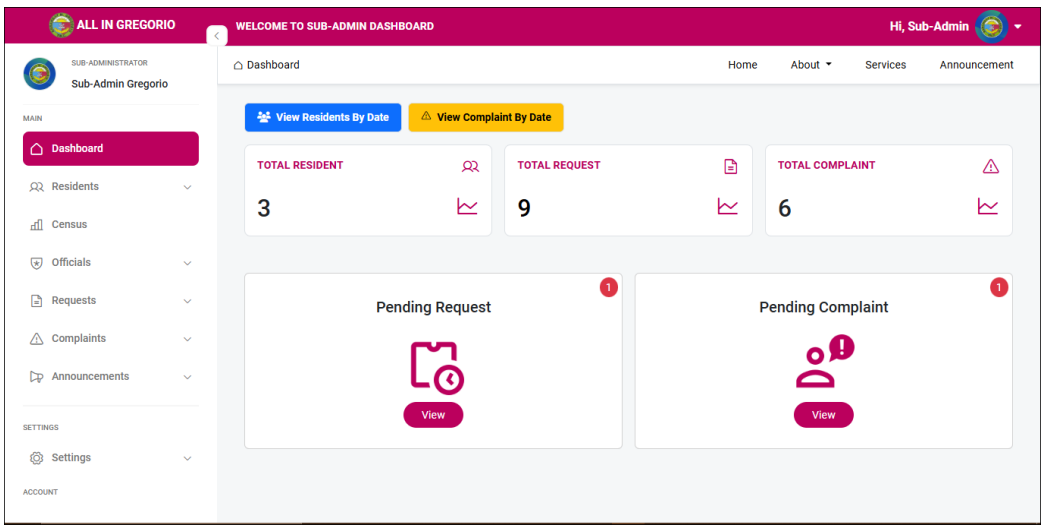

Figure 24. Sub-admin dashboard

Figure 24 shows the sub-admin dashboard, where they can manage various tasks. It includes a summary of the total number of residents, requests, and complaints. The dashboard also gives access to key functions like viewing residents by status (active, rejected, pending), viewing residents by date, importing census data,

managing officials and staff, monitoring requests and complaints, viewing complaints by date, posting announcements, and updating profile and account information.

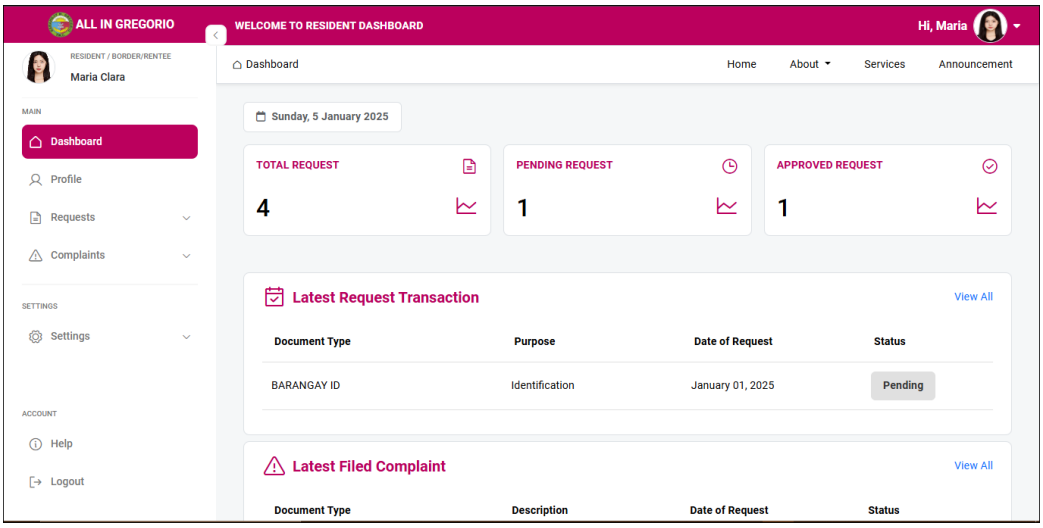

Figure 25. Resident dashboard

Figure 25 shows the resident dashboard, where they can manage various tasks. It includes a summary of the total number of requests, pending requests, and approved request and it also display the latest request transaction and filed complaints. The dashboard also gives contains profile information, requests, complaints, settings where account information (email and password) is located, and help page.

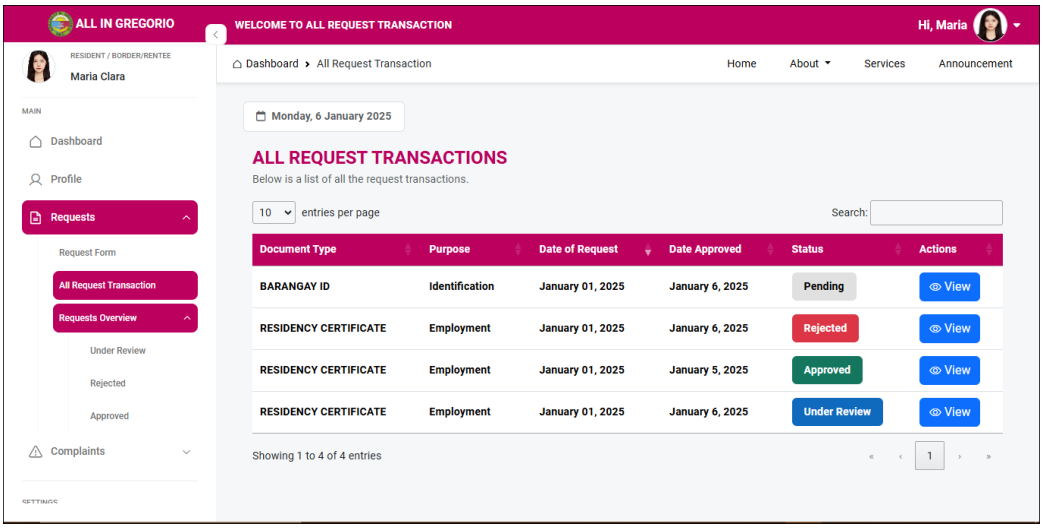

Figure 26. Resident requests

Figure 26 shows the resident request menu. Resident can request documents such as barangay ID, clearance, residency and indigency certificate, and specialized document. They can also track the status of the document they requested.

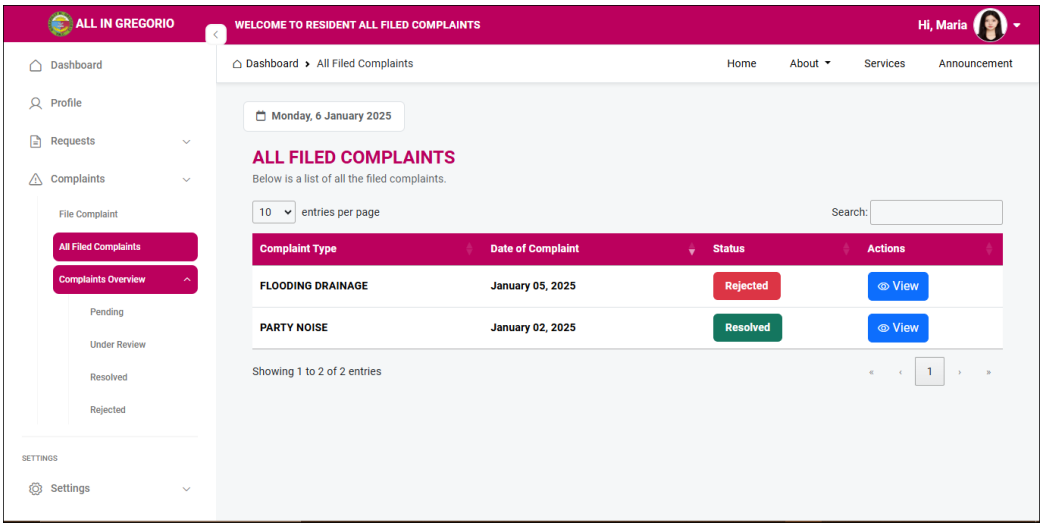

Figure 27. Resident complaints

Figure 27 shows the resident complaints menu, where residents can submit complaints by providing the complaint type, date and time occurred, description, and any supporting images or videos as evidences.

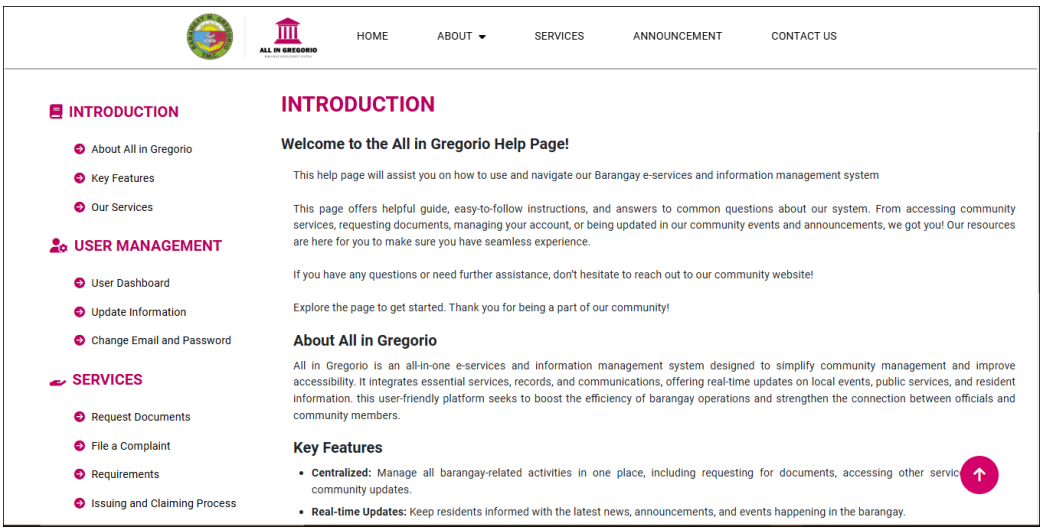

Figure 28. Help page

Figure 28 shows the help page contains a helpful guide about the system. It provides the residents a detailed instruction about managing their account, requesting document, and filing complaint.

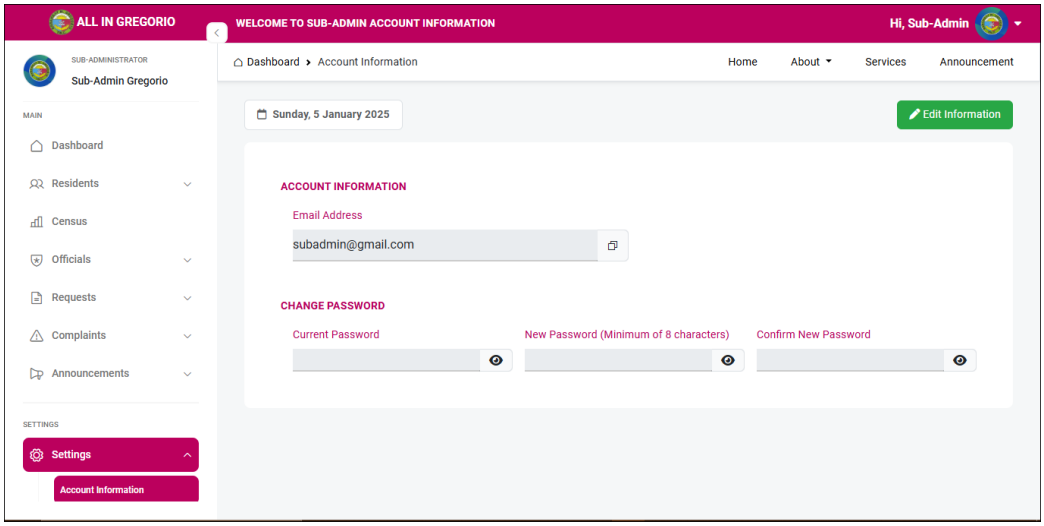

Figure 29. Account information

Figure 29 shows the account information, where the admin, sub-admin, and resident can update their email and password.

System Development

Requirement. The researchers used CSS, HTML, JavaScript, and Laravel Blade for front-end design, with Bootstrap to make the layout responsive. For back-end development, the researchers used PHP and Laravel framework. Visual Studio Code was their code editor, MySQL was the database, and PHPMyAdmin was used for database management. XAMPP provided local hosting, and a web browser was used to test and view the system.

Design. The researchers interviewed barangay officials and staff about the interface and functionalities of the system. They used Figma to create the system prototype and presented it to the barangay officials and staff. Based on their feedback, they made changes to the prototype and finalized the system design.

Development. The researchers collected all the necessary hardware and software requirements and finalized the system design. They started developing the front-end of the system using HTML, CSS, Bootstrap, and JavaScript. Laravel framework and PHP were used for templates, security, and back-end development.

PHPMyAdmin was used for temporary data storage, while XAMPP served as the local hosting platform for the system.

Testing. After development, the researchers conducted thorough testing of the system to identify and fix potential errors or bugs. This process involved barangay officials, staff, residents, and IT professionals. They ensured that the authorization levels for the three types of accounts, which are resident, admin, and sub-admin, were distinct and aligned with their respective roles. Each module's functionality was verified to ensure everything was working correctly and as intended.

Deployment. After successfully completing all the stages of system development and rigorous testing, the researchers proceeded to deploy the "All in Gregorio: A Web-based Barangay E-Services and Information Management System." The deployment was carried out using Hostinger as the hosting platform. This step ensured that the system became fully operational and accessible online, allowing authorized users, including barangay officials, staff, and residents, to access its features and services over the internet seamlessly.

Review. After the deployment, the researchers conducted an evaluation to gather feedback from end-users. They analyzed the collected responses and used the insights to refine the system, if needed, to ensure that its functionality and performance met the required quality standards.

System Testing

The web-based barangay e-services and information management system was tested by one barangay administrator, two residents from the barangay, and two IT professionals. The system went through three kinds of testing, such as unit testing, integration testing, and system testing. Table 4 shows the summary of the test results that the researchers conducted.

Table 4. Test results of the web-based barangay e-services and information management system

MODULE/COMPONENTS	TEST CONDUCTED	BEHAVIOR
Services	Residents can view the list of services and request documents	The system will display the requested documents to the pending requests
Request	Residents can request documents	The system will display the requested documents to the pending requests
	Admin and sub-admin can update the status to under review, approved, or rejected	The system will display the updated status of the requested documents
	Residents can view the status of their requests	The system will display the status of the request if it is pending, under review, approved, or rejected
	The admin and sub-admin can generate the approved requested documents	The system will generate the approved requested documents
Residents	The admin can approve and reject pending residents	The system will send email to the resident regarding the status of the registration
	The admin can add, update, and delete residents	The system will add new resident, update resident's information, and remove active resident
	The admin can set status to activate or suspend	The system will update the status
Barangay Officials and Staff	The admin can register new barangay officials and staff	The system will display the barangay officials and staff
Announcements	The admin and sub-admin can add, view, update, and delete announcements	The system will display the newly created announcement,
Complaints	Residents can file complaints	The system will display the filed complaint to the pending requests
	Admin and sub-admin can update the status of complaints to under review, resolved, or rejected	The system will display the updated status of the complaint
	Residents can view the status of their	The system will display the status of the complaint if it is

	complaints	pending, under review, approved, or rejected
Census	The admin and sub-admin can import barangay census data	The system will display the imported census data
Full Disclosure	The admin can publish full disclosure reports	The system will display the full disclosure report
	Residents can download and access the full disclosure reports	The system will display and download the full disclosure reports
Account Management	The admin can register resident account, sub-admin account, and admin account	The system will update the list of the residents, sub-admin, and admin

System Evaluation

The web-based barangay e-services and information management system for Barangay Gregorio at Trece Martires City Cavite was evaluated by five hundred residents including the barangay officials and staff, and five information technology professionals. The Researchers used an evaluation instrument adopted from the ISO 25010 quality model.

Functional Suitability. The system effectively met the required functionality criteria since it included all the necessary features to fulfill user tasks and objectives, provided accurate results as needed, and supported users in efficiently completing their tasks such as requesting documents, filing complaints, and accessing information from the barangay.

Table 5. Qualitative interpretation of respondents rating the functional suitability of web-based barangay e-services and information management system

CRITERIA	MEAN	QUALITATIVE INTERPRETATION
Functional completeness	4.88	Excellent
Functional correctness	4.79	Excellent
Functional appropriateness	4.79	Excellent

CRITERIA	MEAN	QUALITATIVE INTERPRETATION
Functional completeness	4.88	Excellent
AVERAGE	**4.82**	**Excellent**

Table 5 represents the functional suitability of the web-based barangay e-services and information management system. Functional completeness achieved the highest mean score of 4.88 with an "Excellent" rating. Both Functional Correctness and Functional Appropriateness received a mean score of 4.79, also rated as "Excellent." The overall average mean for the system's functional suitability was 4.82, maintaining an "Excellent" rating.

Performance Efficiency. The system satisfied the performance efficiency criteria by providing prompt response time to users, efficiently utilizing resources as needed, and handles multiple tasks and significant amounts of data.

Table 6. Qualitative interpretation of respondents rating the performance efficiency of web-based barangay e-services and information management system

CRITERIA	MEAN	QUALITATIVE INTERPRETATION
Time behaviour	4.80	Excellent
Resource utilization	4.74	Excellent
Capacity	4.82	Excellent
AVERAGE	**4.79**	**Excellent**

Table 6 represents the performance efficiency of the web-based barangay e-services and information management system. Time behavior received a mean score of 4.80 with an “Excellent” rating. Resource utilization scored 4.74 with an “Excellent” rating, and Capacity achieved 4.82 with an “Excellent” rating as well. Overall, the system's average mean was 4.79, maintaining the “Excellent” qualitative interpretation.

Compatibility. The system met the compatibility criteria by effectively performing its functions, sharing resources, and exchanging information efficiently, which enabled users to successfully complete their tasks.

Table 7. Qualitative interpretation of respondents rating the compatibility of web-based barangay e-services and information management system

CRITERIA	MEAN	QUALITATIVE INTERPRETATION
Co-existence	4.79	Excellent
Interoperability	4.79	Excellent
AVERAGE	**4.79**	**Excellent**

Table 7 represents the compatibility of the web-based barangay e-services and information management system. Both Co-existence and Interoperability received a mean score of 4.79, which is interpreted as "Excellent." The overall mean for Compatibility was also 4.79, earning an "Excellent" rating.

Usability. The system met the usability criteria by having an easy-to-use interface that users could easily understand and navigate. It was simple to learn and operate, and it was designed to be accessible to users even for those with limited computer skills. It provided clear and explicit features, helping users accomplish their tasks independently.

Table 8. Qualitative interpretation of respondents rating the usability of web-based barangay e-services and information management system

CRITERIA	MEAN	QUALITATIVE INTERPRETATION
Appropriateness recognizability	4.84	Excellent
Learnability	4.78	Excellent
Operability	4.81	Excellent
User error protection	4.82	Excellent
User interface aesthetics	4.81	Excellent

Accessibility	4.89	Excellent
AVERAGE	**4.83**	**Excellent**

Table 8 represents the usability of the web-based barangay e-services and information management system. Appropriateness recognizability had a mean score of 4.84, Learnability got a mean score of 4.78, Operability achieved 4.81, User Error Protection got 4.82, User Interface Aesthetics was rated 4.81, and Accessibility received the highest mean score of 4.89. The average mean score for Usability was 4.83 which is interpreted as “Excellent”.

Reliability. The system met the reliability criteria by performing accurately during regular use. It is available to everyone but requires an internet connection for access. The system also showed fault tolerance by continuing to work well even when there were hardware or software problems existing.

Table 9. Qualitative interpretation of respondents rating the reliability of web-based barangay e-services and information management system

CRITERIA	MEAN	QUALITATIVE INTERPRETATION
Maturity	4.81	Excellent
Availability	4.80	Excellent
Fault tolerance	4.80	Excellent
Recoverability	4.79	Excellent
AVERAGE	**4.80**	**Excellent**

Table 9 represents the reliability of the web-based barangay e-services and information management system. The mean score for Maturity was 4.81, earning an “Excellent” rating. Availability received a mean score of 4.80, also rated as “Excellent.” Fault Tolerance similarly had a mean score of 4.80, with an “Excellent” rating, while Recoverability achieved a mean score of 4.79, also rated as “Excellent.” The overall average mean score for Reliability was 4.80, which was interpreted as “Excellent.”

Security. The system met the security requirements by keeping data private and limiting access to users with valid accounts and depending on their role. It protected the data from unauthorized changes or deletions and checked the identity of users and resources to confirm they were authentic.

Table 10. Qualitative interpretation of respondents rating the security of web-based barangay e-services and information management system

CRITERIA	MEAN	QUALITATIVE INTERPRETATION
Confidentiality	4.77	Excellent
Integrity	4.83	Excellent
Non-repudiation	4.81	Excellent
Accountability	4.81	Excellent
Authenticity	4.82	Excellent
AVERAGE	**4.81**	**Excellent**

Table 10 represents the security of the web-based barangay e-services and information management system. The mean score for Confidentiality was 4.77 with an “Excellent” rating. Integrity received a mean score of 4.83, and Non-repudiation also achieved a mean score of 4.81 which both interpret as “Excellent” in rating. Both Accountability and Authenticity had a mean score of 4.81 with an “Excellent” rating as well. The overall average mean score for Security was 4.82, which is also interpreted as “Excellent.”

Maintainability. The system met maintainability standards with independent and dependent modules for easy updates, reusability across systems, and efficient analysis and troubleshooting. It allowed for modifications without compromising quality and supported thorough testing for performance and functionality.

Table 11. Qualitative interpretation of respondents rating the maintainability of web-based barangay e-services and information management system

CRITERIA	MEAN	QUALITATIVE INTERPRETATION

Modularity	4.80	Excellent
Reusability	4.86	Excellent
Analysability	4.82	Excellent
Modifiability	4.77	Excellent
Testability	4.80	Excellent
AVERAGE	**4.81**	**Excellent**

Table 11 represents the maintainability of the web-based barangay e-services and information management system. Modularity earned a mean score of 4.80, which is rated as “Excellent.” Reusability scored 4.86, also rated as “Excellent.” Analysability achieved a mean score of 4.82, reflecting an “Excellent” rating. Modifiability received a mean score of 4.77, which is also rated as “Excellent,” while Testability scored 4.80, interpreting as “Excellent.” Overall, the average mean score for Maintainability was 4.81, which is considered “Excellent.”

Portability. The system met the portability criteria by being versatile and capable of adapting to different environments and devices, including desktops, laptops, tablets, and mobile phones. It was also easily accessible through a web browser, ensuring seamless operation in various settings as long as there is an internet connection.

Table 12. Qualitative interpretation of respondents rating the portability of web-based barangay e-services and information management system

CRITERIA	MEAN	QUALITATIVE INTERPRETATION
Adaptability	4.80	Excellent
Installability	4.81	Excellent
Replaceability	4.81	Excellent
AVERAGE	**4.81**	**Excellent**

Table 12 represents the portability of the web-based barangay e-services and information management system. Adaptability received a mean score of 4.80, which is rated as “Excellent.” Installability and Replaceability both got 4.81, also rated as “Excellent.” The average mean score rating for the Portability of the web-based system was 4.81 which is interpreted as “Excellent”.

Table 13. Qualitative interpretation of respondents' rating on the evaluation of the web-based barangay e-services and information management system.

CRITERIA	MEAN	QUALITATIVE INTERPRETATION
Functional Suitability	4.82	Excellent
Performance Efficiency	4.79	Excellent
Compatibility	4.79	Excellent
Usability	4.83	Excellent
Reliability	4.80	Excellent
Security	4.81	Excellent
Maintainability	4.81	Excellent
Portability	4.81	Excellent
OVERALL MEAN	**4.81**	**Excellent**

Table 13 represents the summary of the qualitative interpretation of All in Gregorio: A Web-based Barangay E-Services and Information Management System. Usability received the highest mean of 4.83 with an “Excellent” rating. Functional suitability received a mean score of 4.82 and was interpreted as “Excellent.” Security, maintainability, and portability all received a mean score of 4.81, which were interpreted as “Excellent” in rating. Reliability received 4.80 with an “Excellent” interpretation. Performance efficiency and compatibility both received a mean score of 4.79, which was interpreted as “Excellent”. Overall, the average mean of each criteria was 4.79, indicating that the web-based system had an “Excellent” rating. The

summary of the evaluation results implied that the system was effective and useful for the barangay officials and staff, as well as the residents of Barangay Gregorio.

System Implementation

The system implementation is the summary of the strategies, activities, persons involved, and duration of the implementation of the All in Gregorio: A Web-based Barangay E-Services and Information Management System.

Table 14. Summary of implementation results

STRATEGY	ACTIVITY	PERSON INVOLVED	DURATION	REMARKS
Approval from Barangay Gregorio Officials and Staff	Letters	Researchers, Barangay Officials and Staffs	1 day	Approved
System Deployment	Deploying the web-based system to web hosting and turnover of the system	Researcher, Administrator	1 day	Deployed
Information Dissemination	User manuals	Researchers, Administrator, Barangay Officials and Staff, Residents	2 days	Accomplished
Training	Demonstration & Tutorial	Researchers, Administrator, Barangay Officials and Staff, Residents	2 hours	Accomplished

Table 14 represents the strategies, activities, individuals involved, durations, and remarks related to the implementation of All in Gregorio: A Web-based Barangay E-Services and Information Management System. The system was successfully

deployed in Barangay Gregorio, Trece Martires City, Cavite, within a day, which included setting up accounts for barangay officials and staff. Information dissemination through brochures involved both barangay officials, staff, and residents, and this activity was completed over two days. Lastly, user training for the web-based system, which included residents as well as barangay officials and staff, was completed in two hours.

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

Summary

The All in Gregorio: A Web-based Barangay E-Services and Information Management System is a system that can be accessed on desktops, laptops, and mobile devices. It has three types of accounts which enable users to log in as administrator, sub-administrator, and resident depending on their role in the Barangay Gregorio. Through the system, the administrator can handle all the record of residents' information, approve or reject residents' request documents, generate barangay ID, clearances, indigency, residency, and other barangay documents, resolve and respond to residents' complaints, register barangay officials and staff, posting program announcements, importing census data, and publishing full disclosure reports such as barangay financial reports, budgets, summary of income and expenditures, annual procurement plan, and other type of reports.

The system was developed using HTML, CSS, Bootstrap, and Javascript for front-end development, PHP and Laravel framework for back-end development, MySQL as the database, XAMPP as a localhost web server, Figma as a prototyping tool, and Visual Studio Code for the code editor. The development of the system followed the Agile methodology, encompassing phases such as requirements,, design, development, testing, deployment, and review.

The system underwent three phases of testing, including unit testing, integration testing, and system testing, with participation from one barangay administrator, two IT professionals, and two residents. Additionally, the system was evaluated by 500 individuals, comprising barangay officials, staff, residents of Barangay Gregorio, and IT professionals, using the ISO 25010 model as the evaluation instrument.

The evaluation results demonstrated an overall mean score of 4.81, which aligns with a qualitative rating of "Excellent." This signifies that the developed web-

based system is effective and useful to all the barangay officials, staff, and residents. For residents, it makes accessing services and information more convenient, while for barangay officials and staff, it acts as a unified platform that optimizes their operations, increases efficiency, and improves transaction management.

Conclusion

All in Gregorio: A Web-based Barangay E-Services and Information Management System successfully achieved the objectives outlined in the study. The system was specifically designed to simplify key barangay functions, such as providing secure login access for administrators, sub-administrators, and residents, managing resident information, and automatically generating essential documents like barangay IDs, clearances, and certifications. It also allows for efficient handling of resident complaints, registration of barangay officials and staff, posting of program announcements, importing barangay census data, and publishing full disclosure reports.

By automating these processes, the system makes barangay services more accessible and efficient, improving communication and ensuring transparency. It directly supports the barangay in serving its residents more effectively while enhancing overall governance.

Recommendations

The following is hereby recommended to the further enhance study:

- Add notification system if the status of the requested document and complaints have been updated.
- Add activity logs to the admin account for every log in, logout, approve, reject, delete, update, and other actions with time stamp.

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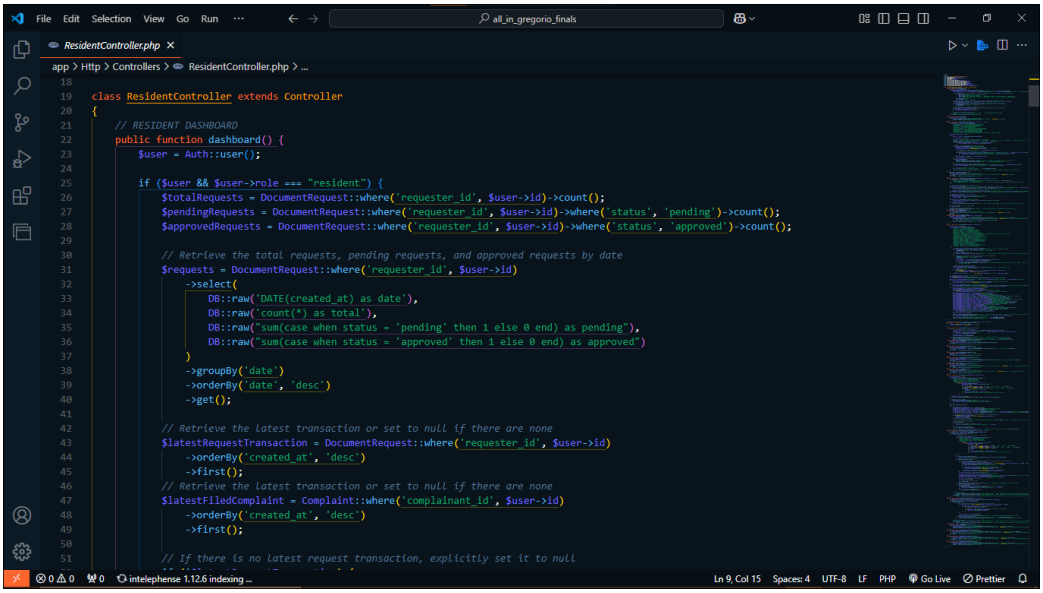
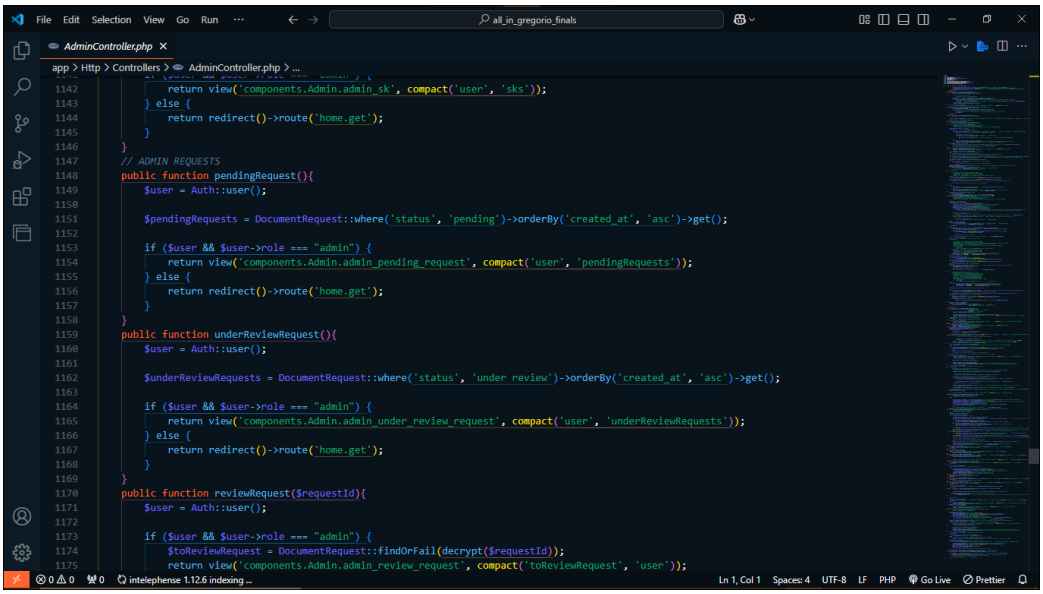
APPENDICES

Appendix 1. Relevant source code

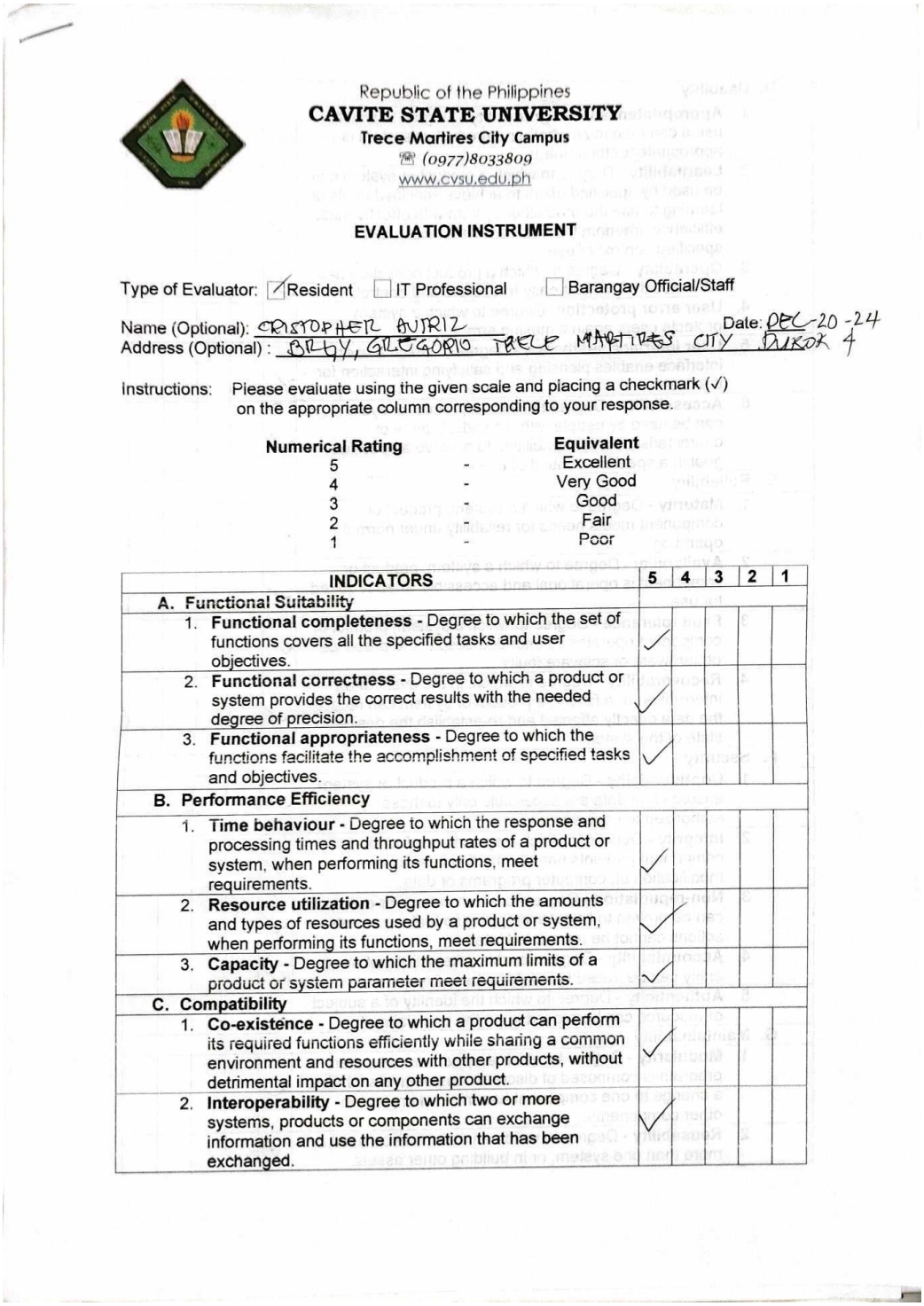


```php
class ResidentController extends Controller
{
    // RESIDENT DASHBOARD
    public function dashboard() {
        $user = Auth::user();

        if ($user && $user->role === "resident") {
            $totalRequests = DocumentRequest::where('requester_id', $user->id)->count();
            $pendingRequests = DocumentRequest::where('requester_id', $user->id)->where('status', 'pending')->count();
            $approvedRequests = DocumentRequest::where('requester_id', $user->id)->where('status', 'approved')->count();

            // Retrieve the total requests, pending requests, and approved requests by date
            $requests = DocumentRequest::where('requester_id', $user->id)
                ->select(
                    DB::raw('DATE(created_at) as date'),
                    DB::raw('count(*) as total'),
                    DB::raw("sum(case when status = 'pending' then 1 else 0 end) as pending"),
                    DB::raw("sum(case when status = 'approved' then 1 else 0 end) as approved")
                )
                ->groupBy('date')
                ->orderBy('date', 'desc')
                ->get();

            // Retrieve the latest transaction or set to null if there are none
            $latestRequestTransaction = DocumentRequest::where('requester_id', $user->id)
                ->orderBy('created_at', 'desc')
                ->first();
            // Retrieve the latest transaction or set to null if there are none
            $latestFiledComplaint = Complaint::where('complainant_id', $user->id)
                ->orderBy('created_at', 'desc')
                ->first();

            // If there is no latest request transaction, explicitly set it to null
```



```php
            return view('components.Admin.admin_sk', compact('user', 'sks'));
        } else {
            return redirect()->route('home.get');
        }
    }
    // ADMIN REQUESTS
    public function pendingRequest(){
        $user = Auth::user();

        $pendingRequests = DocumentRequest::where('status', 'pending')->orderBy('created_at', 'asc')->get();

        if ($user && $user->role === "admin") {
            return view('components.Admin.admin_pending_request', compact('user', 'pendingRequests'));
        } else {
            return redirect()->route('home.get');
        }
    }
    public function underReviewRequest(){
        $user = Auth::user();

        $underReviewRequests = DocumentRequest::where('status', 'under review')->orderBy('created_at', 'asc')->get();

        if ($user && $user->role === "admin") {
            return view('components.Admin.admin_under_review_request', compact('user', 'underReviewRequests'));
        } else {
            return redirect()->route('home.get');
        }
    }
    public function reviewRequest($requestId){
        $user = Auth::user();

        if ($user && $user->role === "admin") {
            $toReviewRequest = DocumentRequest::findOrFail(decrypt($requestId));
            return view('components.Admin.admin_review_request', compact('toReviewRequest', 'user'));
```

Appendix 2. Evaluation instrument



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EVALUATION INSTRUMENT

Type of Evaluator: ☑ Resident ☐ IT Professional ☐ Barangay Official/Staff

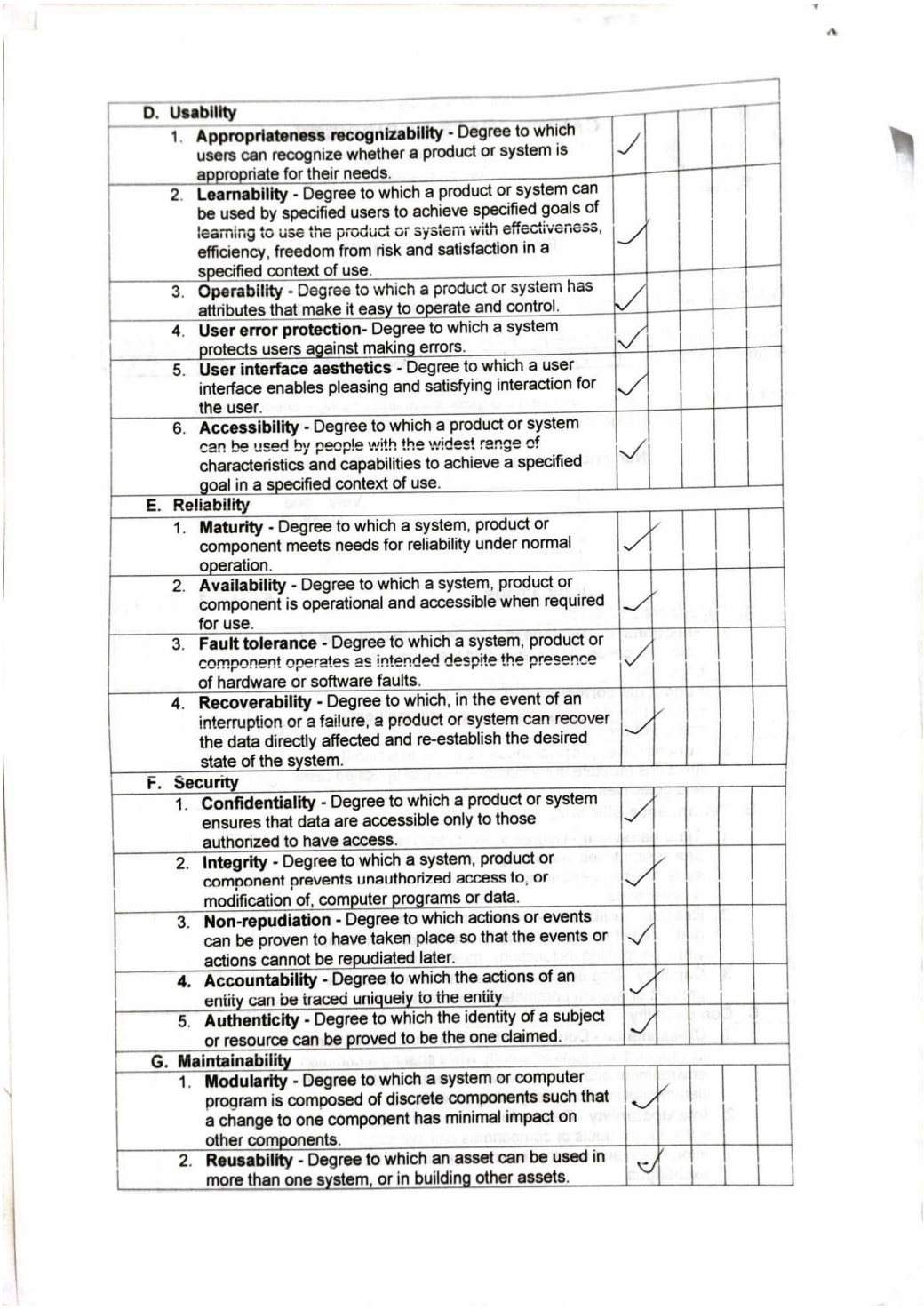
Name (Optional): CRISTOPHER AUTRIZ Date: DEC-20-24
Address (Optional): BRGY, GREGORIO TRECE MARTIRES CITY DIKOR 4

Instructions: Please evaluate using the given scale and placing a checkmark (✓) on the appropriate column corresponding to your response.

Numerical Rating		Equivalent
5	-	Excellent
4	-	Very Good
3	-	Good
2	-	Fair
1	-	Poor

INDICATORS	5	4	3	2	1
A. Functional Suitability					
1. **Functional completeness** - Degree to which the set of functions covers all the specified tasks and user objectives.	✓				
2. **Functional correctness** - Degree to which a product or system provides the correct results with the needed degree of precision.	✓				
3. **Functional appropriateness** - Degree to which the functions facilitate the accomplishment of specified tasks and objectives.	✓				
B. Performance Efficiency					
1. **Time behaviour** - Degree to which the response and processing times and throughput rates of a product or system, when performing its functions, meet requirements.	✓				
2. **Resource utilization** - Degree to which the amounts and types of resources used by a product or system, when performing its functions, meet requirements.	✓				
3. **Capacity** - Degree to which the maximum limits of a product or system parameter meet requirements.	✓				
C. Compatibility					
1. **Co-existence** - Degree to which a product can perform its required functions efficiently while sharing a common environment and resources with other products, without detrimental impact on any other product.	✓				
2. **Interoperability** - Degree to which two or more systems, products or components can exchange information and use the information that has been exchanged.	✓				

Appendix 2. Continued.



D. Usability					
1. **Appropriateness recognizability** - Degree to which users can recognize whether a product or system is appropriate for their needs.	✓				
2. **Learnability** - Degree to which a product or system can be used by specified users to achieve specified goals of learning to use the product or system with effectiveness, efficiency, freedom from risk and satisfaction in a specified context of use.	✓				
3. **Operability** - Degree to which a product or system has attributes that make it easy to operate and control.	✓				
4. **User error protection**- Degree to which a system protects users against making errors.	✓				
5. **User interface aesthetics** - Degree to which a user interface enables pleasing and satisfying interaction for the user.	✓				
6. **Accessibility** - Degree to which a product or system can be used by people with the widest range of characteristics and capabilities to achieve a specified goal in a specified context of use.	✓				
E. Reliability					
1. **Maturity** - Degree to which a system, product or component meets needs for reliability under normal operation.	✓				
2. **Availability** - Degree to which a system, product or component is operational and accessible when required for use.	✓				
3. **Fault tolerance** - Degree to which a system, product or component operates as intended despite the presence of hardware or software faults.	✓				
4. **Recoverability** - Degree to which, in the event of an interruption or a failure, a product or system can recover the data directly affected and re-establish the desired state of the system.	✓				
F. Security					
1. **Confidentiality** - Degree to which a product or system ensures that data are accessible only to those authorized to have access.	✓				
2. **Integrity** - Degree to which a system, product or component prevents unauthorized access to, or modification of, computer programs or data.	✓				
3. **Non-repudiation** - Degree to which actions or events can be proven to have taken place so that the events or actions cannot be repudiated later.	✓				
4. **Accountability** - Degree to which the actions of an entity can be traced uniquely to the entity	✓				
5. **Authenticity** - Degree to which the identity of a subject or resource can be proved to be the one claimed.	✓				
G. Maintainability					
1. **Modularity** - Degree to which a system or computer program is composed of discrete components such that a change to one component has minimal impact on other components.	✓				
2. **Reusability** - Degree to which an asset can be used in more than one system, or in building other assets.	✓				

Appendix 2. Continued.

3. **Analysability** - Degree of effectiveness and efficiency with which it is possible to assess the impact on a product or system of an intended change to one or more of its parts, or to diagnose a product for deficiencies or causes of failures, or to identify parts to be modified.	✓				
4. **Modifiability** - Degree to which a product or system can be effectively and efficiently modified without introducing defects or degrading existing product quality.	✓				
5. **Testability** - Degree of effectiveness and efficiency with which test criteria can be established for a system, product or component and tests can be performed to determine whether those criteria have been met.	✓				
H. Portability					
1. **Adaptability** - Degree to which a product or system can effectively and efficiently be adapted for different or evolving hardware, software or other operational or usage environments.	✓				
2. **Installability** - Degree of effectiveness and efficiency with which a product or system can be successfully installed and/or uninstalled in a specified environment.	✓				
3. **Replaceability** - Degree to which a product can replace another specified software product for the same purpose in the same environment.		✓			

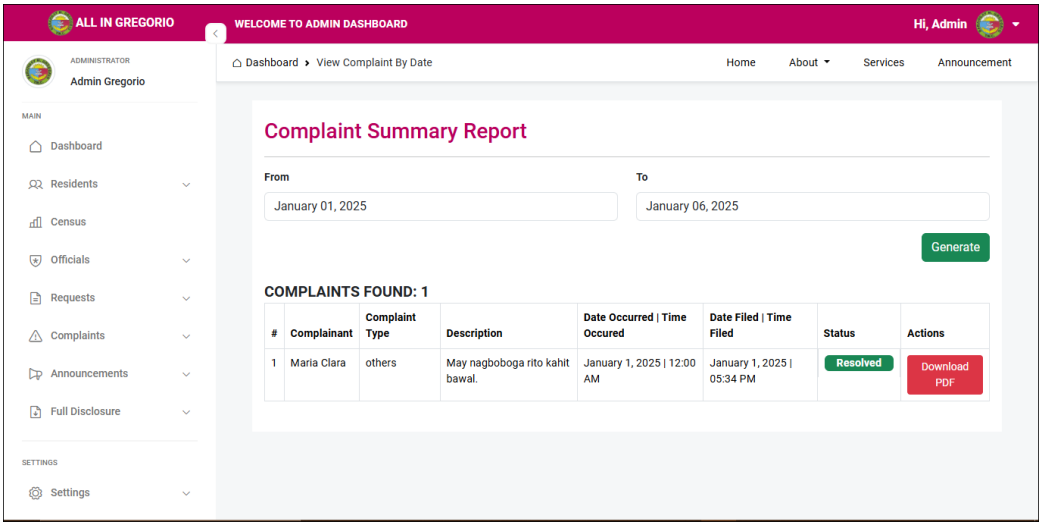
**Adopted from ISO/IEC 25010*

Remarks/Comments/Suggestions:

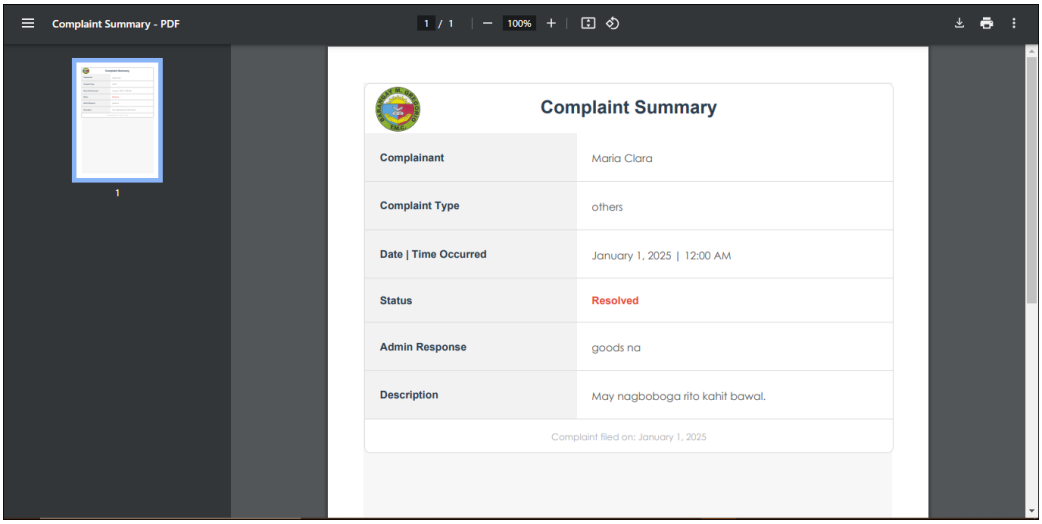
CRISTOPHER NUTRIZ

Name and Signature of Respondents

Appendix 3. Sample Input/Output/Reports



Appendix Figure 1. Sample input of complaint summary report

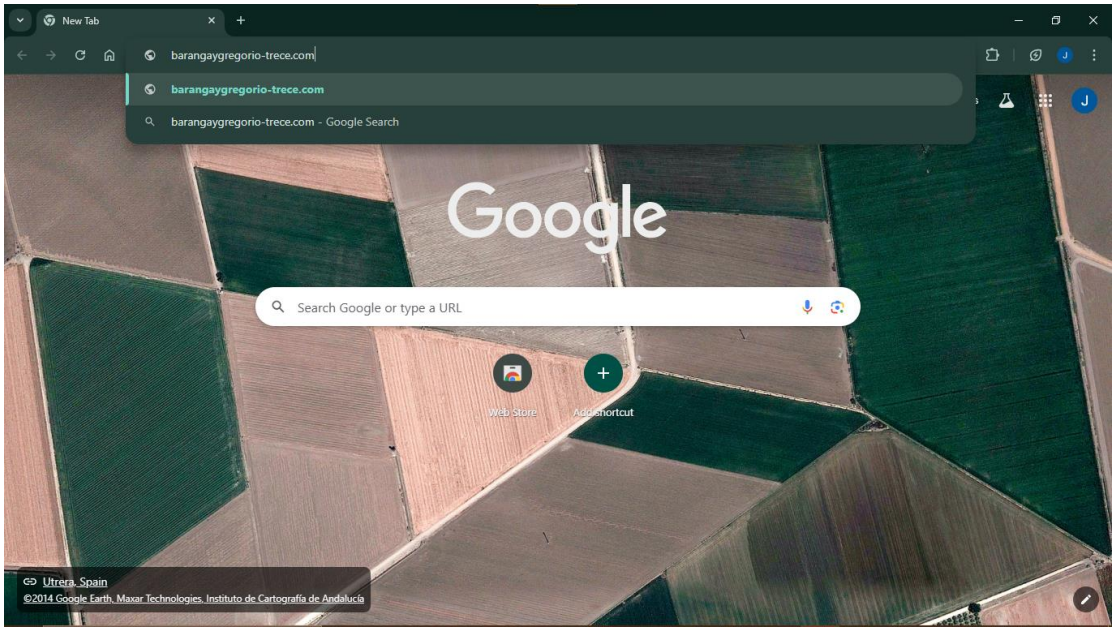


Appendix Figure 2. Sample output of PDF generated complaint summary report

Appendix 4. User's guide

User's Manual

1. Open any web browser, go to barangaygregorio-trece.com, and press Enter.

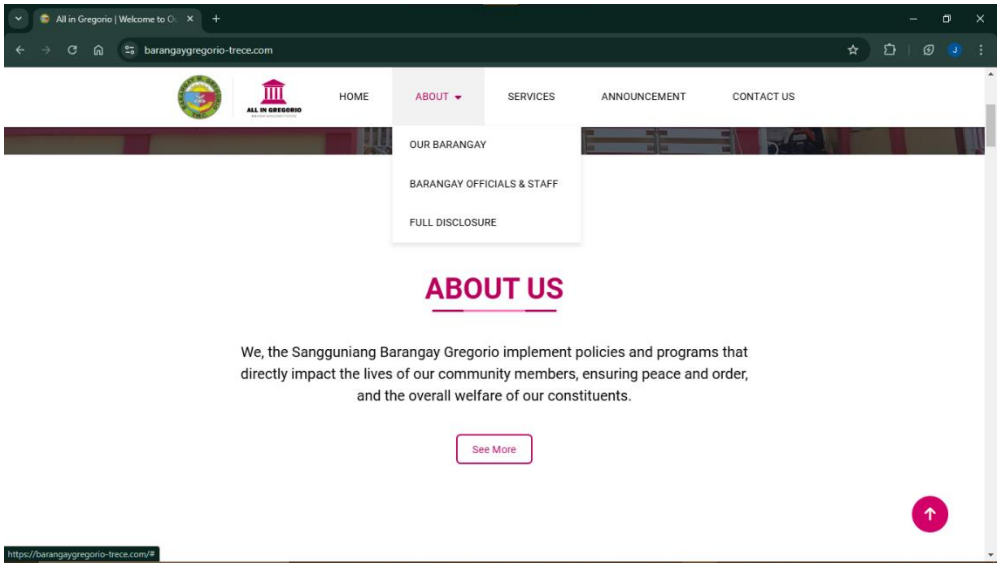


Appendix Figure 3. Accessing the all in gregorio website

2. On the homepage, visitor will see the header section and the navigation menu of the barangay gregorio website. They can explore the pages through the provided links in the navigation menu.

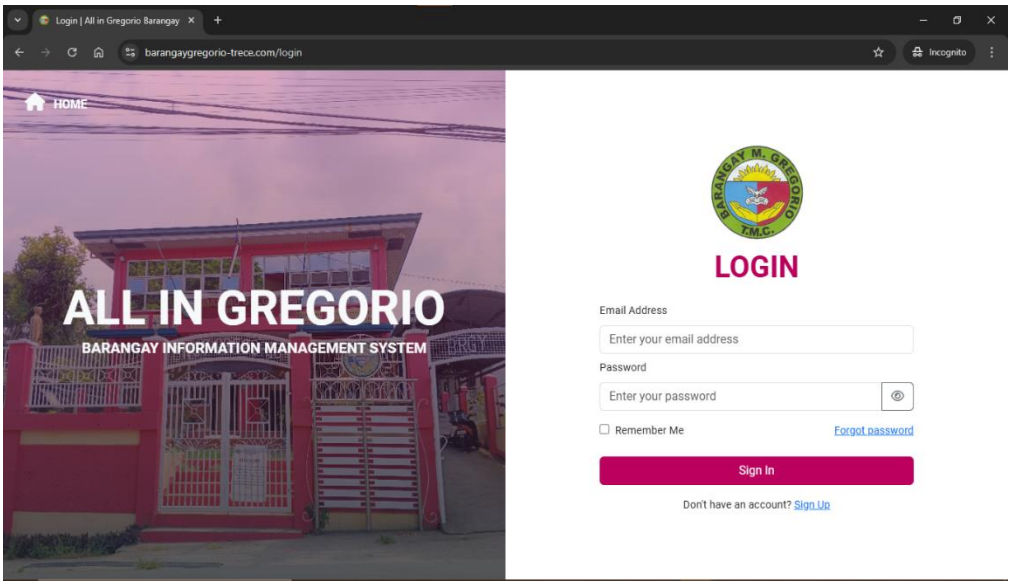
Appendix Figure 4. Home page of all in gregorio website

3. On the homepage, the about us section is under the header section. This section will redirect to the main about page. The visitor can also click the about link in the navigation menu.



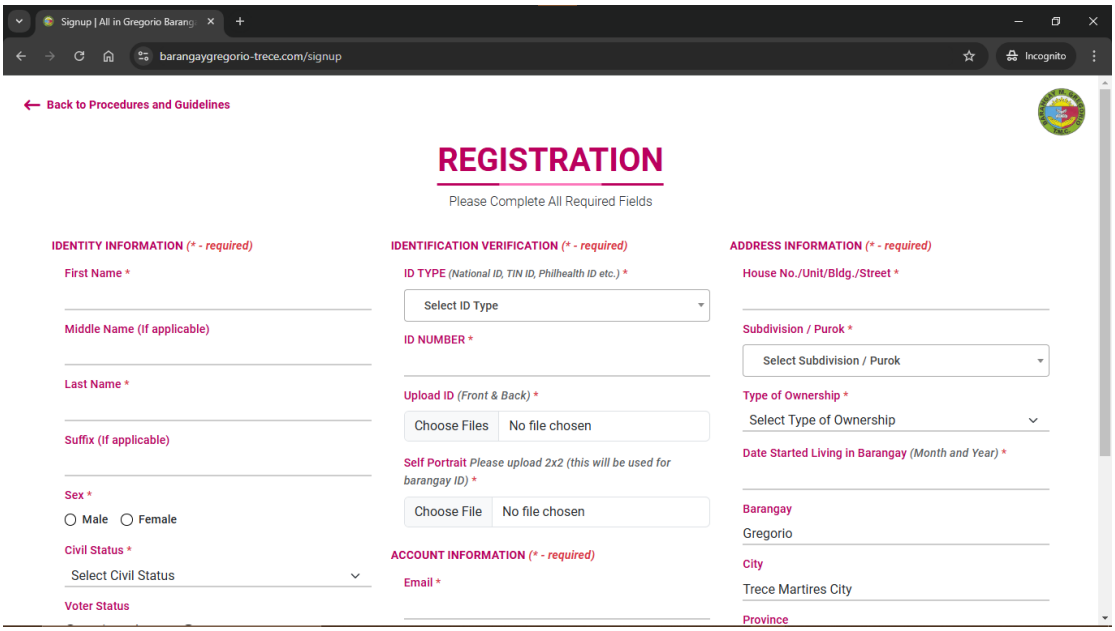
Appendix Figure 5. About us page of all in gregorio website

4. On the login page, depending on the type of user account, if the user is an admin or sub-admin, they will need to enter their email and password to access the system. After logging in, they will be redirected to the appropriate dashboard. A "Forgot Password" option is also available for users who need to reset their password and log in with the new one.



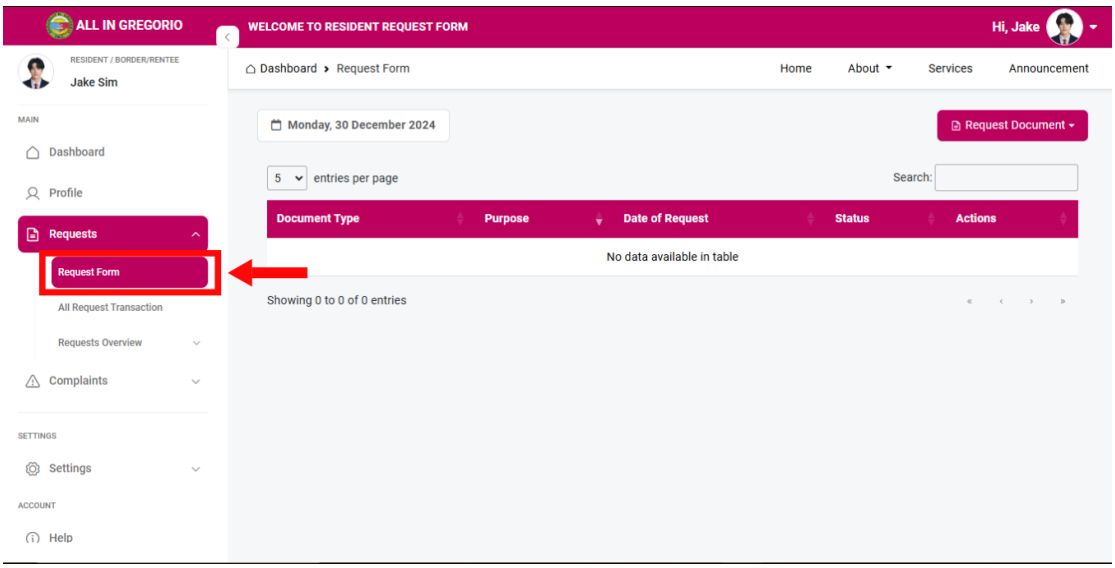
Appendix Figure 6. Login page on the homepage

5. On the registration form, the resident will input all the required information. After the registering, the admin will verified.



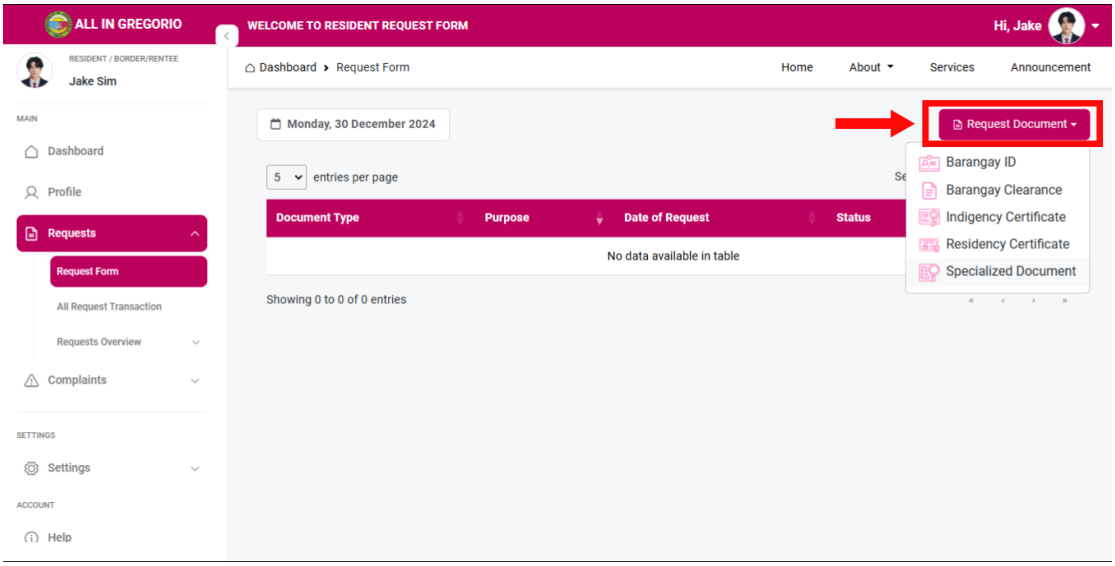
Appendix Figure 7. Registration page on the homepage

6. On the request, resident dashboard, find “Requests” menu and select “Request Form”.



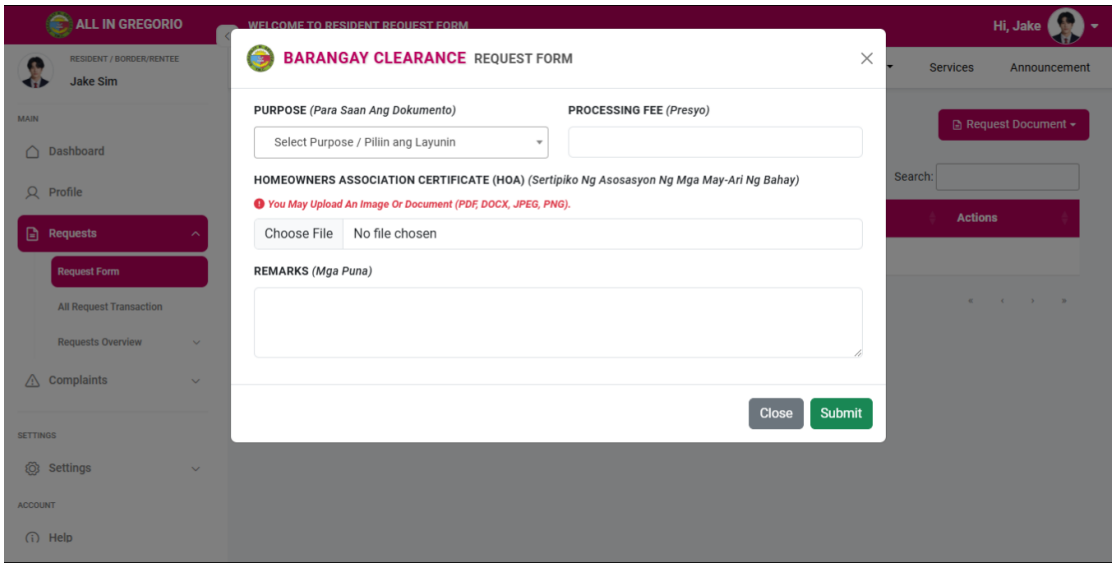
Appendix Figure 8. Resident dashboard

7. Resident will find the “Request Document” button at the top-right part - click on that. Then select the type of document you need.



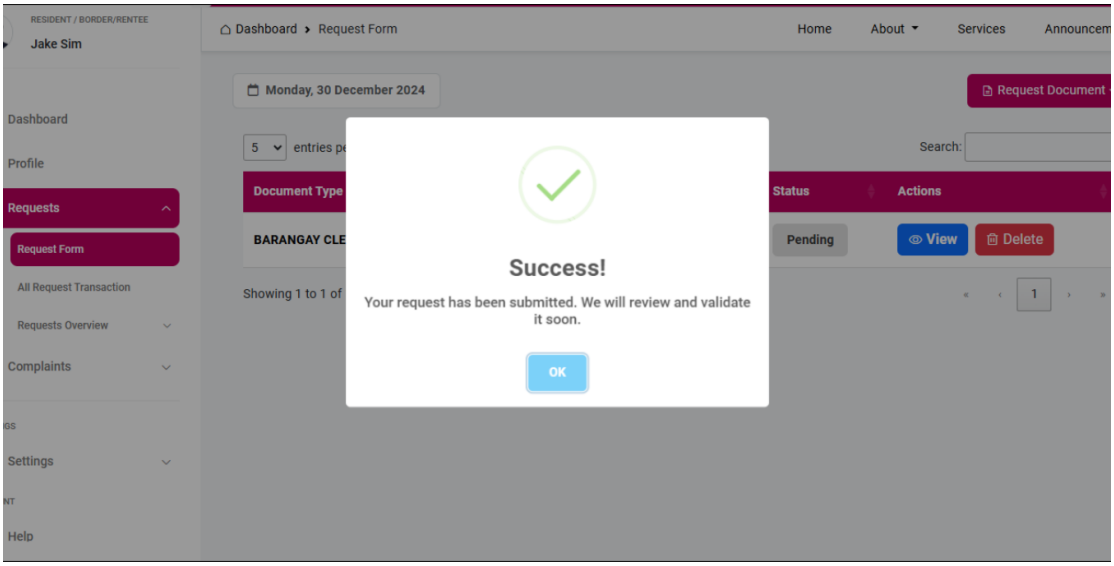
Appendix Figure 9. Request document in resident dashboard

8. After that, a request form will appear. Fill out all the required details and submit the form. Make sure to double-check your details before you submit



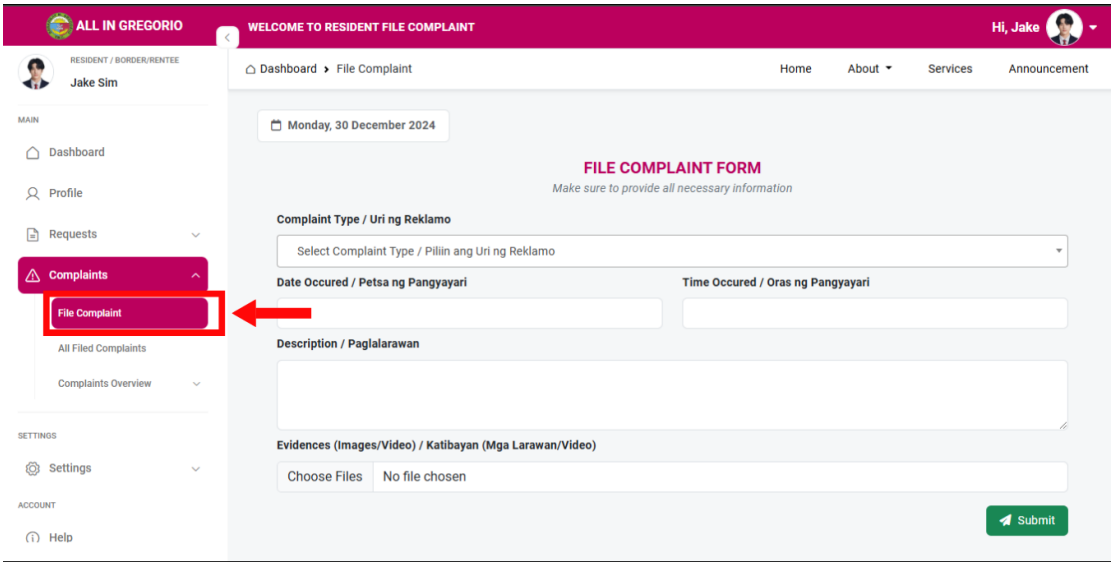
Appendix Figure 10. Request form in resident dashboard

9. Resident will receive a confirmation message. They can now track the status of the request on the dashboard.



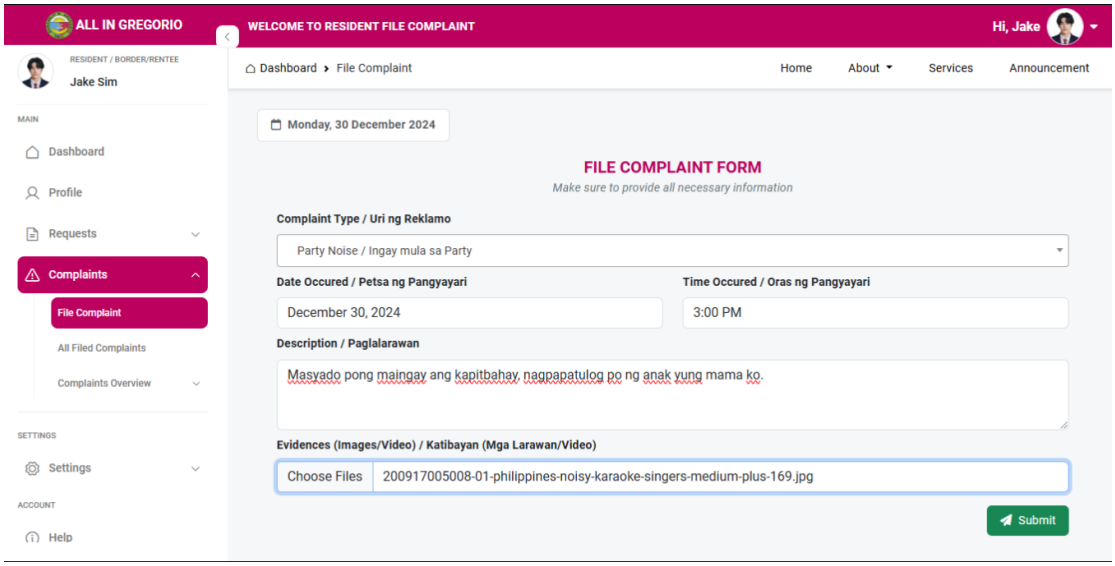
Appendix Figure 11. Confirmation message after submitting request

10. On the complaint, go to dashboard, click on the "Complaints" menu, and choose "File Complaint.". You will see a form with the fields you need to fill out such as complaint type, date and time occurred, description, and evidences.



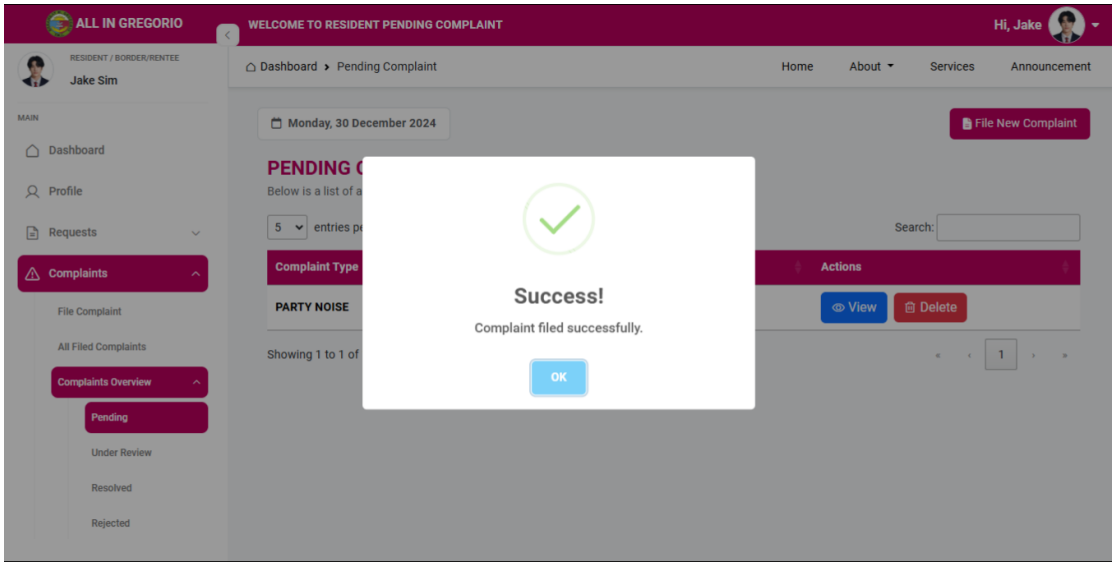
Appendix Figure 12 . Complaint page in resident dashboard

11. Complete the form and don't forget to review your details carefully. Once finished, click the “Submit” button to finalize your request.



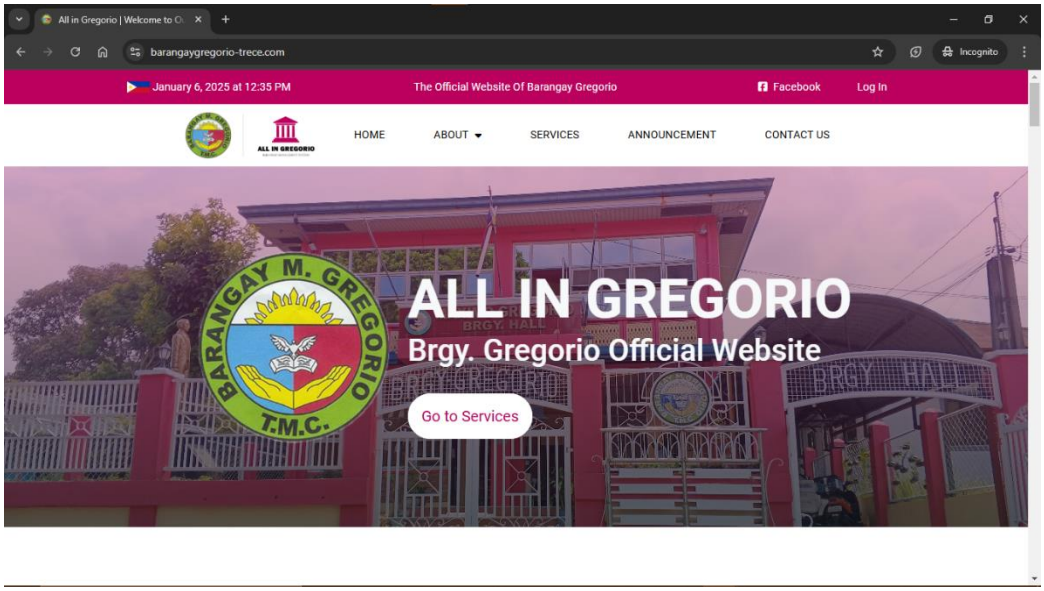
Appendix Figure 13. File complaint form in resident dashboard

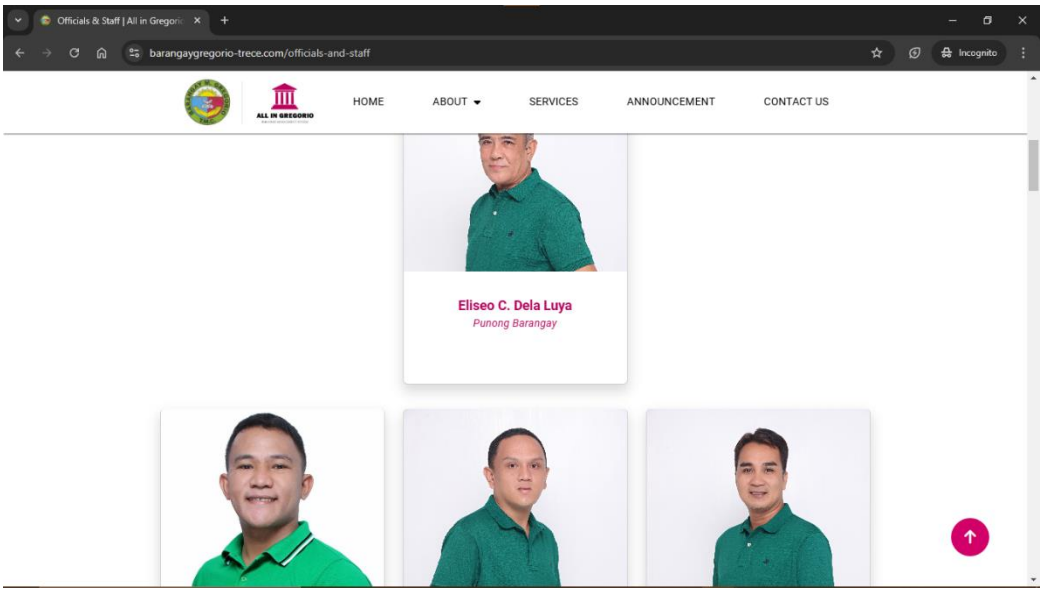
12. Complainant will get a confirmation message, and can now track the status of the request directly from your dashboard.



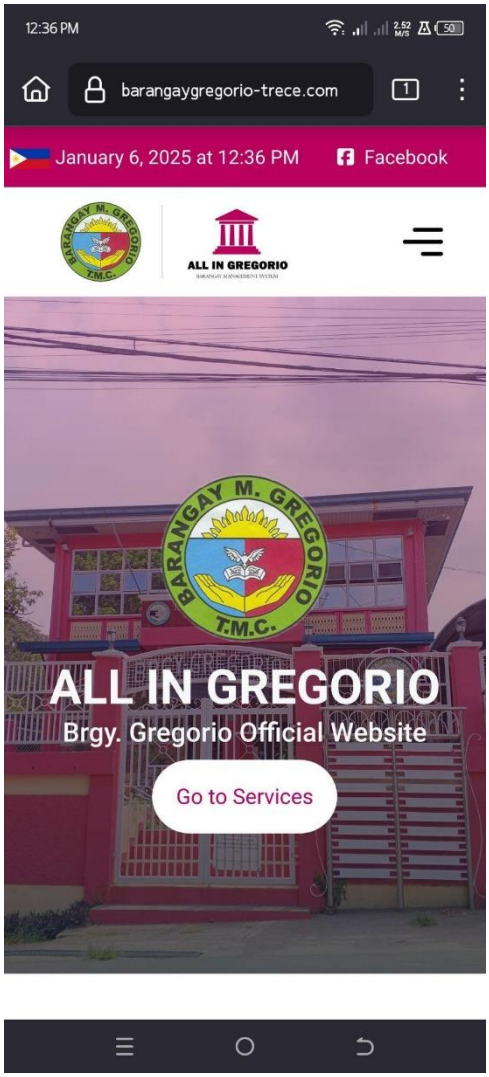
Appendix Figure 14. Confirmation message after filing the complaint in the resident dashboard.

Appendix 5. Screen layouts





Appendix 5. Continued.



Appendix 6. Test results

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TEST INSTRUMENT

COLLEGE OF BACHELOR OF SCIENCE AND INFORMATION TECHNOLOGY

Department of Information Technology

ALL IN GREGORIO: A WEB-BASED BARANGAY E-SERVICES AND INFORMATION MANAGEMENT SYSTEM

Unit testing

Date:
Proponents: Panelo, Aira Mae C.
Valenton, Lois Lane R.
Velarde, Heizel M.

Module: Homepage Module

	Remarks (Passed/Failed/Comments)
FUNCTIONALITY	
Able to see About Us	PASSED
Able to see Services	PASSED
Able to see Announcement	PASSED
Able to see FAQs	PASSED
Able to see Contact Us	PASSED
Accuracy	
Access privileges is correct	PASSED
Access a valid information	PASSED

Module: Account Management Module

	Remarks (Passed/Failed/Comments)
FUNCTIONALITY	
Able to Register, Login and Logout account	Register - Return with input
Able to change Email and Password	PASSED
Able to Forgot Password	PASSED
Accuracy	
Access privileges is correct	PASSED
Access a valid information	PASSED

Module: Admin Management Module

	Remarks (Passed/Failed/Comments)
FUNCTIONALITY	
Able to view the Dashboard	PASSED
Add/Update/Delete Resident(s)	PASSED
Able to Approve/Reject new resident(s)	PASSED
View residents by date	PASSED

Appendix 6. Continued.

Import/Delete Census, House occupants, and Vehicles data	PASSED
Add/Update/Delete Barangay Officials and Staff	PASSED
Approve/Reject Request(s)	PASSED
Generate Document(s)	PASSED
Resolve/Reject Complaint(s)	PASSED
View complaints by date	- ADD TO REPORT (PROJECT)
Generate Complaint Summary	PASSED
Add/Update/Delete Announcement(s)	PASSED
Publish/Update/Delete Full Disclosure	PASSED
Add/Update/Delete Admin and Sub-admin Account(s)	PASSED
Edit Profile Information	PASSED
Accuracy	
Access privileges is correct	PASSED
Access a valid information	PASSED

Module: Sub-admin Management Module

	Remarks (Passed/Failed/Comments)
Functionality	
Able to view the Dashboard	PASSED
View Residents	PASSED
View Residents by date	PASSED
Import/Delete Census, House occupants, and Vehicles data	PASSED
View Barangay Officials and Staff	PASSED
Approve/Reject Request(s)	PASSED
Generate Document(s)	PASSED
Resolve/Reject Complaint(s)	PASSED
View complaints by date	PASSED
Generate Complaint Summary	PASSED
Add/Update/Delete Announcement(s)	PASSED
Edit Profile Information	PASSED
Accuracy	
Access privileges is correct	PASSED
Access a valid information	PASSED

Module: Resident Management Module

	Remarks (Passed/Failed/Comments)
Functionality	
Able to view the Dashboard	PASSED
Request/Delete Document(s)	PASSED
View status of requested document(s)	PASSED
File/Delete Complaint(s)	PASSED
View status of filed complaints(s)	PASSED
View Help Page	PASSED
Edit Profile Information	PASSED
Accuracy	
Access privileges is correct	PASSED
Access a valid information	PASSED

JOSHUA DAVID MERCADO
Name & Signature of Tester
Date: 12/11/2024

Appendix 6. Continued.

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TEST INSTRUMENT

COLLEGE OF BACHELOR OF SCIENCE AND INFORMATION TECHNOLOGY

Department of Information Technology

ALL IN GREGORIO: A WEB-BASED BARANGAY E-SERVICES AND INFORMATION MANAGEMENT SYSTEM

Integration testing

Date:
Proponents: Panelo, Aira Mae C.
Valenton, Lois Lane R.
Velarde, Heizel M.

Modules	Functionality	Passed/Failed	Remarks
Homepage Module	Able to navigate to and redirect to different pages.	PASSED	
Account Management Module	Able to register, log in, and log out of an account.	PASSED	RETURN WITH INPUTS
Admin Management Module	Able to manage residents, census, barangay officials and staff information. Able to manage requested document(s), complaint(s), announcement(s), and full disclosure. Can also generate document(s) and complaint summary.	PASSED	REJECT LIST
Sub-admin Management Module	Able to view residents, barangay officials and staff information. Able to manage census data and announcement(s). Can also generate document(s) and complaint summary.	PASSED	
Resident Management Module	Able to request, view, and delete document(s) and file complaint(s). Can also edit profile information.	PASSED	

Name & Signature of Tester
Date: 12/11/2024

Appendix 6. Continued.

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TEST INSTRUMENT

COLLEGE OF BACHELOR OF SCIENCE AND INFORMATION TECHNOLOGY

Department of Information Technology

ALL IN GREGORIO: A WEB-BASED BARANGAY E-SERVICES AND INFORMATION MANAGEMENT SYSTEM

System testing

Date:
Proponents: Panelo, Aira Mae C.
Valenton, Lois Lane R.
Velarde, Heizel M.

	Action	Activities	System Response	Expected error	System response error
Homepage of All in Gregorio	View Information	Select the navigation menu and explore different pages to view information about Barangay Gregorio.	PASSED		
Account Management	Register account, Login and Logout	Enter email and password, Logout account	PASSED		
Admin Management	Enter admin account	Able to view pending requests, complaints, and residents. Able to manage census, requested documents, complaints, announcements, and full disclosure. Able to generate document and complaint summary.	PASSED		

Appendix 6. Continued.

Sub-admin Management	Enter sub-admin account	Able to view pending requests, complaints, and resident information. Able to manage requested documents, complaints, and announcements. Able to generate document and complaint summary.	PASSED		
Resident Management	Enter resident account	Able to request a document and file a complaint. Able to see status of requested documents and complaints. Can also see remarks of admin or staff regarding the status of the document or complaint.	PASSED		

Name & Signature of Tester
Date: 12/11/2024

Appendix 7. Photo Documentation

Appendix Figure 15. System testing with the *punong barangay* and secretary of Barangay Gregorio

Appendix Figure 16. System evaluation with residents of Barangay Gregorio

Appendix 7. Continued.

Appendix Figure 17. System demonstration and tutorial with residents of Barangay Gregorio

Appendix 8. Curriculum Vitae

CONTACT ME

+639667602676
+639627506625

paneloairamae@gmail.com

www.linkedin.com/in/aira-mae-panelo

PROFILE

Age	: 22 years old
Address	: Brgy. Inocencio, Trece Martires City, Cavite
Civil Status	: Single
Citizenship	: Filipino

SKILLS

- Microsoft Office
- Multitasking
- Attention to detail
- Adaptability
- Active listening
- Time management
- Team collaboration
- Problem-solving

AIRA MAE PANELO

OBJECTIVE

A detail-oriented IT, seeking an entry-level position where I can elevate my potential and utilize my skills to attain the company's goal and expand my expertise in the industry.

INTERNSHIPS

Philippine Statistics Authority - Cavite 2024

Cavite Provincial Statistical Office

- Operates the IT support ticketing system
- Organize and manage spreadsheets using Excel
- Encodes and scans documents
- Assisting clients in queue ticketing system

Provincial Information and Communications Technology Office (PICTO) 2020

Cavite Provincial Capitol

- Encodes and organize documents
- Assists the employees with different tasks

EDUCATION

College 2020-present

Cavite State University - Trece Martires City Campus

Bachelor of Science in Information Technology

Senior High School 2018-2020

Notre Dame of Trece Martires

TVL - Information and Communications Technology

Junior High School 2014-2018

Trece Martires City National High School - Main

Brgy. San Agustin, Trece Martires City, Cavite

ACHIEVEMENTS

College

President's lister from first to fourth year

Senior High School

Graduated with High Honors

Appendix 8. Continued.

LOIS LANE REALIZAN VALENTON

A dedicated senior college student pursuing information technology. Eager to leverage skills in web development and design to contribute to innovative IT works.

CONTACT

0965 785 1195

loislane.valenton@gmail.com

Blk. 20 Lot 24, Westplain Subdivision, Brgy. De Ocampo, Trece Martires City, Cavite

SKILLS

Creativity

Adaptability

Eager to learn

Problem-solving

Web Development & Design

Graphic Design

EDUCATION

College

Cavite State University - Trece Martires City Campus

2020 - present

Senior High School

Asian Institute of Science and Technology (AISAT) - Dasmariñas

2018 - 2020

Junior High School

Trece Martires City National High School

2014 - 2018

TRAINING & CERTIFICATION

Computer Literacy Program (Module II: Hardware, Software, and Graphic Design)

DATACOM Institute of Computer Technology | Rosario, Cavite

November 2015

Appendix 8. Continued.

HEIZEL VELARDE

Taguig City. 1645
+63 950 728 7056
+63 976 336 1584
itsheizel.velarde@gmail.com
justheizel.velarde@gmail.com

EDUCATION

CAVITE STATE UNIVERSITY — Trece Martires City, Cavite
Bachelor of Information Technology — In Progress

TANZA NATIONAL TRADE SCHOOL — Tanza City, Cavite
Computer System Servicing — April 2020

EXPERIENCE

JOHNSON HEALTH TECH PHILIPPINES, INC. — Pasig City, 1605
Graphic Designer | Marketing Associate — September 2023 - September 2024

Starting as a Graphic Design Intern, I quickly proved my passion for creativity and drive, leading to being fully absorbed as a Marketing Associate. During my time at Johnson Health Tech, I:

- Created compelling store collaterals and digital graphics for Facebook, Instagram, and LinkedIn, boosting our brand presence.
- Developed and enhanced our e-commerce platforms on Lazada, Zalora, Shopee, and the company website, generating high-quality leads and driving significant sales conversions.
- Played a key role in building and reinforcing the brand identity across multiple platforms, ensuring a seamless and professional customer experience.

Passionate about creativity, I love transforming ideas into results that drive brand growth and sales.

ROBOJAM PHILIPPINES | ROBOJAM ASIA — Remote
Graphic Designer & Video Editor — June 2021 – August 2023

As a Graphic Designer and Video Editor for RoboJam Philippines/RoboJam Asia, I have been instrumental in bringing robotics to life through creative visuals and videos. My work has helped simplify complex concepts in science, programming, and robotics, making them more accessible and appealing to students across the globe.

Appendix 8. Continued.

- Created vibrant illustrations and engaging videos that showcase the world of robotics.
- Designed eye-catching visuals for seasonal events to captivate a global student audience.
- Developed easy-to-follow video tutorials that simplify complex scientific and programming concepts.
- Produced exciting trailers that spark curiosity and inspire young minds to explore robotics.
- Contributed to making robotics more accessible and engaging for international schools through compelling visual storytelling.

LEADERSHIP AND ACTIVITIES

COMMISION ON ELECTIONS — Cavite State University - TMC Branch

IT Commissioner — August 2022 – October 2023

As an IT Commissioner at the Commission on Elections in Cavite State University, I initiated the digital transformation of our campus voting process. I managed the implementation of our online voting system, ensuring a secure and user-friendly platform for students to exercise their democratic rights.

My role involved overseeing the technical aspects of the election, troubleshooting issues in real-time, and safeguarding the integrity of the votes.

Beyond voting day, I dove deep into the data, analyzing voting patterns and turnout rates. This analysis provided valuable insights that helped shape future election strategies and increased student engagement.

It was incredibly rewarding to see how technology could enhance democratic participation on campus, making the voting process more accessible and efficient for everyone.

SKILLS AND INTERESTS

Tools: Meta Business Suite, Shopify, Microsoft 365 Apps, Google Suite, Notion, Shopee Seller Center, Lazada Seller Center, Zalora Seller Center, ChatGPT, Claude, Copilot.

Graphic Design and Video Editing Tools: Adobe Photoshop, Adobe Illustrator, Adobe Premiere, Adobe After Effects, Canva, Capcut

Technical Programming: PHP, PHP Laravel 10, HTML, CSS, Tailwind CSS, Bootstrap

Language: English, Filipino

Interests: Cheezy Pizza, Good Music, Disney Movies, Animes, Studio Ghibli, Classic Movies (preferably Anne Hathaway and Emma Roberts vibes)